How do Size, Relationships and Capabilities interact over time? A Multidimensional Approach to Firm Growth

ABSTRACT

This paper explores firm growth as a multidimensional phenomenon involving size, relationships and capabilities. Our starting point is the recognition that management literature on firm growth shows two fundamental fallacies. The first fallacy – *the fallacy of modelling firm growth* – refers to the tendency of many models to frame growth exclusively in terms of size and as a sequential of predetermined stages. The second fallacy – *the fallacy of measuring firm growth* – refers to the manifest inconsistencies of the measures normally adopted to gauge firm growth. We maintain that both fallacies can be overcome by reframing firm growth as a result of the interaction of three dimensions: size growth, relationships growth, and capabilities growth. Based on a qualitative analysis of 14 case studies, we propose a model showing how the three dimensions interact over time thus giving shape to firm growth. The model appears to be more realistic than previous theoretical efforts and provides fruitful insights for managers.

Keywords

Firm growth; size growth; relationships growth; capabilities growth

INTRODUCTION

For almost thirty years, since the seminal work of Greiner (1972) management literature has been pervaded by the idea that firm growth could be modelled as a sequence of predetermined stages similarly to the growth of the weight or the height of a biological organism.
However, during the last decade or so the numerous "stages of growth" models have clashed with the overwhelming variety of actual firm growth processes hardly ascribable to a universal path. As a result of this observation, the opposite view seems to start thriving in the literature: firm growth is an idiosyncratic process and therefore it cannot be modelled at all.
We argue that both these approaches share the same reductionistic premise, i.e. they both consider the firm growth just as the growth of its size. Our study removes this premise and takes an intermediate stand. We maintain that actual firm growth processes can be modelled using a non-deterministic approach that relies on a fundamental assumption: size growth represents only one dimension of firm growth that interacts with other two dimensions, i.e. relationships growth and capabilities growth. Based on a qualitative analysis of 14 case histories, we advance a model showing how these three dimensions interact over time thus giving shape to firm growth.
We think our model is more realistic in describing actual firm growth processes than are previous theoretical efforts. Moreover, it provides fruitful insights for managers since it suggests that it is the management of the interdependencies between the three dimensions (i.e. size growth, relationships growth, and capabilities growth) the core issue lying at the heart of firms growth strategies.
The paper is organized as follows. Section two presents the theoretical and conceptual background we rely on. Section three outlines the methodological approach employed in analyzing the case studies. Section four provides the results of the analysis and advances a model of firm growth. Fifth section concludes the paper.

THEORETICAL AND CONCEPTUAL BACKGROUND

The Fallacy of Modelling Firm Growth

The phenomenon of firm growth has long been drawing the attention of economists and management scholars.
In particular the seminal works by Penrose (1959) and Marris (1964) have heavily contributed to the surge of interest in this area. Both the authors highlight how the firm intrinsically seeks to grow even if the reasons they identify for this behaviour are fundamentally different. In the Penrose resource-based theory of the firm growth, learning by doing is the mechanism through which the firm continuously finds new growth opportunities. In the Marris managerial theory of firm growth, the underlying factor that leads to the firm growth is the specific interest of the management in working in an ever bigger firm.
Penrose and Marris seminal works have generated an impressive bulk of theoretical and empirical studies both in economics and management disciplines. Overall this wide literature considers firm growth as a unidimensional phenomenon where the only dimension of growth is the firm size. In other words, the growth of the firm is the growth of its size.
Focusing on managerial studies, a great number of "stages of firm growth" models have been produced (Greiner, 1972, 1998; Moore & Tushman, 1982; Churchill & Lewis, 1983; Quinn & Cameron, 1983; Miller & Friesen, 1984; Smith, Mitchell, & Summer, 1985; Adizes, 1989; Kazanjian, 1988; Kazanjian & Drazin, 1989; Hanks, 1990; Hanks, Watson, Jansen, & Chandler, 1993; Churchill, 1997).
Comparing these different models a number of differences emerge (Hanks et al., 1993; Phelps, Adams, & Bessant, 2007). First of all, the number and the nature of growth stages predicted by the models differ among them. Secondly, some models have been used to portrait the growth of small firms, others deal only with big firms, others claim to have a general validity. Thirdly, most of the models mainly focus on the internal factors, such as the management style and organizational structure, affecting the firm growth while a fewer number of studies consider also exogenous factors (e.g. the industry competitive structure) as crucial drivers of firm growth. Finally, almost all models predict one universal growth path characterized by a predetermined sequence of growth stages while just a few admit a (somewhat limited) variety of different paths of firm growth.

These differences aside, all these models have two common traits. We already referred to the first one: firm growth is conceptualized as size growth gauged by the extension of the boundaries of the firm. Moreover, all the models consider firm growth as a combination of sequential well-defined stages that the firm needs to climb to get bigger. This idea is a direct consequence of modelling the firm growth as a unidimensional phenomenon. In so far as firm growth is just its size growth, it can be assumed that the process of firm growth matches the process of the weight or the height growth of a biological organism, i.e. a sequence of clearly defined stages.

An early and prominent contribution among the stages of growth models is made by Greiner (1972, 1998). Greiner's theory assumes that the history of the firm unfolds through a sequence of growth stages and that each of these stages ends up in a revolutionary period. The resolution of each revolutionary period is the go-ahead for the next stage.

In his 1972 article (partially refined by the 1998 article), Greiner identifies five growth stages described on the base of five parameters (management focus, organizational structure, top management style, control system, management reward emphasis):

1. creativity-led growth, broken off by a crisis of leadership;
2. direction-led growth, broken off by a crisis of autonomy;
3. delegation-led growth, broken off by a crisis of control;
4. coordination-led growth, broken off by a crisis of bureaucracy or red-tape crisis;
5. collaboration-led growth, broken off by a crisis of lack of internal solutions for growth[1].

Each growth stage is sustained by a specific rationale in terms of firm strategy, managerial objectives and organizational structure. In each stage the firm reaches a point where the rationale of the stage inhibits further growth thus triggering the crisis. Therefore the natural development of the organization goes through a series of discontinuities due to internal mutations of the firm that grows and therefore changes.

Also the model by Hanks et al. (1993) makes a remarkable contribution to the stages of growth models. The model advanced by these authors is based on an empirical survey of 133 US firms operating in high technology industries. The authors envisage four stages of firm growth:

1. start-up stage,
2. expansion stage,
3. maturity stage,
4. diversification stage.

The variables that are used to draw the taxonomy of growth stages are of two types. The former (contextual variables) are the age of the firm, the size (gauged by the number of employees) and the rate of employment growth during the last year. The latter (structural variables) are the number of hierarchical layers, the organizational form, and the degree of formalization, decentralization and specialization.

Unlike Greiner, Hank et al. recognize a variety (even if somewhat limited) of possible firm growth paths. Specifically, the authors argue that during the first and the second stage two ramifications can evolve apart from the mainstream process.

The authors define these two configurations "disengagement stages" signalling that when the ownership of the firm undertakes one of these two stages it disengages from further firm growth. In particular, the latter disengagement stage is populated with firms that are older and bigger than those

[1] The last stage (collaboration-led growth) is characterized by a "greater spontaneity in management action through teams and skillfull confrontation of interpersonal differences" (Greiner, 1972: 43). The crisis of the collaboration stage is somewhat ill-defined. The author relates this crisis to the psychological saturation of the firm human resources with regards to the job intensity and the pressure towards innovative solutions. In his 1998 article the author restates the crisis associated to the final stage. This crisis is triggered by the impossibility to find internal solutions/resources to efficiently promote firm growth. As a result of this crisis, the author envisages a sixth phase "in which growth depends on the design of extra-organizational solutions" (65). In other words the firm starts searching for resources outside its organizational boundaries and relies on interfirm relationships to get access to these resources.

in the second stage (i.e. expansion stage) but have a lower growth rate. Hank et al. draw on the model advanced by Churchill and Lewis (1983) to explain this disengagement stage. As a matter of fact, Churchill and Lewis (1983: 34) envisage a stage where "the company has attained true economic health, has sufficient size and product-market penetration to ensure economic success, and earns average or above-average profits. The company can stay at this stage indefinitely, provided environmental change does not destroy its market niche or innefective management reduce its competitive abilities"[2]. The ownership chooses therefore to disengage from further firm growth diverting the resources generated by the firm towards other activities.

Having recourse to the disengagement stages is not enough to free the stage models of firm growth from an excessive determinism. As a matter of fact, the attempts to model firm growth as a life cycle made of predetermined stages tend to fade away during the second half of '90s while the awareness that firm growth is a too complex phenomenon to be crystallized as a temporal sequence of universal stages begins to spread among scholars (Merz, Weber, & Laetz, 1994; Garnsey, 1998; McMahon, 1998; Bhidé, 2000; Dobbs & Hamilton, 2007). In Merz et al. (1994: 49) words, the stage models of firm growth, "while interesting and thought-provoking, possess limited usefulness for the study of growth management since they are built upon the deterministic assumption that all firms grow linearly through a predictable series of preordained stages". The results of our study corroborate and substantialize this standpoint.

The Fallacy of Measuring Firm Growth

According to Penrose (1995: 25), the size of firm "should be measured with respect to the present value of the total of its resources (including personnel) used for its own productive purposes. This is almost impossible to discover in practice, and in the absence of any really satisfactory measure of size we have a wide choice depending on our purpose".

Indeed, a great variety of firm growth measures have been proposed ranging from increase in market share to growth in sales, value added, profits, assets, employees, or number of customers (Hoy, McDougall, & Dsouza, 1992; Garnsey, Stam, & Heffernan, 2006).

However, the most common measures used in empirical studies studying the firm growth are the total sales and number of employees (Weinzimmer, Nystrom, & Freeman, 1998; Delmar, 2006). Both these measures are easily accessible and provide a fairly standard base to make comparisons among firms. Other measures (e.g. the market share) are more difficult to be gathered and can be used to compare only those firms that show some similarities (e.g. similar product ranges). Moreover, total sales and employees are those parameters that entrepreneurships and CEOs normally rely on to appraise their firm growth (Hoy et al., 1992; Delmar, Davidsson, & Gartner, 2003).

Even if sales growth and employees growth are widespread measures of size growth of the firm, Weinzimmer et al. (1998) argue that they are not consistent. The authors empirically prove that although sales growth and employees growth may be correlated, they exhibit different relationships with the determinants of firm growth. The authors conclude that "researchers studying sales growth and those studying growth in number of employees are likely interested in very different theoretical concepts" (Weinzimmer et al., 1998: 250).

Seeking more empirical evidence to corroborate Weinzimmer et al.'s findings, we carried out a simple analysis measuring sales and employees growth on a sample of Italian firms over 2000-2007 period. Following several empirical studies on firm growth, we measure the firm growth as the difference of first year sales/employees and last year sales/employees divided by first year sales/employees. We used AIDA database to gather the data. To make our analysis homogeneous we focused on manufacturing firms (firms with a two-digit ATECO code between 15 and 37) located in North East of Italy that at the end of 2007 could be qualified as medium firms. We drawn the definition of medium firm provided by Medio Banca, i.e. firms with a number of employees ranging

[2] The model by Churchill and Lewis (1983) involves 5 stages: existence, survival, success, take-off, and resource maturity. The second stage can evolve into two different ways. The success-disengagement, described in the text, and the success-growth stage.

from 50 to 499 and total sales ranging from 13 million € to 260 million €. Out of a population of 1410 firms that in 2007 met our criteria, we selected a sample of 771 (54.68% of the population) excluding those firms presenting missing values and those firms with outlier values of sales growth and/or employees growth. Table 1 provides descriptive statistics for sales, employees, sales growth and employees growth.

Insert Table 1 about here

We then run a series of simple calculations. First of all, we figured the correlation between the two growth rates. The correlation was 0.46 very close to the correlation, based on the same formula, found by Weinzimmer et al. study (0.57). Secondly, we focused on those firms with the highest growth rates performance. We selected two sub-samples: firms belonging to the top quartile of sales growth and firms belonging to the top quartile of employees growth. We counted those firms that simultaneously belong to both the quartiles. Only 109 firms (39.35% of the 277 firms belonging to the union of the two quartiles) were in both the top quartiles of sales growth and employees growth while 168 firms (60.65%) were either in the top quartile of sales growth or in the top quartile of employees growth.

Overall, empirical evidence highlights that sales growth and employees growth are at least inconsistent measures of size growth of the firm. How can this mismatch be explained?

The Three Dimensions of Firm Growth

We maintain that both fallacies, i.e. modelling firm growth as a sequence of predetermined stages and measuring firm growth using sales and employees, can be overcome if we recognize that firm growth is a multidimensional phenomenon.

Our argument can easily be understood using an hypothetical example. Suppose that two identical firms hire new marketing managers more capable than the previous ones. The new managers develop new activities and deploy effective marketing strategies that quickly lead the firms to heavily increase their sales. However, while the first firm supports the sales growth by investing in new production capacity and hiring new employees, the second firm outsources the additional production to external subcontractors. If we use sales growth as a measure of firm growth we conclude that both firms have grown but if we use employees growth we come to a different conclusion: the first firm has grown while the second has not.

One can argue that number of employees growth is a more accurate measure of the firm growth than sales growth since the latter does not take into account the degree of vertical integration of the firm (Laursen, Mahnke, & Vejrup-Hansen, 1999; Garnsey et al., 2006).

We advance a partially different explanation. Employees growth is an accurate measure of one dimension of firm growth, i.e. size growth, but there are two other dimensions to be considered in order to have a thorough appraisal of firm growth: relationships growth and capabilities growth.

In our example discrepancy between employees growth and sales growth raises because the first firm increases the number of employees and internal production capacity while the second chooses to increase its networking. Moreover, both firms rely on new marketing capabilities to generate growth opportunities.

Previous literature considers capabilities and relationships as sources of competitive advantage that may lead to firm growth, explicitly or implicitly understood as size growth (Jarillo, 1989; Dyer & Singh, 1998). We maintain that size, relationships and capabilities are three dimensions of the same phenomenon, i.e. firm growth, and that these three dimensions interact overtime in complex manners that are not possible to model using a deterministic stage-wise approach. This paper is an attempt to obtain evidence of these interactions and to frame them into a model that captures the complexity of firm growth.

Before we go any further, we need to provide precise definitions of what we mean by size growth, relationships growth and capabilities growth.

Size growth. We define size growth as the widening of the boundaries of the firm over a given period of time. Size growth may be internal or external (Penrose, 1995).

In the former case, the firm increases its boundaries through greenfield investments. These investments can increase the size of existing organizational units or create new production, logistics or commercial units or subsidiaries.

Mergers and acquisitions are the most common and widely studied forms of external growth (Cartwright & Schoenberg, 2006). In the first case, two firms merge together to become one bigger firm; in the second, one firm acquires the entirety (or the majority) of the equity of another firm. The acquisition of a branch of another firm is a further form of external growth.

Relationships growth. We define relationships growth as the increment of the extent to which a firm uses external resources over a given period of time. External resources are those assets (physical or otherwise) over which the firm has no direct ownership (Jarillo, 1989) but that it can access to through the relationships it has with other firms and organizations (e.g. suppliers, customers, competitors, universities, research centers). As resource-based theory maintains, inter-organizational relationships allow the firm to tap into resources that it does not own (Das & Teng, 2000). The more scarce and critical are these resources for the firm competitive advantage, the higher is the value of the relationships (Jarillo, 1989; Dyer & Singh, 1998).

The extent of external resources can grow both as a result of an increase of the number of relationships and as a result of an increase of the value of existing relationships.

In the former case, the firm extends its value network (or value constellation), namely the set of relationships[3] that the firm uses to get accessed to external resources (Normann & Ramirez, 1993; Allee, 2000; Barringer & Harrison, 2000). In the latter case, the firm keeps its network stable but evolves its existing relationships towards more valuable configurations.

Inter-organizational relationships can take several forms ranging from subcontracting relationships, to licensing relationships to joint-ventures.

Among the criteria suggested by the literature to classify inter-organizational relationships, the presence of equity exchanges between the organizations is of particular interest in our analysis since the development of this types of relationships lies on the edge between size growth and relationships growth[4].

Even more important for our analysis is the distinction between arm's length relationships and collaborative relationships (or partnerships). Since Richardson (1972)'s seminal work, many scholars have highlighted the importance of collaborative relationships for the competitive advantages of the partners (Porter & Fuller, 1986; Contractor & Lorange, 1988; Kogut, 1988; Nohria & Garcia-Pont, 1991; Bleeke & Ernst, 1993). For example, a vast literature has focused on the transition of supplier relations from arm's length relationships to partnerships and demonstrates that supplier relations based on cooperation are valuable in order to secure the partners the access to resources that cannot be traded using market relationships (Cusumano & Takeishi, 1991; Helper & MacDuffie, 1997; Camuffo, Furlan, & Rettore, 2007).

Capabilities growth. We define capabilities growth as the development of new capabilities of a firm over a given period of time. The development of new capabilities can be based either on internal resources or on resources that the firm acquires from the market. For example, a firm can hire new engineers to fill a gap in a field previously uncovered or it can train internal engineers to achieve the same result.

The capabilities of a firm can be classified into three broad categories:

- functional capabilities,
- interface capabilities,

[3] The relationships a focal firm relies on are both direct and indirect (Anderson, Håkansson, & Johanson, 1994). Indirect relationships extend the extent of knowledge scope the firm can tap into. For example, a producer of machine tools that involves a component supplier (direct relationship) in the development of a new product, indirectly acquires also the knowledge that this supplier have developed through the interaction with its customers (indirect relationships).

[4] More precisely, when a firm enters the equity of a partner, the equity share owned by the firm can be used as a measure of size growth while the equity share owned by the partner can be used as a measure of relationships growth of the firm.

- dynamic capabilities.

The first category of capabilities refers to the abilities to carry out the core functions (operations, marketing and Research & Development) and the support functions (e.g. human resource management, accounting) of the firm.

The second category of capabilities allows the firm to effectively and efficiently use external resources (Stevenson & Jarrillo, 1990). We can divide these capabilities into two types: a) searching and monitoring capabilities representing the ability to search and select new suitable external resources (Furlan, Grandinetti, & Camuffo, 2007) and b) relational capabilities representing the ability to successfully manage the existing network of relationships (Lorenzoni & Lipparini, 1999). Supplier management capabilities and customer management capabilities are typical examples of interface capabilities.

Dynamic capabilities are defined as "the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environment" (Teece, Pisano, & Shuen, 1997). According to Teece et al. (1997) dynamic capabilities concern three different aspects: a) coordination and integration of different activities of the firm and of its value network, b) learning how to enhance performances, lower weaknesses, reduce threats, and identify new business opportunities and c) reconfiguration of firm resources coherently with strategic reorientations that cope with an ever changing and complex environment. These reconfigurations may involve internal resources and external resources, i.e. the firm's value network.

RESEARCH DESIGN AND METHOD

We use the three dimensions of firm growth to conduct 14 case histories of firms located in North-East of Italy.

All these firms have an history of several decades, or at least several lustra (the youngest firm was founded in 1995) and, during their life time, they have been showing significant performances in terms of sales and employees growth (table 2).

Insert Table 2 about here

As suggested by Ellram (1996) and Voss, Tsikriktsis and Frohlich (2002), we collected information through open-ended interviews, guided by a common case study protocol built on the three dimensions of firm growth as defined in the previous section (table 3). To conduct the interviews these research constructs have been operationalized with specific questions (Yin, 2002). The interviews spanned the entire history of each firm (from foundation to present time).

Insert Table 3 about here

The research begun in 2005 and finished in 2007. For each case study, we interviewed entrepreneurs, CEOs and top managers. On the whole, we carried out a total of 42 interviews and each of them took about 2 hours. The interviews were taped and written up and transcripts were used for the subsequent analysis. Finally, we gathered information using secondary sources (e.g. financial reports, balance sheets, public databases, websites, catalogues, newspapers) and during public speeches delivered by firms' protagonists. The within case analysis was aimed at keeping track of the interdependencies between the three dimensions of firm growth in order to unveil chains of interdependencies linking these three dimensions (figure 1 gives an illustration of one within case analysis).

Insert Figure 1 about here

RESULTS AND DISCUSSION: A MODEL OF FIRM GROWTH

On the base of the case histories analysis and subsequent comparison between the cases we identify a set of nine interdependencies that dynamically link the three dimensions of firm growth. This set of interdependencies links the three dimensions of firm growth (size growth, relationships growth and capabilities growth) and on the whole portrays our multidimensional model of firm growth. Figure 2 shows the nine interdependencies labelled as P1 to P9. In the following paragraphs we describe and discuss each of these interdependencies using evidence from the case histories to support our arguments.

Insert Figure 2 about here

Size growth and relationships growth

Size growth and relationships growth are normally considered mutually exclusive alternatives. As a matter of fact, whenever a firm chooses between make or buy it either decides to scale up its internal capacity or to increase the amount of external resources it relies on.

However, our case studies show that size growth and relationships growth are often complementary and interdependent processes.

First of all, in all the cases size growth has triggered the establishment of new relationships or made some of the existing relationships to evolve (*P1: size growth may generate relationships growth*).

Calligaris is a leading firm in the Italian furniture industry. Founded in 1923, for most part of its life the firm has grown within the boundaries of the chair industrial district heavily relying on local subcontractors and exporting its final products mainly to European markets (Grandinetti, 2003). During the 1990s, the entrepreneur realized that in order to penetrate the US and Japanese markets (two of the most promising markets) the firm needed to arrange direct commercial presence in those countries. In 1998 Calligaris undertook a greenfield investment creating a commercial subsidiary in US. This firm has two organizational units: one, located in the Atlantic coast, serves as a logistic unit while the other, located in the Pacific coast, carries out customer service activities. Having a local commercial base allowed Calligaris to improve existing relationships and establish new relationships with sale agents and retailers eventually leading the firm to create a distribution channel that selectively covered the whole US market. In 2005 Calligaris replicated the US market penetration strategy in Japan establishing a commercial subsidiary with a sales office in Kobe and a distribution center in Okawa. By the end of 2007, the firm was selling its product through 122 stores in US and 69 stores in Japan.

Similarly to P1, in all our case studies we found evidence that relationships growth generates opportunities for size growth (*P2: relationships growth may generate size growth*).

In the firms operating in industrial markets (Anodica, Carraro, C-Blade, Brovedani, Mainetti, Premek), new large customers often lead the companies to make further capacity investments.

Premek was established in 1978 and is now a first-tier supplier for several industries, such as electric household appliance, medical and precision devices, hydraulics, optomechanics, automotive, telecommunications, textile and aerospace. At the beginning of 1998 the firm started a relationship with a Swedish customer. Overtime the relationship grew and evolved from a mere subcontracting relationship to a partnership leading Premek to be increasingly involved in the product development and industrial engineering process of the customer. This evolution forced Premek to make investments in new production capacity (e.g. assembling lines in protected and aseptic environment and dedicated functional-testing machines).

Organizations other than customers can have an important role in fostering size growth of the firm. As Jarillo (1989) maintains firms may leverage on new resources provided by external organizations with the deliberate intent to initiate size growth processes.

Firms of our sample operating in consumer markets (Allison, Calligaris, Moroso, Snaidero, Morellato, Grotto, Geox) traced their brilliant size growth performances back to the development of

a network of relationships with suppliers providing strategic services like marketing research, advertisement, product design and the like.
Snaidero is an Italian company ranking now fifth among the European producers in the kitchen industry. During the 1990s the firm seemed to be doomed to fall into decline. The premise for a reversal was the takeover of the founder's son who advocated a new way of running the business. In particular, he promoted the extensive use of external resources to develop a new model of kitchen. This way he revolutionized the well-established practice of developing new products mostly relying on internal resources. As a first step the firm started a relationship with a market research agency that carried out a market segmentation analysis using lifestyles as the segmentation variable and identified the most interesting segment for the firm to position its new product. In the product development project the designer Iosa Ghini was involved in order to give shape to the idea of the new product. Also in the planning of the advertising campaign the firm resorted to external resources to effectively market the new product that was finally launched in the end of 2000, four years later the beginning of the new product development process. Leveraging on the market success of the new product, the firm started a new phase characterized by a sharp increase of employment and production capacity level.
The interdependencies P1 and P2 are causal in nature with a temporal lag that separates the cause from the effect. In our case histories we also find evidence of another type of interdependency where size and relationships grow simultaneously (*P3: size growth and relationships growth may be interdependent but not linked by a causal relationship).*
In particular, this type of interdependency occurs whenever a firm acquires (or merges) another firm simultaneously growing both its size, by incorporating the proprietary assets of the acquired firm, and its relationship portfolio, by acquiring the set of relationships of the acquired firm. Sometimes the relational capital of the acquired firm may be the real reason behind the acquisition since its value overwhelms the value of the proprietary assets of the acquired firm.
Morellato is a leading firm operating in two converging industries: watch and jewellery. To reach a sustainable competitive advantage in these mature industries, the owner and CEO of Morellato realized that to successfully market the products it was necessary using well known brands such as those of the fashion clothing industry. This way a jewel or a watch could be launched in the market and got the immediate attention of the admirers of the brand associated with the product. Establishing and managing relationships with the brand owners an the retailers became therefore a critical success factor for Morellato. To that end between 2006 and 2007 the firm carried out two important initiatives. First, it acquired Sector, a watch producer that brought a dowry of its proprietary assets and some important licensed brands (Cavalli, Moschino, Pirelli). Another initiative was the acquisition of Diffusione Italiana Preziosi, a company running a chain of some 300 jewellery shops (located in several European countries) most of them under franchising agreements. Both the acquisitions led Morellato to widen its boundaries (size growth) but most of all to increase its set of relationships with external organizations (in the first case with the brand owners and in the second case with the franchisees).

Capabilities growth and size growth

From our analysis, we found considerable evidence that the development of capabilities may support size growth (*P4: capabilities growth may generate size growth*). From our case studies, we often found the situation where a small extent of capabilities growth determined a small extent of size growth. This event may recur several times thus triggering phases where the gradual development of firm capabilities causes a gradual widening of firm boundaries.
We also found evidence that the inverse relationship (*P5: size growth may generate capabilities growth*) often involved small variations of the two constructs. Indeed, even small incremental investments (e.g. arranging a new production line) often require and trigger the development of new functional capabilities. The capabilities growth can occur in several forms: personnel training, recruitment of new employees, learning by doing.

However, in order to better appreciate the causal relationship between capabilities growth and size growth (and vice versa), it is worthwhile focusing on the developmental phases where firm size undergoes a significant growth signalled by a surge of the number of employees.

By studying these discontinuous phases in our firms, we found several cases where capabilities growth proceeded size growth (P4). Evidence shows that this dynamic is particularly common when firms are involved in fierce internationalization processes, repositioning strategies and diversification strategies.

Between the end of the 20th century and the beginning of the 21st century, the firms of our sample operating in fashion and furniture industries (Allison, Calligaris, Moroso, Snaidero, Morellato, Grotto, Geox) have sought a strong market internationalization by penetrating new foreign markets and creating sales offices, commercial subsidiaries, and flagship stores in the most important markets. This strategy marked a significant commitment leap towards foreign markets as compared to the previous approach to internationalization mainly based on indirect exportations. The new entry strategy posed great challenges to the firms that had to deal with country-specific peculiarities of the foreign markets. Being aware of these difficulties, the firms prepared the commitment leap beforehand by developing new marketing capabilities trough internal training programs and recruitment of experienced workers and managers.

Carraro is the world's leader in the production of driving systems for off-highway vehicles (e.g. tractors, earth-moving machines, trucks). The firm was born in 1932 as a tractor producer but during the 1970s the owner and CEO, beset by bigger producers, decided to reposition the firm by focusing on the production of single components (i.e. axles) and became a first-tier supplier of their competitors (e.g. Renault, Ford, Case, Caterpillar, John Deere). This decision was at the base of a period of remarkable size growth leading the firm to double in just few years the number of employees. The repositioning strategy was successful for two main reasons. First of all, the CEO and top managers understood that big producers, challenged by highly volatile markets, were at the outset of an outsourcing movement to gain flexibility. Secondly, Carraro's repositioning leveraged on design and manufacturing capabilities, such as those concerned with mechanical components (e.g. gearboxes for four-wheel drives), that the firm had built up during the first 60 years of its life.

In our case histories, we also run several times into discontinuous phases where capabilities growth chased size growth (P5). This happens when a sudden increase of the firm's size resulting in heightened organizational complexity requires a substantial development of new capabilities. Here the timeframes of the two growths are very different: while size growth occurs in short time, capabilities need more time to develop in order to adapt the organization to the new size.

In particular, the decoupling between size growth and capabilities growth is typical of the acquisitions where organizational features of the acquired firm are very different of those of the acquired firms. In our sample, we have observed acquisitions of this kind in several cases (Calligaris, Snaidero, Morellato, Carraro).

After 1995, Carraro undertook a strong growth path mainly based on acquisitions. The main reason behind these acquisitions was the fact that the customers demanded Carraro to be near their plants around the world in order to streamline production flow and ease communication and coordination tasks. As a matter of fact, several of these acquisitions were branches of customers' plants. During the interviews, CEO and several managers stated that several acquisitions triggered long and tough integration phases since Carraro needed to learn how to integrate the new firms and to redesign the corporate organization to coordinate the different parts of the whole organization (i.e. development of dynamic capabilities).

Finally, it is worth noting that the acquisitions lead the firm to simultaneously scale up and incorporate the stock of capabilities brought by the acquired firm (*P6: size growth and capabilities growth may be interdependent but not linked by a causal relationship*). Several acquisitions we analyzed were fundamentally driven by the willingness of the management to acquire the stock of capabilities needed to implement a specific strategy such as the entry in a new strategic business area. In these cases, the acquisitions realized a simultaneous growth of both size and capabilities of the firm.

Capabilities growth and relationships growth

We found compelling evidence that capabilities growth plays a key role in the relationships growth of the firm (*P7: capabilities growth may generate relationships growth*).

First of all, several interviewees highlighted how the investments in R&D, quality management, production and logistics, organizational structures and coordination mechanisms laid the foundations not only to establish relationships with new customers and develop relationships with existing ones but also to select valuable suppliers and make the most out of existing supplier relationships.

Secondly, interface capabilities complemented functional and dynamic capabilities to support the process of relationships growth. On the one hand, our firms continuously needed to improve abilities to search and select new suitable external resources bearing in mind the long-term implications of selection (Barringer, 1997). On the other hand, renewing relational capabilities was necessary to develop successful relationships with the owners of these resources.

Thirdly, from the case histories it emerged the role plaid by the dynamic capabilities as regard to the configuration of the value network. When Carraro decided to become a first-tier supplier during 1970s, it had to change the whole network of relationships coherently with its new position within the supply chain. Competitors gradually became customers or prospective customers, suppliers gradually became competitors and a new set of supplier relationships needed to be established. The reconfiguration of the whole value network rooted on specific capabilities that had not risen overnight but were honed over many years and shaped by competences embedded in key persons (CEO, top managers), practices formalized in organizational units (at the end of the 1960s the firm set up an organizational function specifically dedicated to axles and drive systems) and specific assets (i.e. technological knowledge).

Our case histories also show how the onset of new relationships (with suppliers, customers or other organizations) may generate the development of firm's capabilities (*P8: relationships growth may generate capabilities growth*). In particular, we run into some instances of what we call "relational discontinuities" (i.e. when a firm, as a result of an acquisition, suddenly increases the set of new relationships) that are of paramount interest here. When Snaidero acquired Cuisines Plus (a chain of franchisee shops of modular kitchens) in 2000, it had no adequate know-how on retail management. The firm leveraged on the set of new relationships with the franchisees to learn how to manage kitchen outlets. In the following years Snaidero leveraged on these capabilities to acquire other franchising chains.

Similarly to P3 and P6, evidence was gathered of non-causal linkages between relationships growth and capabilities growth (*P9: relationships growth and capabilities growth may be interdependent but not linked by a causal relationship*).

In particular, we found that relationships and capabilities simultaneously grow as a result of interfirm collaboration. Successful partners' interaction drives information and knowledge sharing, co-production of joint knowledge, and the progressive achievement of partners' goals (Håkansson & Snehota, 1995). From our standpoint interaction leads to a twofold result. On the one hand, it increases the resources the firms can get access to thus increasing the value of the relationships (relationships growth). On the other hand, it increases the partners' capabilities (capabilities growth) including the refinement of the relational capabilities (Lorenzoni & Lipparini, 1999).

All the firms of our sample had relied on cooperation to develop their capabilities. The most widespread situations of inter-organizational collaboration are with customers and suppliers. Founded in 1972, Brovedani is an important producer of high-precision mechanical components for several sectors including automotive and household appliances. It employs more than six hundred people with production facilities in Italy, France and Slovak Republic. The turnover of the firm has been astonishingly growing during the last ten years from less than 20 millions Euro in 1997 to 78 millions Euro in 2007. The firm maintains long lasting relationships with all the customers and co-design and thorough information sharing have become usual managerial practices in customer relationship management. As the managing director argued, as vertical collaboration has flourished

over time, Brovedani has absorbed knowledge and developed renewed design and technological capabilities.
Less frequent, but definitely important from a strategic standpoint, are those cases of cooperation with non-for profit organizations (e.g. universities), competitors (i.e. horizontal cooperation), and firms operating in other industries (i.e. lateral cooperation).
Anodica is a medium firm founded in 1962 as a spin-off of Zoppas, a household appliances producer. The firm manufactures aluminium components for the household appliance and furniture industries and had long been rooted in the local context (i.e. North East of Italy) both from the customers' and suppliers' sides. However, at the beginning of 2000, top management realized the firm needed to internationalize its sales and to globally source its supplies in order to keep a competitive stand and follow the main customers. To accomplish this goal, the firm started searching for partners that, while operating in complementary industries, shared with Anodica some customers. CEO found four other firms willing to carry out a common journey and started a collaboration with them that led the firms to integrate their products thus offering the customers a single product system rather than a bunch of separate components. As the collaboration unfolded its effects, the firms developed product design capabilities hardly accessible to any of them took in isolation. To formalize the collaboration and its governance, in 2006 the five firms founded a consortium.

CONCLUSIONS

This paper explores firm growth as a multidimensional phenomenon involving size, relationships and capabilities. Our starting point is the recognition that management literature on firm growth shows two main fallacies: the fallacy of modelling firm growth and the fallacy of measuring firm growth. The first fallacy refers to the tendency of many models to frame growth exclusively in terms of size and as a sequential of predetermined stages (Merz et al., 1994). The second fallacy refers to the fact that measures adopted to gauge firm growth (e.g. sales and number of employees) show manifest inconsistencies (Weinzimmer et al., 1998).
We maintain that both fallacies can be overcome by considering firm growth as the result of the interaction of three dimensions: size growth, relationships growth, and capabilities growth. Based on a qualitative analysis of 14 case studies we propose a model showing 9 interdependencies that link the three dimensions of firm growth.
In the preceding paragraphs we have described the interdependencies each at a time. This approach has been adopted to explain in an analytical fashion our conceptual model that significantly differ from the traditional ones. However, in each phase of the life of our firms we have observed the concurrence of several interdependencies. As a matter of fact, it is the peculiar combination of a set of interdependencies that explains firm growth in each phase.
Our work offers several contributions both to academicians and practitioners.
First of all, our results back up the criticism advanced by several authors about the stage models of firm growth (Merz et al., 1994; McMahon, 1998; Bhidé, 2000; Dobbs & Hamilton, 2007). The case histories we studied cannot be interpreted using any of the stage models of firm growth proposed by the literature. We did not find evidence that firms follow patterns characterized by prescribed stages nor we run into any couple of firms that has followed the same growth pattern whatsoever.
Moreover, our analysis shows the descriptive effectiveness of a framework that relies on size growth, relationships growth, and capabilities growth. Each of the phases of the history of a firm can be described in terms of a set of interdependencies among the three dimensions. Therefore, our model cannot be used to portray a sequence of general stages each of which featuring a particular combination of interdependencies between the three dimensions. On the contrary, in the Cartesian space shaped by the three dimensions we can draw a number of growth paths characterized by distinctive sets of interdependencies between the three dimensions.
We think our work can be useful to researchers seeking to imbue the choice of the firm growth measures with more rigour. Measures should be chosen in light of the dimension of firm growth that the research wants to investigate. For example, number of employees is better off when only the size

growth is to be considered while sales is a more rough but comprehensive measure that tends to comprise all the three dimensions of firm growth.

Finally, managers should be aware of the interdependencies between the three dimensions of firm growth and consider them upfront in strategic decision making. When managers decide to undertake a significant move in any of the three dimensions (size growth, relationships growth, or capabilities growth), they should try to envisage how the interdependencies generated by this shake will shape size growth, relationships growth, and capabilities growth on the long run.

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TABLE 1
Descriptive Statistics of the AIDA Sample (n=771)

	Sales	Employees	Sales growth (2000-2007)	Employees growth (2000-2007)
Mean	35975993.45	127.46	79.63%	32.80%
Standard Deviation	29735803.13	77.93	102.53	83.52

TABLE 2
Firms of the Sample

Firm	Year of foundation	Industry	Firm size
Allison	1963	Eyewear	Medium
Anodica	1962	Mechanical components	Medium
Brovedani	1972	Precision mechanical components	Large
Calligaris	1923	Furniture	Medium
Carel	1973	Electric and electronic components	Medium
Carraro	1932	Drive systems	Large
C-Blade	1963	Precision mechanical components	Medium
Geox	1995	Footwear	Large
Grotto	1972	Clothing	Medium
Mainetti	1961	Coat Hangers	Large
Morellato	1930	Wacthes and jewels	Large
Moroso	1952	Furniture	Medium
Premek	1978	Precision mechanical components	Medium
Snaidero	1946	Furniture	Large

* Medium firms have a number of employees ranging from 50 to 499 and total sales ranging from 13 million € to 260 million €. Large firms have a number of employees greater than 499 and/or sales greater than 260 million of €.

TABLE 3
Research Protocol

Size Growth	**Relationships Growth**	**Capabilities Growth**
Internal growth • Capacity investments in existing organizational units • Creation of production, commercial or logistical units • Creation of new firms controlled by the headquarter **External growth** • Mergers & Acquisitions • Acquisitions of firms' branch	• New relationships with other firms or organizations • Development of existing interorganizational relationships	• Development of functional capabilities • Development of interface capabilities • Development of dynamic capabilities

FIGURE 1
Chains of interdependencies in the Carraro case

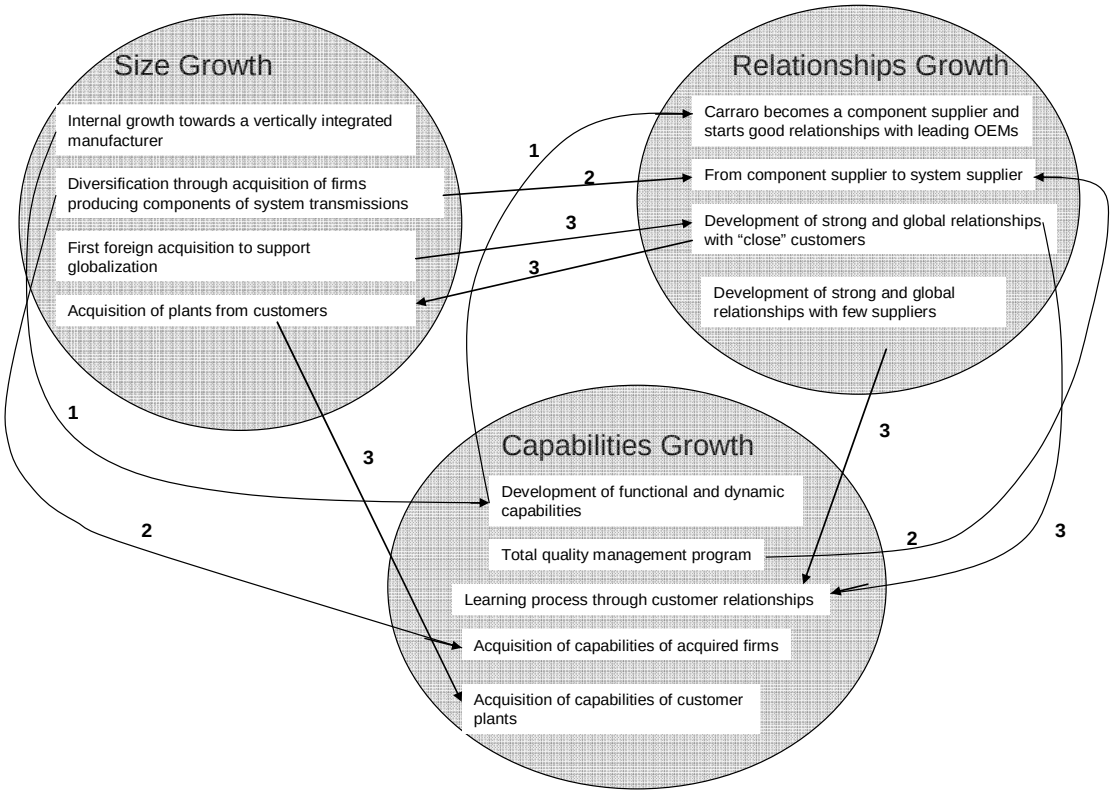
Size Growth
Internal growth towards a vertically integrated manufacturer
Diversification through acquisition of firms producing components of system transmissions
First foreign acquisition to support globalization
Acquisition of plants from customers
Relationships Growth
Carraro becomes a component supplier and starts good relationships with leading OEMs
From component supplier to system supplier
Development of strong and global relationships with "close" customers
Development of strong and global relationships with few suppliers
Capabilities Growth
Development of functional and dynamic capabilities
Total quality management program
Learning process through customer relationships
Acquisition of capabilities of acquired firms
Acquisition of capabilities of customer plants
1
2
3
3
1
3
2
3
2
3

FIGURE 2
The proposed model of firm growth