THE CONTENTS OF FIRM-LEVEL ENTREPRENEURSHIP IN MATURE INDUSTRIES: A KNOWLEDGE-BASED PERSPECTIVE

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ABSTRACT

Adopting a knowledge-based view of the firm, this paper explores how different contents of firm-level entrepreneurship may influence performance of companies in mature industries. More specifically, this paper aims at: 1) identifying what kind of entrepreneurial behavior (new-market entry, new-product development, diversification) is more suitable to survive and prosper in mature industries; 2) discussing if knowledge sharing is to be promoted to successfully compete in these industries; 3) identifying which kind of knowledge (market knowledge or technology knowledge) is most needed to develop entrepreneurial behavior in mature industries.

INTRODUCTION

Several European industries are in the maturity stage of their life cycle since their turnover is no longer growing: domestic demand is declining, industry is concentrating, new competitors from developing countries appear. Pervasive maturity conditions call for a deep understanding of the strategic posture firms should have to successfully perform.

According to previous studies, an entrepreneurial strategic posture is more strongly associated with positive performance in emerging industries, than in mature ones, as successful organizations tend to adopt a more conservative strategic posture in mature industries (Covin and Slevin, 1990; Low and Abrahamson, 1997).

However, anecdotic evidence reports cases of companies that have been successful in mature industries thanks to their entrepreneurial posture. Moreover, a limited number of studies have been carried out to explore entrepreneurial processes in mature industries (e.g. Stopford and Baden-Fuller, 1994; Cassia, Fattore and Paleari, 2006). With these exceptions, very little attention has been devoted to the study of the relationship between firm-level entrepreneurship and performance in mature industries, despite the vast majority of industries in US, Europe and Japan are experiencing intense maturity conditions coupled with the increasing rivalry of new competitors.

The main objective of this study is hence to explore the relationship between different contents of firm-level entrepreneurship and performance of companies operating in mature industries. We adopt a knowledge-based view of the firm and entrepreneurship, which allows us to illuminate the central role played by knowledge recognized by existing entrepreneurship models (Ardichvili, Cardozo and Ray, 2003; Denrell, Fang and Winter, 2003; Shane, 2000; Shane and Venkataraman, 2000).

The research problem is approached by focusing on firm-level entrepreneurship content (product development, market development, diversification) rather than process (entrepreneurial orientation). Moreover, firm-level entrepreneurship is conceived as knowledge-based behavior, whose dynamics have not been explored in the context of mature industries. In particular, little is known about knowledge sharing among firms in mature settings, and the types of knowledge needed.

There are three research questions: 1) what type of firm-level entrepreneurship (new-market entry, new-product development, diversification), if any, is needed to outperform in mature industries? 2) is knowledge sharing needed to outperform in mature industries? 3) which kind of knowledge (market knowledge or technology knowledge) is needed to develop firm-level entrepreneurship in these industries?
Our research design involves two stages. First, we developed and tested a set of hypotheses on a stratified sample of 132 firms operating in the Italian textile industry. Results suggest that managers in mature industries behave entrepreneurially, in contrast with several previous contributions describing them as behaving mainly as administrators (Stevenson and Gumpert, 1991). Managers in our sample invest in product development rather than other types of entrepreneurial behaviors; they share knowledge with other companies in order to favor innovative combinations; they leverage market knowledge with more emphasis than technical knowledge. In the second stage we interpreted and extended our results by means of an analysis of six case studies of firms active in the same industry of those sampled in our survey.

We make the following contributions. From a theoretical standpoint, we advance literature on mature industries by questioning that entrepreneurial behaviors are not suitable in such industrial settings. Following a knowledge-based approach, we adopt a new perspective on the phenomenon to enrich its understanding. From a managerial point of view, our exploration of the type of knowledge and entrepreneurial behavior that should be leveraged offers useful advice for improving a firm’s performance in mature industries.

The paper proceeds as follows. We begin by reviewing the literature on strategy and entrepreneurship in mature industries. Then, a set of hypotheses is developed, grouped in three sections: types of firm-level entrepreneurship; knowledge availability and knowledge sharing; types of knowledge. This is followed by a methodological section, where the empirical setting and the research design of the study are presented. Next we present and discuss our results. We conclude providing final reflections and contributions of the present study and offering suggestions for further research.

STRATEGY AND ENTREPRENEURSHIP IN MATURE INDUSTRIES

Industries mature when their turnover ceases to grow. Mature industries are those facing either the maturity or decline phase of the so-called “industry life cycle” (Porter, 1980). The main general traits of mature industries can be synthesized as follows: a) declining turnover (Amin and Smith, 1990); b) declining domestic demand (Baden-Fuller, 1989); c) increasingly fierce competition from developing countries (Cassia et al., 2006); d) excess of production capacity (Levitt, 1965); e) decrease in the number of firms, due to increasing exits and decreasing entries (Klepper, 1996); f) decrease in employment (Walsh, 1991); g) decrease in profitability (Patton, 1959). Several industries can be defined as mature in Europe. According to EUROSTAT (2006), among manufacturing activities, three industries have registered a negative annual growth rate of turnover between 2000 and 2005: electrical and optical equipment; textiles and textile products; leather and leather products. Two industries have been growing at an annual average rate lower than 2%: wood and wood products; pulp, paper and paper products. According to ISTAT (2006) Italy makes no exception. Several manufacturing industries show negative growth rates in the 1990-2005 period, e.g., textile and clothing, tanning and dressing of leather products, manufacture of electric and electronic equipments, manufacture of mechanical equipments and tools.

Past research has revealed a strong link between strategic management and industry life-cycle stage (Anderson and Zeithaml, 1984; Thietart and Vivas, 1984). This line of research is relevant, as it responds to the need for identifying the conditions under which organizations should choose or abandon certain strategies based on industry conditions. Some studies have focused on business strategy within the context of specific stages of the industry life cycle. Hall (1980), Hambrick, MacMillan and Day (1982) and Hammermesh and Silk (1979), for example, focused on strategy making in mature industry firms. Their prescriptions for the maturity stage center around increased efficiency, quality and product/market differentiation, rather than new-product development and growth. Harrigan (1980) has examined strategic formulation and choice in declining industries. According to her contingency model, strategic choices should depend on industry-segment traits such as nature of competition, certainty of demand decline, exit barriers, and on competitive strengths such as average returns, vertical relationships and relationships with customers. Based on these factors, strategies should range from immediate exit to increasing investments. In the 1990s the study of firm behavior in mature industries became of interest to the entrepreneurship field. This determined a shift in focus, from the content to the process of strategy. However, most of the studies do not focus on maturity, but explore entrepreneurship in different phases of the industry life cycle. Two studies in particular focused on the strategic posture of new ventures (Covin and Slevin, 1990; Low and Abrahamson, 1997). They both converge in arguing that an entrepreneurial strategic posture is more strongly associated with positive performance in emerging industries, rather than in mature ones. In mature industries, successful organizations adopt a more conservative strategic posture (Low and Abrahamson, 1997) since the relationship between entrepreneurial strategic posture and performance is...
moderated by industry life-cycle. The only extensive study focusing on firm-level entrepreneurship in the context of maturity was performed by Stopford and Baden-Fuller (1994). They explored the process of corporate entrepreneurship as a sequence of stages. The need for studying such a process resulted from the empirical evidence of firms that have been successful in mature industries as a result of their entrepreneurial attitude: Edwards, Richardson, Weir, Hotpoint, Wolsey, Scott and Merloni. These firms have often been able to rejuvenate the entire industry with their entrepreneurial strategy. Along the same lines, Cassia et al. (2006) have more recently studied other cases, confirming that entrepreneurship and maturity are not antithetical: Gillette, Ryanair, Starbucks, Swatch, Toyota, Wal-Mart are examples of company that have been successful thanks to their entrepreneurial posture.

The conflict between research results and anecdotic empirical evidence can be explained in light of Lumpkin and Dess’s (2001) argument about the need to deeply understand different dimensions of entrepreneurial orientation, such as as proactivity and competitive aggressiveness. In mature industries, proactivity is inappropriate while competitive aggressiveness is associated with higher performance. Another explanation can be given drawing from the literature on the environmental variables affecting the relationship between entrepreneurial orientation and performance. Environmental hostility (Covin and Slevin, 1989) and environmental dynamism (Duncan, 1972) are both factors that strengthen the relationship between entrepreneurial orientation and performance (Zahra 1993; Zahra and Covin, 1995; Lumpkin and Dess, 1996). Mature industries are characterized by environmental hostility, that favors successful entrepreneurial behavior, but are not dynamic by definition, thus reducing the possibility of firm-level entrepreneurship to yield positive outcomes. These speculations point to the need for studying firm-level entrepreneurship in mature industries more in-depth. Moreover, no studies have focused on firm-level entrepreneurship of SMEs operating in mature industries. This contrasts with empirical evidence: although characterized by a growing concentration level, mature industries comprise mainly small firms. In the Italian textile industry, for instance, only 139 firms out of 78,361 have more than 250 employees, according to the last census (ISTAT 2006).

Given that existing entrepreneurship models recognize the central role played by knowledge (Ardichvili, et al., 2003; Denrell et al., 2003; Shane, 2000; Shane and Venkataraman, 2000), the research problem is approached by studying firm-level entrepreneurship as a knowledge-based behavior, whose dynamics have not been explored in the context of mature industries.

HYPOTHESES DEVELOPMENT

Types of Firm-Level Entrepreneurship in Mature Industries

Existing studies have mainly addressed process aspects of firm-level entrepreneurship, given their focus on entrepreneurial orientation. As suggested by Lumpkin and Dess (1996), entrepreneurial orientation describes key entrepreneurial processes that answer the question of how new businesses are undertaken. Previous studies reveal that successful organizations, operating in mature industries, adopt a more conservative strategic posture. We suspect that these results are biased by the prevailing process approach to entrepreneurship adopted in extant literature. On the basis of existing anecdotic evidence, we wonder if there is some type of corporate entrepreneurship that can sustain performance in mature industries. The term corporate entrepreneurship refers to the content of entrepreneurial decisions by addressing what is undertaken. Hence, in this paper we aim to shed some light on the contents of entrepreneurial behavior.

There is no universally accepted definition of corporate entrepreneurship. According to Sharma and Chrisman (1999), in some cases corporate entrepreneurship is interpreted simply as firm strategic renewal. In some others it is viewed as the creation of new organizational units, with different possible levels of control by the parent company. In yet other works, corporate entrepreneurship encompasses product or service innovation, i.e., the introduction of something new to the marketplace. In the context of the present paper, and in line with Zahra (1991) and Sathe (2003), firm-level entrepreneurship expresses the entrepreneurial behavior shown by existing organizations that create a new business, here intended as product development, market development or both. Product development involves revising the concept of an existing business by introducing new products, services or technologies (Zahra, 1991). Mature industries are often characterized by mature products, whose sales are limited by the fact that customers do not need higher quantities. Thus, improving the offer in qualitative terms could be a way to induce customers to buy more than before. Moreover, a mature industry is characterized by growing competition from developing countries. Improving the offer by product development could represent a way to outperform firms competing on price (Porter, 1980). Therefore, we advance the following hypothesis:
HP1: Product development is a type of firm-level entrepreneurship that is positively correlated with performance in mature industries.

Market development occurs by locating new markets for existing products (Zahra, 1991). A mature industry, by definition, is characterized by the fact that current markets are no longer growing and that production capacity is in excess. Thus, searching new markets, i.e., enlarging the number of clients for existing products, could be a way to increase company turnover and exploit the capacity not fully used. Hence:

HP2: Market development is a type of firm-level entrepreneurship that is positively correlated with performance in mature industries.

Creating new businesses through both market and product development is better known as diversification, which means entering a new industry (Zahra, 1991). Operating in a mature industry is risky, given that the product sold to customers could be soon replaced by a breakthrough innovation. Risk is also given by the possible rapid entry of new competitors from developing countries. Diversification allows the company to reduce risk: enlarging the product portfolio let the company compete in different arenas, where success rates differ, to ensure a higher minimum return. Therefore:

HP3: Diversification is a type of firm-level entrepreneurship that is positively correlated with performance in mature industries.

Knowledge Availability and Sharing in Mature Industries

The resource-based view of the firm argues that firms with valuable, rare, inimitable and non-substitutable resources have the potential of achieving a competitive advantage (Barney, 1991, 1995). Resources can be classified into those that are knowledge-based and those that are property-based (Miller and Shamsie, 1996). The former are tangible inputs, while the latter are the ways in which firms combine and transform tangible inputs (Galunic and Rodan, 1998). Knowledge-based resources are more likely to support the provision of a sustainable competitive advantage, because they are more difficult to imitate (McEvily and Chakravarthy, 2002) and improve performance (McGrath, Tsai, Venkataraman and MacMillan, 1996).

Corporate entrepreneurship occurs when an opportunity is recognized and exploited within the context of an existing organization. On the basis of Austrian economics tradition (e.g., Hayek, 1945; Kirzner, 1973), the resource- and knowledge-based view of entrepreneurship sees entrepreneurial opportunities as existing because different economic agents have different beliefs about the relative value of resources, given the potential to transform them into a different state. In turn, these different beliefs depend on asymmetries of information available to economic agents: individuals recognize opportunities related to information they already possess about market and technology. Similarly, organizations identify and exploit opportunities related to their own knowledge availability (Alvarez and Barney, 2002; Kazanjian, Drazin and Glynn, 2002). Idiosyncratic knowledge is hence essential in attributing the potential for competitive advantage (Denrell et al., 2003). In the context of mature industries, market stagnancy leads to a scarcity of opportunities (Shane, 2003). The availability of knowledge should hence strongly influence company competitiveness. The more knowledge-based resources are available, the more a company has the possibility to spot the scarce opportunities available earlier than its competitors. Hence, we advance the following hypothesis:

HP4: Knowledge availability is positively correlated with performance in mature industries.

However, past research has failed to address the issue of what approach towards knowledge sharing is more conducive of positive outcomes in mature industries. Although knowledge should be carefully protected in order to develop and maintain a distinctive knowledge base, we suggest that knowledge sharing may improve performance, whatever the industry life cycle stage. Firm-level entrepreneurship is a process that results from the combination of a prior knowledge base with knowledge absorbed from the environment. The effect of prior knowledge on firm-level entrepreneurship is mediated by the positive impact of social networks (Ardichvili et al., 2003), because inter-firm relationships may increase the likelihood to acquire valuable knowledge to be matched with the existing knowledge base in novel combinations (Kogut and Zander, 1992). Thus:

HP5: Knowledge sharing is positively correlated with performance in mature industries.
Types of Knowledge and Firm-Level Entrepreneurship in Mature Industries

Knowledge about markets and knowledge about technology represent two types of knowledge that potentially have strong performance implications. These two different types of knowledge increase the ability to discover and exploit opportunities, thus allowing the company to behave entrepreneurially. Previous studies on the role of knowledge in entrepreneurship (Wiklund and Shepherd, 2003; 2005) did not distinguish between different types of knowledge, but called for future research on it. In this research we address this call by exploring the role of market and technological knowledge in entrepreneurship.

Market knowledge sustains corporate entrepreneurship since it can increase a firm's ability to discover and exploit opportunities. Shane (2000) found that prior knowledge of customer and ways to serve them influenced the discovery of solutions to customer problems. Those who lack customer familiarity (Von Hippel, 1988) and knowledge of ways to serve the market (Shane, 2000) will find it difficult to recognize solutions to customer needs and to formulate an effective marketing strategy to introduce and sell the new product/service. Market knowledge could be useful for identifying segments of customers not yet served, as well as needs not yet satisfied. Hence:

**HP6:** Market knowledge is positively correlated with firm-level entrepreneurship in mature industries.

Technological knowledge can also sustain firm-level entrepreneurship. On the one hand, technological knowledge can lead to technical advances allowing the company to discover an opportunity despite its market applicability is not apparent (Abernathy and Utterback, 1978). On the other hand, technological knowledge may also enhance a firm's ability to effectively exploit a market opportunity by determining the product's optimal design to optimize functionality, cost, and reliability (Rosenberg, 1994). Therefore:

**HP7:** Technological knowledge is positively correlated with firm-level entrepreneurship in mature industries.

**METHODS**

**Empirical setting**

The empirical setting for this study was chosen with the aim of targeting SMEs active in an industry that has undergone a relentless trend towards maturity in the past few years. This is the case of the Italian textile industry, where declining domestic demand is coupled with weaker performances on global markets. The trade balance of the Italian textile industry has lost over 56% between 2001 and 2005 (ISTAT, 2007). The excess of production capacity has resulted in a fiercer and gradual selection of firms: between 1981 and 2001 the number of firms has decreased by 56%. A similar drop has occurred in the number of workers between 1951 and 2001 (ISTAT, 2007). The industry has also witnessed a gradual concentration of firms followed by an increase in average company size. Between 1995 and 2005 the number of micro and small firms decreased consistently whilst the number of medium and large firms increased (ISTAT, 2007). Finally, the average profitability of firms in the Italian textile industry has diminished through time, as reported by the financial database AIDA – Bureau Van Dijk. The average Return on Investments (ROI) dropped from 8.64% in 1999 to 4.44% in 2005, while Return on Equity (ROE) fell from 4.72% to -0.5%. In summary, the Italian textile industry shows all the traits that literature (Patton, 1959; Levitt, 1965; Baden-Fuller, 1989; Amin and Smith, 1990; Walsh, 1991; Klepper, 1996; Cassia et al., 2006) attributes to mature contexts.

To control for geographical, social and cultural influences of entrepreneurship and performance we focused on a selected area, namely the Province of Como, in Northern Italy. Here, textile manufacturing has an ancient tradition and literature reports maturity conditions to be even more vivid and intense than elsewhere in Italy (Alberti, 2007).

**Research design**

The research design of this study relies on a combination of qualitative and quantitative research methods (Jick, 1979; Lee, 1999; Tashakkori and Teddlie, 1998). Studies on corporate entrepreneurship have been mostly conducted adopting a quantitative approach, which offers more generalizable results, although sometimes at the expenses of the richness and detail of resulting theories. Thus, at first, our hypotheses were tested on a stratified probability sample of firms, in order to reach generalizable results about our three research questions. This allowed us to elaborate a preliminary discussion of findings and limitations.
In a second stage of our research, we decided to strengthen our results, making them more vivid and thorough. Thus, we relied on a case study approach (Eisenhardt, 1989; Yin, 1989), according to which several methods and empirical sources contribute to offer a holistic understanding of the phenomenon of interest and allow to obtain a deep and rich empirical comprehension of research topics that received little attention by scholars (Eisenhardt, 1989). More precisely, a comparative case study method has been adopted. Six cases have been studied in depth and longitudinally, relying on several data sources. In a third stage, we interpreted findings using qualitative data from case studies to exemplify and strengthen results derived from quantitative data.

Sample
We used a stratified probability sample designed to represent privately owned small and medium enterprises (SMEs) in the Italian textile industry. The sampling population consisted of 1,886 textile firms located in the Province of Como. Company data were provided by Centro Tessile Serico and triangulated with the financial database AIDA – Bureau Van Dijk. A stratified sample of 132 firms (7% of the population) was built in order to represent the different types of firms operating within the production chain of the industry. Data were collected in 2005. The target respondent was the CEO. A mail questionnaire was used to collect information from respondents: out of the 132 firms selected for the initial sample, 74 completed and returned the questionnaire (see table 1). Single-industry studies are criticized for being too narrow in scope and consequently their results are harder to generalize. However studies like this offer a greater control over exogenous variation related to industry characteristics. Table 1 reports also the main characteristics of respondent firms within the sample.

Variables and measures
“Performance” was conceived as a bi-dimensional concept related to profit and turnover. Following Wiklund and Shepherd (2003) respondents were asked to compare the development of firm performance relative to their main competitors. We used 5-point scales ranging from “much lower” to “much higher” (a = 0.86). The development of the three different types of firm-level entrepreneurship was detected asking respondents to reveal the main entrepreneurial options chosen by the company over the past three years: “product development”, “market development” and “diversification”. We asked if these three entrepreneurial behaviors have been developed or not, thus building three dichotomous variables. “Knowledge availability” was measured following Wiklund and Shepherd (2003) and their operationalization of knowledge-based resources applicable to the discovery and exploitation of opportunities. Firm’s knowledge availability compared to competitors was evaluated on 11 5-point scales ranging from “much lower” to “much higher” (a = 0.87). “Market knowledge” and “technological knowledge” were measured following Gupta and Govindarajan (2000), by evaluating the firm’s knowledge position vis-à-vis competitors. We had 5 items pertaining to “market knowledge” —“Compared to other companies in your industry, does your company have a weak or strong position in terms of”: expertise in marketing, special expertise regarding customer service, innovative markets, staff educated in giving superior customer service, staff capable of marketing your products/services well (a = 0.77). We had 4 other items pertaining to “technological knowledge” —“Compared to other companies in your industry, does your company have a weak or strong position in terms of”: technical expertise, highly productive technical staff, information on materials, and information on production (a = 0.67). “Knowledge sharing” was measured by asking if the company usually shares information with other companies within the local industry, thus building a dichotomous variable.

Case studies
We used the financial database AIDA – Bureau Van Dijk for cases selection. We considered only firms with a total turnover between 30 and 100 million Euros in 2004 and located in the chosen geographical setting. Further, we considered only independent firms, excluding those belonging to holdings and groups where strategic freedom might be compromised. We then used a profitability index, (namely the ratio between Earnings before Income Taxes—EBIT and value of production, to select only those cases showing a profitability at least 20% higher than the average industry profitability for three consecutive years (2002-2004). The selection process yielded six firms which are presented in table 2. For each case we relied on several sources of evidence, collected between 2005 and 2006. Primary sources consisted of semi-structured interviews with open questions focused on the same categories and variables of the quantitative study. Interviews have been tape-recorded and transcribed according to the most established methodologies (e.g., Miller and Glassner, 1997; Holstein and Gubrium, 1997; Bailey, 1982). Secondary sources of data have been used to corroborate and strengthen evidence drawn
from primary sources. They include: documentation (e.g., company’s internal publications, articles from newspapers and magazines, administrative documents, written reports); archival records (e.g., organizational charts and budgets, service records, lists of names, previously collected survey data, personal records); physical and cultural artifacts (e.g., pictures, printouts, samples of products).

[Insert table 2 about here]

Data analysis
First, we proceeded by analyzing data collected through the mail questionnaire. We applied the bivariate correlation analysis in SPSS™ first because it suited best our research questions and, second, because it showed to have a better explicative power compared to alternative statistical analyses. Thus, a bivariate correlation analysis was run in order to explore the relationships between couples of variables. To test correlations between interval and dichotomous variables we did not use the common Pearson’s r, but the less known Chramer’s phi (Bryman and Cramer, 2000). Thus we calculated all correlations in this way, except for the correlation between two variables: “Knowledge Availability” and “Performance”, which are both interval variables.

Second, we complemented our analysis with qualitative data collected through case studies. A formal, retrievable database was produced with QSR – Nvivo™ for each case. Each database comprised case study notes, transcripts, documents, files and records, and reference to available evidence of physical artifacts. We triangulated different data sources in order to obtain more robust evidence (Jick, 1979).

RESULTS AND DISCUSSION
Table 3 reports the correlation coefficients expressing the relationship between the three types of firm-level entrepreneurship, performance, knowledge position, the two types of knowledge and knowledge sharing. Significance levels are reported in brackets. Sauley and Bedeian (1989) have demonstrated that a p<0.10 level of significance can be very satisfactory in case of small samples like the one available in this study.

[Insert table 3 about here]

Out of the three types of corporate entrepreneurship considered in this study (e.g., product development, market development and diversification), one of them resulted positively correlated with performance, at sufficient significance levels: product development. Hence, HP1 was supported, unlike HP2 and HP3, which were rejected. Thus, the answer to the first research question is the following: in mature industries, product development is a type of entrepreneurial behavior that may enhance performance. This result is in conflict with the generally accepted prescription according to which entrepreneurial behaviors are not worthy in mature industries. Previous research has overlooked the multi-faceted nature of the concept of firm-level entrepreneurship, not considering that there can be successful forms of entrepreneurial behavior, such as product development.

Success is a common trait of all the cases we used to complement our findings. The six firms we considered have outperformed their competitors for three consecutive years, with profitability indexes ranging from 42% to 430% higher than the industry average. When we looked at the content of previous businesses on which these results are premised, we notice that entrepreneurial choices in our cases are consistent with HP1, but not with HP2 and HP3. All the cases have a strong product and market focus sustained by a differentiation advantage. These characteristics resemble a typical niche strategy. Canclini stresses this on its brochure and website: “We believe specialization means quality, therefore we invested a lot to become absolute specialists in the sole manufacture of fabrics for shirts”. The same occurred, for instance, to Leggiuno and Eurojersey, who gradually dismantled previous businesses in order to specialize just on one. This choice excludes diversification because firms focus on one specific niche. Before the management-buy-out Leggiuno was involved in different
businesses, which have been gradually reduced to one, in order to reach a neat focus strategy: “I will not diversify my business – says the President of Eurojersey – whilst on the opposite I intend to invest even more on specialization on one specific product”. The same could be said for Italdenim where diversification is not even discussed, because – its CEO says – “businesses cannot be improvised, you need to follow you industrial vocation and build on that, leveraging your specialized competencies”. Even market development, i.e., the search for new clients, does not occur among the six cases. On the contrary, respondents stress their efforts in selecting and reducing the number of clients, in order to better focus on a small number of partner-clients with whom they develop new products. The majority of Canclini’s sales is guaranteed by product variants specifically realized for important partner-clients, such as Armani, Gucci, Zegna, Brooks Brothers, Etro, Hermes and Louis Vuitton. Similarly, Leggiuno has engaged in the skimming of its market portfolio, drastically reducing the number of clients in order to reduce complexity and maintain only those clients apt to establish mutually beneficial partnerships. Product development in mature industries often takes the form of incremental innovation of current products, which are continuously renewed in their features, properties and variants. The CEO of Leggiuno states the importance of investing in incremental product innovation in mature contexts such as the Italian textile industry, where radical product innovation is very rare. Leggiuno invests 5% of its turnover in innovation and has an innovation manager fully dedicated to experiment and develop new features and properties for its main product, i.e., fabric for shirts. Today, Leggiuno offers its products in 4,000 variants, which means 4 times more compared to 2000. The same happens to Canclini, whose offer comprises 3,000 product variants, 80% of which are renewed every year. Italdenim, whose product – i.e., jeans – is quite consolidated, continuously works on innovating the aesthetic and stylistic dimension of its productions. Product development and innovation are also main underpinnings of the strategy of Solbiati, which continuously introduces new fibers, materials and styles (e.g., the crêpe linen or the vintage linen) in its offer. One out the six cases – namely, Eurojersey, whose profitability index is 430% higher than the industry average – experienced also radical product innovation, introducing a brand new fabric (i.e., Sensitive), which has been patented and applied to several segments of the fashion business, where the elasticity of fabrics is crucial (e.g., underwear, beachwear, sportswear, etc.).

Knowledge availability and sharing resulted positively correlated with performance, thus supporting HP4 and HP5. Such a result is not surprising, in light of the resource- and knowledge-based view: the availability of knowledge within companies and its exchange among firms seem to improve performance in mature industries. What is more striking is that knowledge sharing seems to be more positively correlated with performance, than with knowledge availability. This means that even if knowledge availability is necessary, it is its sharing that can really improve company performance. Thus, the answer to the third question is the following: knowledge sharing is relevant for ensuring performance in mature industries, to a higher extent than the simple availability of knowledge.

Again, we further explored these findings through our comparative case studies. Product development occurs in the six cases thanks to the knowledge companies have acquired in decades of product specialization and focus. Even the family plays a crucial role in that, in most of the cases (i.e., Canclini, Italdenim, Solbiati and Taborelli) family members are recognized as important repositories of industry-specific knowledge. The case of Leggiuno is particularly informative: a former family business, where, despite the management-buy-out occurred, one of the family members with a crucial knowledge of the business was deliberately maintained in the management team to exploit his competencies in product development. Hence, knowledge availability is necessary and this is confirmed even by case studies, but knowledge sharing is even more important. “We owe our success to our network of partners, whose creativity, specific competencies and demanding inputs continuously inject new knowledge into our business”, says the President of Leggiuno.

Knowledge sharing can occur in several forms. Taborelli’s family owns a portfolio company – called A-Team – which controls each single subcontractor involved in the production process necessary to Taborelli, from design to distribution. Equity-based relations are not the only form in which knowledge sharing occurs. Canclini leans on a wide network of subcontractors with which it has 30-40 year-long relationships, which in most of the cases assume the form of exclusive informal partnerships. Further, the President of Canclini periodically meets with other entrepreneurs and managers of the Italian textile industry to exchange information, feelings, orientations and opinions. This is the case also of the President of Solbiati, who has long lasting friendship ties with other textile entrepreneurs and famous designers and stylists all over the world, with whom to share market and technological knowledge for continuous product development. Eurojersey shares with its suppliers the study of new features and properties of its patented fabric, and with its clients the study of new applications and markets. Finally, knowledge sharing is habitual in all six cases, which operate within the special climate of an industrial
district, where cooperation, knowledge spill-overs and shared cognitions are reported by literature as a specific trait of these organizational contexts.

Finally, market knowledge and technological knowledge resulted both positively correlated with product development, although at different levels. Both HP6 and HP7 were supported, confirming that product development is a process that needs the availability of heterogeneous information and capabilities. What is surprising in these results is that market knowledge resulted more correlated to product development than technological knowledge. Understanding the needs of the market is more valuable in industrial contexts where market is no longer growing. Thus, the answer to the second research question is the following: market and technological knowledge are both relevant for firm-level entrepreneurship in mature industries, but the former seems to be more relevant than the latter.

Even on this point, case studies illuminate the relationships among variables. All the cases show a common trait: a robust technological knowledge (on processes, materials, treatments and equipments), internally developed or acquired from the local network of suppliers and sub-contractors. This kind of knowledge is reported by respondents to be crucial in building their differentiation advantage in terms of style, design, product features and properties. Continuous product development is grounded on technical improvements, expertise of technicians and stylists, continuous and incremental process innovation. Solbiati in 2000 has engaged in a process still on-going of technological upgrading (involving machineries, personnel, procedures) not only to keep production costs at the minimum and increase efficiency, but also to flexibly and rapidly respond to its new product development department. Again, Solbiati, thanks to gradual adjustments in the finishing processes (such as glitering, ironing, washing, etc.) has been able to introduce on the market several product variants. A breakthrough innovation is, for instance, a linen fabric with a vintage effect that keeps it creased. Likewise, Leggiuno applied its knowledge on ink-jet printing to shirts fabric, launching a brand new collection and fashion on the market. Italdenim relies much on its manufacturing expertise in combining different treatments, colors, fibers and processes to obtain new product variants (e.g., various kinds of stone-washed, stone-bleach, stone-rinsed, over-dyed, stretched and creased jeans).

Hence, technological knowledge is important for new product development, but the President of Taborelli reminds that “to have the best technicians and to master the entire production process is not enough to outperform competitors in this difficult market […] time-to-market is the key”. Taborelli stresses the relevance of being able to read market needs and promptly respond with new products. Even Leggiuno, through its new-product-development department, has invested in reducing its time-to-market at the minimum, flexibly adapting new product variants to clients’ needs. Thus, according to case analysis, market knowledge appears crucial to properly channel technological knowledge into product development. For this reason, Leggiuno – as all the other five cases – develops its product variants together with clients (e.g., Versace, Armani, Dolce & Gabbana, Prada, Burberry, Kenzo, Paul Smith) who are “an invaluable source of ideas and inputs”, as the CEO says. Leggiuno enhances its market knowledge through co-designing new products with main clients, but also through the active participation at fairs and industry events, where they learn in advance what market wants. The same could be said for Eurojersey, who also do co-marketing with distributors to direct grasp the requests from the market. Italdenim systematically scan the external environment and monitor its market, in order to forecast trends and styles to incorporate in its product development.

All significant correlations resulting from this discussion are represented in figure 1. The suggested direction of causality of the relationships between variables does not derive from empirical testing – given the cross-sectional nature of the study – but from our theoretical reflections on case studies. Dotted lines express that the relationships are less strong than those represented with solid lines.

[Insert figure 1 about here]

CONCLUSION

Research contributions

This study is an attempt at capturing some essential traits of entrepreneurial behavior of firms operating in mature industries. Mature industries constitute a significant portion of the economy in several countries in terms of number of firms involved, employment and GDP created. Moreover, available statistics suggest that a number of industries that have been growing until recently are gradually approaching the maturity phase, which requires a radically different competitive approach. It is hence relevant to both policy makers and managers to have a clear understanding of the entrepreneurial choices and behaviors that are more likely to be conducive of positive performance in this type of industrial setting.
Despite their relevance, mature industries have seldom attracted research interest of entrepreneurship scholars. The field has focused on early stage industry growth, business entry and startups, and technological innovation conducive of high growth (Shane and Venkataraman, 2000). Besides, focus of entrepreneurship studies has mainly revolved around process issues, with a prevalence of studies investigating key entrepreneurial processes of businesses formation and entrepreneurial orientation (Lumpkin and Dess, 1996). This has resulted in a rather narrow description of firms in mature industries as economic agents that should concentrate their efforts on increasing efficiency, protecting their knowledge from competitors and harvesting businesses by increasing their customer base in different markets. In contrast, a host of anecdotal evidence describes success in mature settings as deriving more from innovation and from bold, proactive strategic choices, than on a conservative, insular and reactive attitude. Our aim in this paper was to explore these contradictions, by focusing on the contents of firm choices in mature industries, and on the types of knowledge and knowledge management required to prosper in such industries. We did so by means of a mixed qualitative and quantitative research design, addressing firms in the textile and clothing industry in Northern Italy.

There are three main results. First, new product development has a positive impact on performance of firms active in mature industries, while market development does not. Second, although controlling specialized knowledge does seem to be relevant to performance in mature settings, equally, if not more relevant are efforts at sharing knowledge with suppliers, customers and business partners. Third, while technological knowledge plays an important role in facilitating new-product development, knowledge of markets and customers is even more important, in contrast with common wisdom stressing the importance of mastering production processes in mature industries vs. growing ones.

Our study is one of the few attempts at capturing the phenomenon of firm-level entrepreneurship in mature industries. It hence contributes to the entrepreneurship literature by applying existing concepts and approaches to a specific industrial context. Our work advances the literature on mature industries in different ways. Moreover, our results are partially counterintuitive, hence adding value to extant knowledge on mature businesses. Firm-level entrepreneurship is needed in mature industries, although in the shape of product development. Efforts in searching new market or diversify are not necessarily worthy, while product development is needed to outperform in this kind of context. Product development should be seen as a knowledge-based process that requires not only knowledge availability but mainly knowledge sharing. In line with Cooper (1983) a product operationalizes both market and technology: it seems that in mature industries the operationalization of market has a stronger role than the operationalization of technology. Adopting a knowledge-based approach, our study sheds a new light on the behavior of firms operating in this kind of context. Moreover, it is based on a sample of firms designed to represent the majority of firms, small and medium sized, thus representing the industry in a more realistic way. Finally, directing attention towards content, rather than process issues offers a different perspective on entrepreneurship in mature industries. Process is obviously important to entrepreneurship. Without previous studies on how entrepreneurial opportunities are spotted, nurtured and developed in existing firms, we would be blind to the mechanisms which make entrepreneurship possible even in mature settings. Equally relevant to these firms’ performance is, we believe, choice of content of entrepreneurial initiatives. Lacking such knowledge, firms may run the risk of successfully facilitating and pursuing the wrong type of entrepreneurial opportunities, hence severely threatening their survival in these highly competitive settings.

Our results have practical implications both for policy makers and for managers. Based on our findings, managers facing industry maturity are called to acquire market knowledge with more emphasis than technical knowledge; to act entrepreneurially, despite previous suggestions to behave as administrators; to invest in product development rather than other forms of entrepreneurial behaviors; to share knowledge with other companies in order to favor its combination in novel forms. In line with these results, policy makers interested in facilitating performance of firms active in mature businesses should take measures in two related directions. First, they should favor new-product development by facilitating access to financing and by offering incentives to relationships between firms and universities specifically aimed at developing new products. Second, they should ease inter-firm relationships and knowledge sharing by empowering entrepreneurial associations, professional networks and industrial districts, and by championing shared databases of industry best practices.

Limitations and future research
Our study has some obvious limitations. First, the cross-sectional nature of the study limits the external validity of the analysis: through a longitudinal design more evidence on causality could have been obtained. Second, data have been collected exclusively in Italy and in a single industry, therefore reducing the possibility to generalize of our findings. The explored relationships may change across
countries, since all the concepts are related to cultural issues. Third, the dichotomous nature of several measures has limited our results, reducing both our capacity to measure variables and the possibility to adopt more complete instruments of analysis. Despite these limitations, our data illuminate several aspects of entrepreneurship in mature businesses, opening up intriguing aspects that have been overlooked by extant literature. We believe that this may trigger several lines of further research on the topic. Future studies should be conducted in different countries and industries, hence increasing the external validity of our results. Different country settings may have a strong impact on the role of knowledge and knowledge sharing, which are heavily dependent on cultural dimensions. It would be interesting, for example, to explore whether our results hold both in collective-oriented cultures and in national or local cultures that are more oriented towards the individual. Different industry settings, in turn, may have a strong impact on the type of knowledge required to thrive in mature businesses. While, for instance, the textile and clothing industry does rely heavily on both market and technological knowledge, other industries may place a different emphasis on knowledge types, or may even require types of knowledge that are irrelevant in our focal setting. Further research may also employ different measures of knowledge sharing and of types of firm-level entrepreneurship. This would add depth and reliability to the results surfacing in our research.

REFERENCES


Table 1. Population, sample and respondents and characteristics of respondent firms

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Choice Set</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Years in operation</td>
<td>&lt;10</td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td>11-24</td>
<td>25%</td>
</tr>
<tr>
<td></td>
<td>25-49</td>
<td>37%</td>
</tr>
<tr>
<td></td>
<td>50-74</td>
<td>16%</td>
</tr>
<tr>
<td></td>
<td>&gt;75</td>
<td>12%</td>
</tr>
<tr>
<td>Sales revenues (in million Euros)</td>
<td>&lt;1</td>
<td>7%</td>
</tr>
<tr>
<td></td>
<td>1-4,9</td>
<td>27%</td>
</tr>
<tr>
<td></td>
<td>5-9,9</td>
<td>31%</td>
</tr>
<tr>
<td></td>
<td>10-24,9</td>
<td>21%</td>
</tr>
<tr>
<td></td>
<td>25-50</td>
<td>8%</td>
</tr>
<tr>
<td></td>
<td>&gt;50</td>
<td>6%</td>
</tr>
<tr>
<td>Employees</td>
<td>&lt;10</td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td>10-19</td>
<td>14%</td>
</tr>
<tr>
<td></td>
<td>20-29</td>
<td>15%</td>
</tr>
<tr>
<td></td>
<td>30-49</td>
<td>19%</td>
</tr>
<tr>
<td></td>
<td>50-100</td>
<td>21%</td>
</tr>
<tr>
<td></td>
<td>&gt;100</td>
<td>21%</td>
</tr>
</tbody>
</table>

Source: personal elaboration on data provided by Centro Tessile Serico
Table 2. Cases selection

<table>
<thead>
<tr>
<th>Company</th>
<th>2004</th>
<th>2003</th>
<th>2002</th>
</tr>
</thead>
<tbody>
<tr>
<td>CANCLINI TESSILE S.P.A.</td>
<td>Sales (Euros) 32,106,074</td>
<td>33,026,392</td>
<td>Sales (Euros) 28,450,651</td>
</tr>
<tr>
<td></td>
<td>EBIT (Euros) 1,757,303</td>
<td>2,911,162</td>
<td>EBIT (Euros) 1,739,947</td>
</tr>
<tr>
<td></td>
<td>Value of production (VP)</td>
<td>32,452,785</td>
<td>34,627,862</td>
</tr>
<tr>
<td></td>
<td>Profitability index 5,41</td>
<td>8,41</td>
<td>5,99</td>
</tr>
<tr>
<td>EUROJERSEY S.P.A.</td>
<td>Sales (Euros) 52,649,913</td>
<td>62,278,107</td>
<td>58,735,500</td>
</tr>
<tr>
<td></td>
<td>EBIT (Euros) 9,981,118</td>
<td>14,991,159</td>
<td>14,260,995</td>
</tr>
<tr>
<td></td>
<td>Profitability index 17,92</td>
<td>23,74</td>
<td>25,91</td>
</tr>
<tr>
<td>ITALDENIM S.P.A.</td>
<td>Sales (Euros) 53,922,802</td>
<td>49,038,219</td>
<td>50,514,082</td>
</tr>
<tr>
<td></td>
<td>EBIT (Euros) 5,326,373</td>
<td>5,419,990</td>
<td>4,448,454</td>
</tr>
<tr>
<td></td>
<td>Profitability index 9,75</td>
<td>11,09</td>
<td>9,18</td>
</tr>
<tr>
<td>LEGGIUNO S.P.A.</td>
<td>Sales (Euros) 34,600,625</td>
<td>28,185,284</td>
<td>27,163,806</td>
</tr>
<tr>
<td></td>
<td>EBIT (Euros) 6,421,764</td>
<td>4,167,519</td>
<td>4,119,697</td>
</tr>
<tr>
<td></td>
<td>Profitability index 18,09</td>
<td>15,39</td>
<td>15,11</td>
</tr>
<tr>
<td>MICHELE SOLBIATI SASIL S.P.A.</td>
<td>Sales (Euros) 40,572,759</td>
<td>42,221,040</td>
<td>45,943,303</td>
</tr>
<tr>
<td></td>
<td>EBIT (Euros) 2,377,398</td>
<td>2,677,449</td>
<td>3,639,256</td>
</tr>
<tr>
<td></td>
<td>Profitability index 5,73</td>
<td>6,19</td>
<td>8,16</td>
</tr>
<tr>
<td>TESSITURA SERICA A.M. TABORELLI - S.R.L.</td>
<td>Sales (Euros) 46,026,512</td>
<td>37,999,510</td>
<td>35,528,171</td>
</tr>
<tr>
<td></td>
<td>EBIT (Euros) 3,447,572</td>
<td>3,507,841</td>
<td>2,473,909</td>
</tr>
<tr>
<td></td>
<td>Profitability index 7,37</td>
<td>9,32</td>
<td>6,95</td>
</tr>
<tr>
<td><strong>Average profitability index</strong></td>
<td><strong>3,74</strong></td>
<td><strong>4,38</strong></td>
<td><strong>4,23</strong></td>
</tr>
</tbody>
</table>

Source: personal elaboration on data provided by AIDA – Bureau Van Dijk

Table 3. Correlation analysis

<table>
<thead>
<tr>
<th></th>
<th>Performance</th>
<th>Market Knowledge</th>
<th>Technological Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product Development</td>
<td>0,522 (0,011)</td>
<td>0,615 (0,104)</td>
<td>0,530 (0,033)</td>
</tr>
<tr>
<td>Market Development</td>
<td>0,329 (0,442)</td>
<td>0,539 (0,134)</td>
<td>0,345 (0,581)</td>
</tr>
<tr>
<td>Diversification</td>
<td>0,400 (0,160)</td>
<td>0,384 (0,321)</td>
<td>0,436 (0,207)</td>
</tr>
<tr>
<td>Knowledge Availability</td>
<td><strong>0,242 (0,037)</strong></td>
<td>0,384 (0,321)</td>
<td>0,436 (0,207)</td>
</tr>
<tr>
<td>Knowledge Sharing</td>
<td>0,510 (0,004)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: personal elaboration

Figure 1. Firm-level entrepreneurship, knowledge and performance in mature industries.

Source: personal elaboration