

**Human resource management practices,
organizational culture and corporate entrepreneurship.
An analysis of the Italian industrial machinery firms.**

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1. Introduction

Competition in today's market is increasingly based on the ability to innovate (Damanpour, 1991; Dosi, Nelson & Winter 2002; Smith, Collins & Clark, 2006). The lifecycle of products is getting shorter, and the competitive advantage gained from innovation is quickly eroded by new, aggressive competitors (Verona, 1999). This is true, in particular, in those "high-velocity" markets characterized by "*blurred boundaries, fluid business models, ambiguous and shifting players, non-linear and unpredictable change*" (Eisenhardt & Martin, 2000, p.1115). In this context, corporate entrepreneurship (CE) plays a fundamental role to help firms in fostering and sustaining their competitive advantage. Corporate entrepreneurship allows organizations to refine current products and services and identify new ones, recombine knowledge and resources to innovate continuously and renovate and extend their organizational competences (Zahra & Bogner, 1998; Lumpkin & Dess, 2003). In this way, firms are able to generate and sustain their competitive advantage over time.

Several studies analyze the effects of corporate entrepreneurship on firm performance.

Zahra (1991), for example, tested correlations between formal and informal aspects of corporate entrepreneurship and four accounting-based measures of financial performance: earning-per-share, return on investments, return on assets and net income to sales, finding positive results. Other studies emphasized the positive effects that corporate entrepreneurship has on profitability (Zahra 1993, Zahra & Covin 1995, Lumpkin & Dess, 1996, Kaya, 2006,

Antoncic 2007), basing on the principle that introducing innovations allows entrepreneurial firms to take advantage from opportunities not yet exploited by other firms, thus increasing the firm's effectiveness on the market. The relevance of corporate entrepreneurship to firm results has been also highlighted with respect to broader indicators of performance than financial measures. Lumpkin and Dess (1996) propose to take into consideration not simply market and financial success but also to take into consideration the broader stakeholders' satisfaction. This is in line with what Zahra (1993) indicates when encouraging scholars to include both financial and non-financial performance measures. Consistently, measures like customer and employee satisfaction have been included in several studies (Lumpkin & Dess 1996, Barringer & Bluedorn, 1999; Wiklund & Shepherd 2003, Kaya 2006) Other studies point out how the effect of CE on performance is not only on the short term but also creates the base to sustain it over time, by stimulating the process of organizational learning (Floyd & Wooldridge 1999; Zahra, Nielsen & Bogner, 1999).

Given the relevance of corporate entrepreneurship for organizational life, many studies have investigated this phenomenon in the last thirty years. Earlier works emphasized some entrepreneurial characteristics of the firms such as proactiveness, risk-taking attitude, innovativeness (Miller & Friesen, 1982; Miller, 1983; Burgelman, 1983). Some studies also tried to link entrepreneurial characteristics to some dimensions of organizational culture (Morris, 1983, 1984; Zahra, Hayton & Salvato, 2004), showing how the entrepreneurial features of a firm are based on a balance between individualism and collectivism. Other studies, later on, started to investigate corporate entrepreneurship as the result of collective and individual action. This approach is adopted in studies like the one from Hornsby, Kuratko and Zahra (2002), by which entrepreneurship culminates in the decision of individuals to act entrepreneurially. Jones and Butler (1992) suggested that corporate entrepreneurship resides in the entrepreneurial behaviour of managers. Floyd and Wooldridge (1999) see corporate

entrepreneurship as a process oriented to the renewal of organizational capabilities by the means of individuals or groups of individuals recognizing and pursuing opportunities. Hornsby et al. (2002) in particular, indicated middle managers as main actors in the entrepreneurial performance of a company.

Lately, studies in the field have suggested the need to further investigate the nexus between the action of individuals and entrepreneurial opportunities (Shane & Venkataraman, 2000; Eckardht & Shane, 2003), arguing that several studies in the field have been devoted to understand the characteristics of the entrepreneurial firms and individuals, while much less space has been devoted to studying entrepreneurial opportunities, which have a relevant role in the entrepreneurial process and in the economic system in general.

Several studies have addressed the problem of how to foster corporate entrepreneurship through human resource management (HRM) practices. In his extensive review of the literature, Hayton (2004) shows how several empirical studies relate HRM practices, or bundles of them, to corporate entrepreneurship, business venturing and innovation in general. None of them, however, seem to have explicitly addressed the relation between individuals' action and the entrepreneurial opportunities, as suggested by the recent literature in entrepreneurship (Eckhardt & Shane, 2003). Moreover, these studies apparently fail to provide a compelling explanation of the mechanisms that underlie the relation between HRM practices and the entrepreneurial outcomes. In a similar fashion, such studies generally indicate a single set of practices that are supposed to foster the entrepreneurial, venturing or innovation outcome. In this way they fail to take into account the apparently contrasting needs that the corporate entrepreneurship process potentially brings in it.

In order to address these gaps, I propose a model relating human resource management practices, organizational culture and corporate entrepreneurship. In particular, I analyze the effects of organizational individualism and collectivism on opportunity discovery, opportunity evaluation and opportunity exploitation. In doing so, I also investigate the role of two alternative sets of HRM practices. Adopting the behavioural view of the human resource management (Schuler & Jackson, 1987), I will assess the influence of HRM practices on middle managers' behaviour. I focus on middle manager because of their central role in the entrepreneurial process (Hornsby et al. 2002; Kuratko, Ireland, Covin &Hornsby. 2005). Thanks to their ability to acquire, recombine and exploit organizational knowledge, they foster organizational learning, which is essential in the CE process (Zahra, Nielsen and Bogner, 1999; Floyd and Wooldridge, 1999). Moreover, focusing on a specific category of employees makes the explanation of the process more clear and the relation between HRM practices and behaviours more testable (Lepak & Snell, 2002). My research hypotheses aim to analyze how an individualist organizational culture fosters opportunity discovery, while opportunity a collectivistic culture sustain the process of opportunity evaluation. Similarly, I investigate how individualist HRM practices can foster opportunity discovery and collectivist HRM practices influence opportunity evaluation, as well as the combined effect of culture and HRM practices on opportunity discovery and evaluation. Finally, I check how opportunity discovery and evaluation lead to opportunity exploitation.

I tested my hypotheses in a survey conducted within the Italian industrial machinery sector. One of the major challenges in this industry is represented by the rising costs of raw materials, that have dramatically increased over the last few years (Datamonitor, 2007). Therefore, companies need to increase quality, in order to justify higher prices and protect their margins. Focus on quality and the ability to meet changing market requirements are particularly important for Italian firms, that cannot count either on the low labour costs that

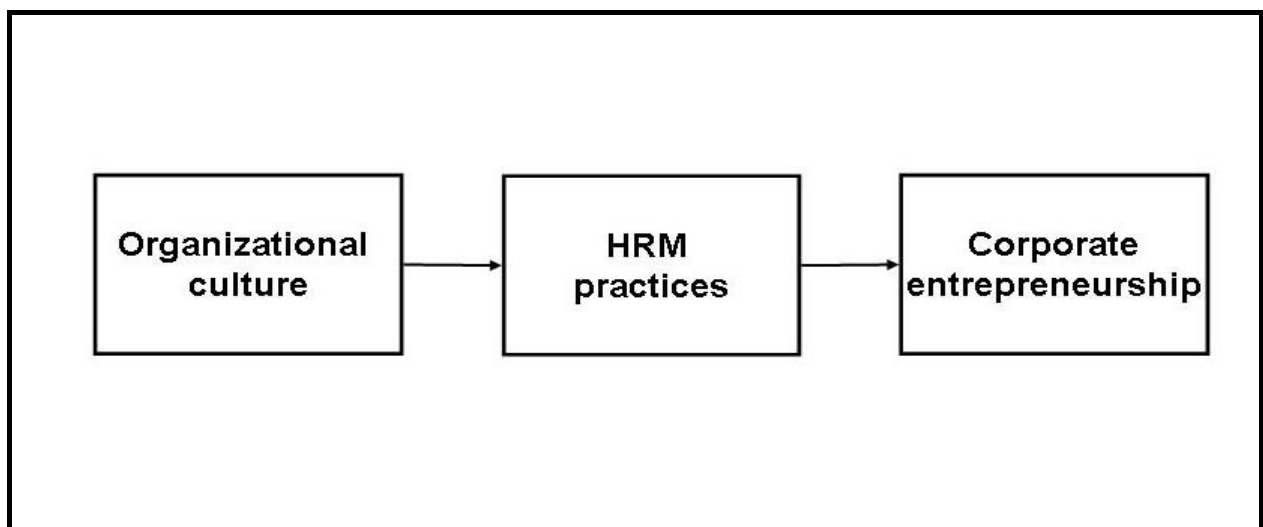
characterize their Chinese competitors or on the large scales of their Japanese and German counterparts to compete on costs. Italian firms typically leverage on technology and creativity (Federmacchine, 2006). In this context, the ability to innovate and be entrepreneurial is key to the competitive success of Italian companies. This makes them particularly suited for the purposes of my study, as corporate entrepreneurial efforts are crucial to prosper in such a difficult competitive scenario.

In this way I aim at providing a better understanding of the corporate entrepreneurship process, and of its apparently conflicting stages. I also aim at identifying two alternative, internally consistent, sets of HRM practices, that will be able to foster corporate entrepreneurship in terms of opportunity discovery, evaluation and exploitation, thereby considering the nexus between individuals' action and entrepreneurial opportunities. Finally, and consistently with the knowledge based view of the firm (1996), I aim at showing how human resource management practices can guarantee a sustainable competitive advantage through corporate entrepreneurship and through the knowledge related process involved in it.

In the next section I will describe the three stages that compose the corporate entrepreneurial process, namely opportunity discovery, opportunity evaluation and opportunity exploitation. I will discuss how these three stages are related to three distinct knowledge-related processes. Opportunity discovery is based on knowledge acquisition, opportunity evaluation is based on knowledge integration, and opportunity exploitation is based on knowledge exploitation. Furthermore, I will analyse how opportunity discovery and opportunity evaluation are based on the central action of middle managers that should establish relations with key players within and outside the firm to make knowledge flow. In section 3 I discuss the role of culture in fostering entrepreneurship. In particular, I focus on

the cultural dimensions of individualism/collectivism and discuss how these are related to the corporate entrepreneurship process. Moreover, I analyse the reciprocal influence between individualism/collectivism and organizational culture. In section 4, I discuss how individualist-oriented and collectivist-oriented HRM practices influence the different stages of the entrepreneurial process and investigate the mechanism by which these practices influence middle managers' behaviours. Finally, I propose a theoretical model linking organizational culture, human resource management and corporate entrepreneurship to be tested empirically. Section 5 contains the description of the methods I used for the empirical test of my model, which is tested on a sample of 82 Italian industrial machinery manufacturers with more than 100 employees. Section 6 illustrates the results of my analysis. Section 7 discusses such results as well as its limitations and the further research that could be addressed in order to make the results of my study more robust and generalisable.

Fig 1 Basic research framework



2. The corporate entrepreneurship process.

2.1 What does it mean, for a firm, to be entrepreneurial?

In this section I focus on the corporate entrepreneurship process. I analyze the activities that characterize the entrepreneurial organizations. But what does it mean for a firm to be entrepreneurial? A possible answer to this question can be found in the corporate entrepreneurship literature. Many definitions of Corporate Entrepreneurship (CE) have been provided in existing studies. Some of them see firms themselves as the actors of the entrepreneurial effort, and outline the entrepreneurial attributes these organizations should possess (Miller, 1983; Covin & Miles 1999). Other conceptualizations of CE more specifically refer to the action of individuals (or groups of individuals) within the firm (Sharma & Chrisman, 1999).

Contributions adopting the first kind of definitions usually translate the characteristics of the individual entrepreneur to the level of the firm. This is the case, for example, with the definition provided by Miller (1983) that identifies risk taking attitude and proactiveness as two of the three traits characterizing the entrepreneurial firm. Lumpkin and Dess (1996) added autonomy and competitive aggressiveness to the original Miller's dimensions. Studies focusing on individuals within the organization usually consider the activities that are performed by these players, who might eventually show the characteristics of individual entrepreneurs. Jones and Butler (1992), for example, suggested that corporate entrepreneurship resides in the entrepreneurial behaviour of managers. Hornsby et al. (2002) and Kuratko et al. (2005) indicate middle managers as main actors in the entrepreneurial performance of a company.

In an attempt to provide a framework that could be applicable to both corporate entrepreneurship and to the broader field of entrepreneurship, Stevenson and Jarrillo (1990) define entrepreneurship as “*a process by which individuals, either on their own or inside organizations, pursue opportunities without regard to the resources they currently control (p.23)*”. In this definition the pursuit of opportunities, independently from the actual control of resources, is presented as the central activity of all the entrepreneurial effort.

This conceptualization of entrepreneurship is consistent with the one by Venkataraman (1997), who conceptualizes it as “*the discovery, the evaluation and the exploitation of future goods and services.*” Ten years after Stevenson and Jarrillo’s contribution, Shane and Venkataraman (2000) point out that research on entrepreneurship has failed to consider it as a nexus of two phenomena: the presence of *opportunities* and the presence of enterprising individuals, as it focused mainly on the nature of the *entrepreneurial individuals*.

In Stevenson and Jarillo’s view, the definition of entrepreneurship can be easily extended to firms, whose entrepreneurial characteristics are based on their ability to pursue opportunities, regardless of the resources they currently control. More specifically, they suggest that “*the level of entrepreneurship within the firms is critically dependent on the attitude of the individuals within the firms below the ranks of top management (p.24)*”. It is, therefore, the ability of individuals within the firm to pursue opportunities that defines the ability of the whole organization to be entrepreneurial.

Basing on these considerations, I adapt Venkataraman (1997) definition of entrepreneurship to firms. Therefore I will consider as entrepreneurial *a firm that is able to discover, evaluate and exploit opportunities, basing on the action of some key players within it*. I will consider this definition of corporate entrepreneurship because it focuses on the “entrepreneur’s” behaviour and therefore sheds light on the corporate entrepreneurship

process. In this way, we can get insight on how to foster this phenomenon (Stevenson and Jarillo, 1990). Moreover, this conceptualization shows how the corporate entrepreneurial process firm relies on the behaviour of a particular group of people, thereby emphasizing the relevance of the HRM practices to corporate entrepreneurship. Consistent with this view, several studies on corporate entrepreneurship specifically focus on middle managers as key players in the process of corporate entrepreneurship (Kuratko, Ireland, Covin & Hornsby 2005; Hornsby, Kuratko & Zahra 2002; Floyd and Wooldridge, 1990, 1992, Pearce, Kramer and Robbins, 1997). As Hornsby et al. (2002) suggest, given their position within the organization, middle managers are fundamental in accomplishing those formal and informal activities that promote corporate entrepreneurship, as they mediate the strategic and operating levels. In particular, they play a central role in favouring the flux of knowledge that is involved within the entrepreneurial process (Floyd & Wooldridge, 1999; Zahra, Nielsen & Bogner, 1999). Middle managers focus on how knowledge is accepted by other people and how individuals can achieve positions of influence in order to pursue the implementation of their entrepreneurial ideas (thanks to the social structure). The implementation of entrepreneurial ideas is favoured by middle managers through knowledge networks and develop in three main steps. One is the development of the idea, that is favoured by weak ties and carried on drawing on subjective criteria. The following step is the emergence of the entrepreneurial initiative, subject to empirical criteria of validation. Finally there is the development of the new organizational capability, that derives from the matching of the entrepreneurial initiative with a company strategy and value, supported by networks of relations. Also, middle managers are able to favour the gathering of external knowledge (Hayton & Kelley, 2006; Kuratko et al. 2005) and the transmission of knowledge from different stages between the same firm (Burgelman, 1983). Therefore, they are at the centre of the flows of knowledge that characterize corporate entrepreneurship activities. In line with

the above discussion, I will highlight in the following sections three stages of the CE process that are based on middle managers' contribution: opportunity discovery, opportunity evaluation, and, indirectly, opportunity exploitation,

I will present these three processes providing a definition and a description of the activities and of the knowledge-related process characterizing them. I will point out, for each of them, the importance of creating networks of contacts and the role of middle managers in fostering them.

2.2 Three knowledge - based entrepreneurial stages

2.2.1 Opportunity discovery

- Definition

Consistent with Shane and Venkataraman (2000), I define this stage as the process by which an organization realizes that an opportunity exists and has value.

Although many distinctions have been operated in the literature between opportunity discovery, recognition, perception or creation (Ardichvili, Cardozo & Ray, 2003), I generically use the term "opportunity discovery" to indicate the ability to locate value in some market or technological condition through the application of a new means-end relation framework that is unknown to other competitors (Shane & Venkataraman, 2000; Eckhardt & Shane 2003). This is quite similar to what Ardichvili et al. (2003) refer to as opportunity discovery (intended as a sub-process of the opportunity recognition process), emphasizing the perception of a "fit" between market needs and available resources.

- Opportunity discovery and knowledge acquisition

I argue that the ability of a firm to discover new opportunities is strictly related to the process of new knowledge acquisition. Shane and Venkataraman (2000) suggest that the discovery of entrepreneurial opportunities is helped by the creation of new information channels and by the cognitive abilities of the entrepreneur. According to this view, the discovery of new opportunities derives from the distribution of information among the economic actors. These elements make the entrepreneur depart from the dominant mind-set of the organization and come up with new ideas and opportunities (Floyd & Wooldridge, 1999). Shane (2000), consistently with the Austrian approach (Kirzner, 1997), suggests that opportunities cannot be discovered through active, systematic search. They can only be discovered through “*the recognition of value of new information that they happen to receive through other means* (p. 451)”. When new information matches the entrepreneur’s idiosyncratic knowledge, new opportunities are recognized (Venkataraman, 1997). Therefore, the acquisition of new knowledge from key customers, providers, knowledge workers within or outside the organization, is the primary way by which opportunities can be spotted.

- Opportunity discovery and middle managers’ behaviour

Establishing contacts outside the firm, with both customers and suppliers, is helpful in discovering new opportunities. Creating informal networks with people within and outside an organization is a way to create those “information corridors” that enable the entrepreneur to acquire new, specialized, information. By so doing, he or she can create those mental frameworks that help to recognize new opportunities (Shane & Venkataraman, 2000). Consistent with this, Wiklund and Shepherd (2003) point out that establishing external contacts with customers helps firm acquire market knowledge and therefore more easily locate opportunities. Shane and Venkataraman (2000) suggest that not only the product market can be source of opportunities, but also the factor markets can provide occasions to

develop entrepreneurial ideas. Once the information corridors are established and the relevant knowledge is acquired, the cognitive abilities of the entrepreneurs make them see the opportunities that many other people do not see by creating new means-end relations (Shane & Venkataraman, 2000).

In this process, the entrepreneur is helped by other organizational members that may be directly or indirectly involved in the entrepreneurial activity (Zahra 1999).

Therefore, creating informal networks within and outside the organization to exchange pieces of specialized knowledge with a broad array of different actors is crucial for middle managers to identify new opportunities. This is consistent with Hills, Lumpkin and Dess (1997) study, where they show that entrepreneurs that have large networks identify more opportunities than the others who don't. In their exploratory study about opportunity recognition, they show that "network entrepreneurs" identify significantly more opportunities than the "solo" entrepreneurs" because they benefit of their contacts, that allow them to gather more information and consequently spot more opportunities.

The process of opportunity discovery typically involves the creation of weak ties by the corporate entrepreneur, that makes it possible for him or her to deviate from the dominant mind set and make sense of new, emerging, opportunities (Floyd & Wooldridge, 1999). This is based on the idea of the "strength" of weak ties proposed by Granovetter (1973), according to which actors that have more weak ties have more possibilities to gather diverse information. This creates those information corridors that, in conjunction with the corporate entrepreneurs' cognitive abilities, lead to the spotting of new opportunities (Shane & Venkataraman, 2000). *Ceteris paribus*, networks characterized by weak ties usually present more structural holes. Consistently, Burt (2000) suggests that people bridging more structural holes are more likely to know about, have a hand in or control new opportunities. According to this perspective, managers that have more social capital and broker more contacts are more

advantaged than those who don't, because they are more aware of the relevant changes in the market.

Middle managers often create informal networks even beyond the ones strictly needed for their ordinary working activity. By so doing, they actively and diligently gather innovative ideas from within and outside the firm (Hornsby et al. 2002). Burgelman (1983) indicates that managers assemble internal and external pieces of knowledge together in order to define a new opportunity. Hayton and Kelley (2006) suggest that corporate entrepreneurs (typically middle managers) explore different knowledge domains, learn from them, and link knowledge to solve problems. When doing so, middle managers develop networks of relations, both within and outside the company. Such relations favour the acquisition of new knowledge as well as the cognitive process that leads to the discovery of new entrepreneurial opportunities.

This represents the first step of the entrepreneurial process, which typically evolves into the second stage, that of opportunity evaluation, that I present in the next section.

2.2.2 Opportunity evaluation

- Definition

When an individual entrepreneur discovers an opportunity, he or she informally evaluates it in order to conclude whether it is worth pursuing more formal investigation or not (Ardichvili et al 2003). I consider the opportunity evaluation process as the ability of *an organization* to evaluate if an entrepreneurial opportunity is worth pursuing or not. This process of evaluation is typically started by an individual (the entrepreneur) that discovers an opportunity and evaluates it in a way that is often informal and not articulated (Ardichvili et al. 2003). I refer

to the opportunity evaluation process of an organization as the process that starts *after* the subjective, informal, evaluation of the opportunity by its discoverer.

The opportunity discovered has to be consistent with the subjective system of beliefs of the entrepreneur (Floyd & Wooldridge, 1999). This means that an entrepreneurial idea has to make sense first of all to its discoverer. After the (positive) subjective evaluation by the entrepreneur, that idea has to undergo a process of empirical validation by receiving the evaluation of a network of people that the entrepreneur creates in order to get his/her idea accepted. After this, the idea has to be matched with the organizational goals and activities. Therefore, the validation, or evaluation, of an entrepreneurial idea is a process that goes from the individual, to the social to the organizational level (Floyd & Wooldridge 1999). The necessity of evaluating an opportunity in collaboration with other people becomes stronger when it comes the time to acquire resources to start developing it or testing it through more formal steps like feasibility analyses (Ardichvili et al. 2003). As Burgelman (1983) suggests, an opportunity has to be proven viable even before obtaining resources for its preliminary development. In order to receive a positive evaluation of a new entrepreneurial idea, and get access to resources, such idea needs to be championed throughout the organization.

Through this process of championing, an individual influences other people's perception about the necessity of pursuing a particular opportunity (Hayton & Kelley, 2006). Champions can do this to involve people in the technical definition and development of an entrepreneurial idea (like a new product, service or process oriented at fulfilling an opportunity) or to gain legitimacy and sponsorship from the key resource holders and decision makers within the organization. The person championing an entrepreneurial idea from the technical standpoint may be different from the one that navigates it throughout the organization (Floyd & Wooldridge, 1999). However, Day (1994) suggests that, under particular circumstances, the two functions of "product" and "organizational" champion can

be performed by the same person (“dual-role champions”). Therefore, the opportunity evaluation process strongly relies on the championing activities of corporate entrepreneurs.

- Opportunity evaluation and knowledge integration

The process of opportunity evaluation, and of championing within it, is closely tied to the process of knowledge integration, intended as the pooling of different kinds of specialist knowledge to perform tasks that are directly or indirectly related to a firm’s value creation process (Grant, 1996; Zahra et al. 1999). When an entrepreneurial idea is evaluated by the organization, passing through its selection-retention environment, new knowledge leaves the realm of an individual and is shared within the group, entering into the organizational processes. In this way, new knowledge is integrated into a firm’s competences, extending them (Floyd & Wooldridge, 1999; Zahra et al., 1999). This parallels the knowledge combination process, intended as the systematization of concepts into a knowledge system (Nonaka & Takeuchi, 1995; Nahapiet & Ghoshal 1998). Such process is essentially social, as it takes place in particular situations, in coactivity and in relationships, and is crucial to coordinate diverse production skills and to integrate several knowledge streams (Nahapiet & Ghoshal, 1998). Social interactions, as well as organizational routines, are particularly important in order to integrate knowledge that is more tacit in nature (Grant, 1996).

Organizational champions, when trying to make an organization evaluate an opportunity, try to make new knowledge integrated into an organizational system of knowledge and hence, into its operations, thereby pursuing knowledge combination and integration. This is so because champions, with their action, create at least three of the four conditions that Nahapiet and Ghoshal (1998) indicate as characterizing the process of knowledge exchange and combination. The conditions that they identify for knowledge exchange and combination to happen are 1) the access to the knowledge of other parties, 2) the anticipation of value through exchange/combination of knowledge, 3) an appropriate level of motivation to

exchange and recombine knowledge, and 4) the ability to combine knowledge, that depends on the level of collective knowledge.

By their action, CE champions, in our case middle managers, provide at least three of these conditions for knowledge exchange and combination. In a first place, when promoting their ideas, champions become central figures in emerging social networks (Floyd & Wooldridge, 1999) with people that can provide resources (like knowledge) that can be useful for the venture. These networks, often informal, on which champions rely, are the infrastructure by which others' resources, including knowledge, can be accessed. These ties can include people both within and outside the organization (Starr & McMillan 1990).

In a second place, when CE champions bring an opportunity to the attention of their colleagues, they anticipate the value that the development of that opportunity can potentially bring. This leads to knowledge exchange and recombination. Finally, CE champions inspire and enthuse others in order to get their commitment to support innovations (Hayton & Kelley, 2006; Howell & Higgings, 1990). In this way they obtain the motivation of people to exchange and recombine knowledge. Therefore, CE champions have an important role in the process of knowledge exchange and combination, as they contribute to provide three out of the four conditions that Nahapiet and Ghoshal (1998) indicate as necessary for it.

By favouring knowledge exchange and combination, entrepreneurial champions induce people to exchange ideas and cooperate, thereby exchanging tacit and explicit knowledge and incorporate it into organizational operations.

When promoting an opportunity, corporate champions try to capture the interest of senior managers that can provide money and other organizational resources to the entrepreneurial venture, as well as the interest of specialists, that can contribute their expertise. Therefore, they attempt to integrate different kinds of knowledge around an opportunity, to develop, refine and make it accepted by the organization. When doing so, they need to pool both

explicit and tacit knowledge. Therefore, establishing weak ties will be no longer sufficient, as only with closer, cooperative, relations people will be able to share tacit knowledge and integrate their specialist expertise to develop opportunities.

- Opportunity evaluation and middle managers' behaviour.

A relevant role in the process of influencing others to champion entrepreneurial opportunities is played by middle managers. Given their favourable position at the heart of the organization, they create networks that reach people at both the operating and the executive level of the firm. Therefore, they can stimulate interest in CE activities and provide (mostly intrinsic) rewards to their collaborators in order to pursue innovative ideas (Hornsby et al. 2002). At the same time, they are able to influence the perceptions of top managers by making accessible to them different strategic alternatives, by synthesizing information and eventually altering the formal structure (Floyd & Wooldridge, 1992, Hornsby et al. 2002). They can also try to convince senior managers about the strategic opportunity of some particular ventures (Burgelman 1983), thereby influencing the type and the intensity of the corporate entrepreneurship effort and, therefore, the company's strategic agenda (Burgelman & Sayles, 1986). To do so, middle managers build their own networks of contacts that help key people within the organization to uncover new ways to think about new technologies and their potential use to fulfil emerging opportunities (Zahra et al., 1999). Moreover, middle managers play a critical role in identifying, acquiring and deploying resources to be devoted to entrepreneurial opportunities. Their closeness to the operating level makes them able to have an idea of the amount and quality of the resources that are needed to develop a specific opportunity. Their superior knowledge of the organization with respect to lower level managers allow them to locate these resources and find out the most effective way to reach

them. Middle managers can shepherd an entrepreneurial opportunity by their personal networks (Kuratko et al 2005). As Pinchot (1985) suggests, middle managers can themselves act as sponsors and create networks of additional sponsors, directly and indirectly influencing the process of resource allocation (Hayton & Kelley 2006). In this way, by championing new entrepreneurial ideas, and gathering resources to implement them, they concretely integrate new entrepreneurial knowledge into a firm competencies. This is in line with the role of middle managers as indicated by Floyd and Wooldridge (1999).

Opportunity evaluation typically evolves in the third step of the entrepreneurial process, which is opportunity exploitation.

2.2.3 Opportunity exploitation

- Definition

I define the opportunity exploitation process as the process by which a firm actually takes advantage of the opportunities discovered by appropriating the rent deriving from it. This is a very important stage of the entrepreneurial process because, without it, a firm cannot fully be considered entrepreneurial (Zahra et al. 1999). As Schumpeter suggests (1934), creating rents is a fundamental part of entrepreneurship, along with risk taking and resource recombination.

This process is based on the “exploitation capability” defined by Zahra and George (2002), intended as the ability to refine, extend and leverage existing competences. In their conceptualization, the outcomes of the exploitation capability are the persistent creation and commercialization of new goods, systems, processes, knowledge and organizational forms.

- Opportunity exploitation and knowledge exploitation

The process of exploiting opportunities results in launching new products and services in order to appropriate the entrepreneurial rent.

The ability to exploit knowledge is strictly related to the ability of acquiring and integrating new knowledge belonging to several areas of technology into a firm operations (Cohen & Levinthal, 1990; Brown & Eisenhardt, 1998). Zahra et al. (1999) suggest that exploiting entrepreneurial opportunities relies on the integration of knowledge that resides within or outside an organization. According to Zahra and George (2002), the knowledge exploitation process derives from the absorption and integration of new knowledge. Similarly, Yli-Renko Autio and Sapienza (2001) suggest that knowledge exploitation, intended as the creation of new products and services, is a consequence of the ability of the firm to acquire new knowledge. Therefore, the opportunity exploitation process typically evolves into the two entrepreneurial processes described above, which are opportunity discovery (based on knowledge acquisition) and opportunity evaluation (based on opportunity integration).

Based on this, I suggest that:

Hp1: Opportunity exploitation derives from both the opportunity discovery and the opportunity evaluation processes. In particular

Hp 1a: opportunity discovery has a positive influence on opportunity exploitation

Hp1b: opportunity evaluation has a positive influence on opportunity exploitation

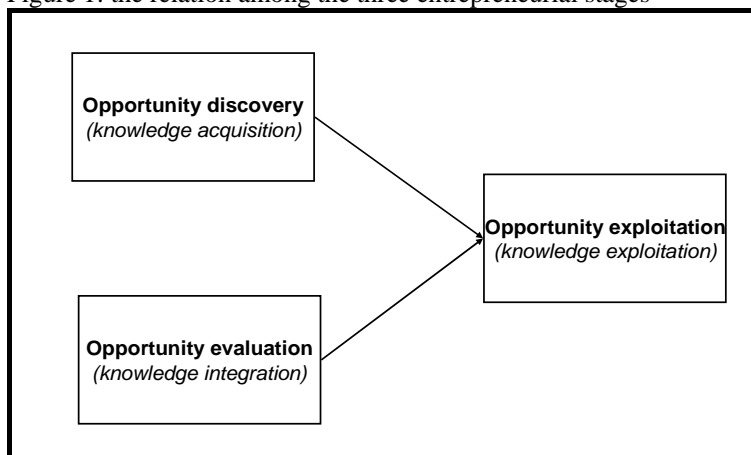
A summary of the three entrepreneurial stages is included in table 1.

Table 1: Three knowledge-based entrepreneurial stages.

Entrepreneurial Process	Definition	Knowledge-related process	Role of middle managers
<i>Opportunity discovery</i>	The process of realizing that an opportunity exists and has value	Acquisition of new market and technological knowledge to find new means-ends relations	Generate external (but also internal) networks to create new information channels; Generate internal (but also external) networks to make sense of the reality.
<i>Opportunity evaluation</i>	The process of understanding whether an opportunity is worth further investigation or not	Knowledge exchange, combination and integration, to develop, refine an opportunity and decide whether to pursue it or not.	Generate networks among different actors to overcome barriers and help them integrate their tacit and explicit knowledge.
<i>Opportunity exploitation</i>	The process of actually taking advantage of the opportunities discovered	Embodying knowledge into products and services to appropriate the entrepreneurial rent.	Knowledge exploitation derives from the previous two processes

In the next section, I describe how organizational culture can influence these three entrepreneurial processes, represented in figure 1.

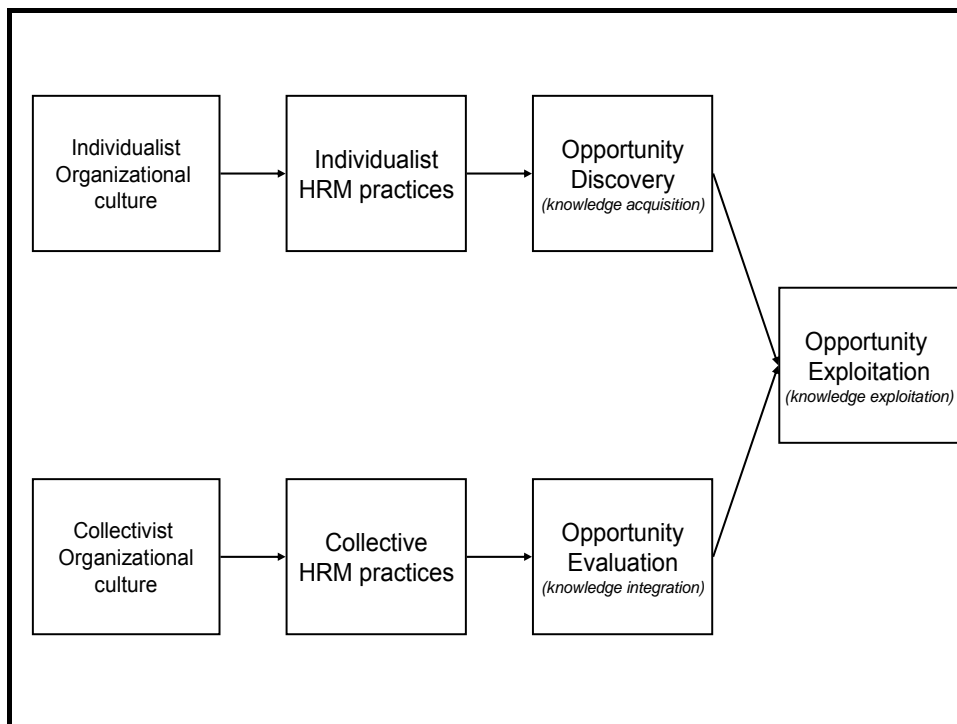
Figure 1: the relation among the three entrepreneurial stages



3. Organizational culture and entrepreneurship.

In this section I show the role that organizational culture plays in fostering entrepreneurial behaviours. I will first provide a brief review of the literature on how organizational culture helps in fostering entrepreneurship. Then, more precisely, I will explain the role of individualism/collectivism in fostering opportunity discovery and opportunity evaluation. After, I will investigate how individualism/collectivism is related to the human resource management system. In section 4, I will describe how individualism/collectivism deploy its influence on middle managers' entrepreneurial behaviours by the means of human resource management practices, that play a mediating role in the relation between organizational culture and corporate entrepreneurship. The overall theoretical model is reported in figure 2.

Figure 2: The theoretical framework.



Organizational culture is a powerful means to influence employees' behaviours. Culture can affect performance thanks to its effect on employees behaviours (Deal & Kennedy, 1982; Den Hartog & Verburg, 2004). Many scholars have suggested that organizational culture can foster those discretionary behaviours that lie at the heart of corporate entrepreneurship (Burgelman, 1983; MacMillan 1987; Hayton, 2005). Morris, Davis and Allen (1993) indicate that several studies acknowledge that the entrepreneurial orientation of the firm is related to aspects of culture such as an organization's value systems, its heroes, and its rewards rituals. Morris et al. (1993) indicate how individualism and collectivism influence innovation and entrepreneurship. In particular, they suggest that a balance is needed between individualism and collectivism. The rationale for this is that while individualism allows autonomy and incentives to tap individuals' creativity and spot new opportunities, collectivism favours the cooperation that is required in order to gain support and acceptance to implement opportunities. They found empirical support to their ideas, highlighting a curvilinear relationship between individualism/collectivism, measured as a continuum, and corporate entrepreneurship. Abrahm (1997) indicates that horizontal individualism, in conjunction with a supportive organizational climate, is positively associated with cooperative performance. Zhara, Hayton and Salvato (2004) analysed the relation between four dimensions of organizational culture and entrepreneurship in family firms. They found a curvilinear association between individualism/collectivism and entrepreneurship, and positive linear relationships between external orientation, decentralization, long-versus short-term orientation and entrepreneurship. Finally, Chandler, Keller and Lyon (2000) suggest that HRM influence creativity and innovation by creating a supportive culture.

All these studies show how organizational culture plays a fundamental role in fostering corporate entrepreneurship. I will now analyze how the dimensions of individualism and collectivism influence the opportunity discovery and the opportunity evaluation processes.

3.1 Organizational culture, opportunity discovery and evaluation.

Individualism/collectivism and entrepreneurial processes.

Work by Morris et al. (1993) and Zahra, Hayton and Salvato, (2004) indicate that individualism/collectivism, measured on a continuum, has a curvilinear relation with entrepreneurship. This means that there should be a balance between individualism and collectivism, in order to foster entrepreneurship. A higher emphasis on individualism will be detrimental, as well as a higher emphasis on collectivism. This is so because too much individualism would probably put individual interest in the first place, which would result in individuals pursuing their own objective with no or little fit with the overall strategic interest. An excessive level of collectivism, on the contrary, would probably hinder the entrepreneurial spirit of employees which would probably focus on their own duties and encourage resistance to change (Morris, Avila & Allen, 1983). Robert and Wasti (2002) empirically show that organizational individualism and collectivism are not extremes of the same continuum, rather they are two distinct constructs. This means that an organization can have low or high levels of both organizational culture dimensions at the same time. Following this rationale, I suggest that having high levels of both organizational individualism and organizational collectivism will be beneficial to the corporate entrepreneurship process. In particular, I propose that organizational individualism will be positively related to opportunity discovery, while organizational collectivism will be positively related to opportunity evaluation.

Organizational individualism and opportunity discovery

As described above, the opportunity discovery process centers on the ability of middle managers to create a set of relations with people within and outside the organization from which they can acquire new, divergent, knowledge.

This is essentially a process that pertains to the individual. It is the individual that creates the means-end relation necessary to see opportunities that others don't, thanks to his/her cognitive abilities and the knowledge he/she acquires from the contacts established (Shane, 2000). Moreover, entrepreneurs are often moved by risk-taking, autonomy, individual empowerment and personal commitment (Lumpkin & Dess, 1996). It is the autonomous initiative of organizational members that makes them start entrepreneurial initiatives (Burgelman, 1983, Zahra et al. 2004). As Morris et al (1993) suggest, respect for the individual and personal incentives will help employees to spur their creativity. Individual autonomy and sense of ownership will encourage the risk taking required to create and implement a new entrepreneurial concept. Sense of ownership, risk taking, need for autonomy, are likely to be at the base of the creation of middle managers' networks of contacts.

Therefore, it emerges that a cultural orientation emphasizing individualism will be positively related to the discovery of opportunities based on middle managers' individual initiative.

H_p 2: An individualist organizational culture will be positively related to opportunity discovery

Organizational collectivism and opportunity evaluation

I have argued that cooperative networks, that underlie the opportunity evaluation process, are characterized by strong ties. As discussed above, the opportunity evaluation stage is strictly related to the close collaboration of individuals in order to integrate knowledge into new products, processes or services. Therefore, organizational culture should be oriented at creating networks for a closer collaboration.

Several studies indicate that countries, organizations and groups presenting a collectivist culture are more oriented at collaboration (Hofstede, 1980, Morris et al 1993; Wagner, 1995). Under these conditions, the integration of knowledge that underlies the opportunity evaluation phase will be more effective. Knowledge integration is strictly related to collaboration, as it allows to effectively exchange and absorb tacit knowledge, in addition to explicit knowledge (Grant, 1996; McEvily & Markus, 2002). Therefore, higher levels of collaboration will favour knowledge integration and, consequently, the opportunity evaluation process.

Based on this I suggest:

H_p 3: A collectivist organizational culture will be positively related to opportunity evaluation

3.2 The relation between individualism/collectivism and HRM practices.

Organizational culture and HRM systems.

Culture and the human resource management system influence each other. On one hand, culture permeates organizational systems, structures and processes, including the HRM system. As Schein (1990) suggests, “*underlying assumptions of culture of individualism create a reward and control system that encourages individual competitiveness (p. XXIX)*”.

On the other side, HRM systems influence and reinforce organizational culture (Wilkins, 1984; Kerr and Slocum, 1987; Guest, 1994). Both perspectives are legitimate and useful (Den Hartog & Verburg, 2004). Consistently, in this section, I analyze the relation between organizational culture, namely individualism and collectivism, and human resource management systems.

HRM practices and individualism/collectivism

A few articles have analyzed the relation between individualism and collectivism and human resource management practices. Although only one of them (Robert & Wasti, 2002) investigates this relation at the organizational level, we can find some insights from other papers that study the relation between HRM practices and individualism/collectivism measured at the level of individuals or at the level of national culture. Moreover, such studies do not explicitly test the effect of individualism/collectivism on HRM practices, but simply find correlations between these two constructs. This is consistent with the idea that human resource practices and culture can influence each other. Nevertheless, the indications we can obtain from this work are still useful for the purpose of analyzing the influence of culture on HRM practices, as we know that national, social or organizational cultural values are incorporated in organizations' structure and systems (Schneider 1990).

I now provide a brief review of these studies, centring my discussion around different groups of HRM practices.

Culture and the selection process.

Ramamoorthy and Carroll (1998) relate the dimensions of individualism and collectivism to different human resources practices. They show the preferences in terms of

HRM practices of individuals that are more individualist-oriented or collectivist oriented in their nature. In particular, their analysis shows that a higher collectivist orientation will be negatively related to a preference for test-based selection systems. The rationale for this is that selection tests are compatible with organizations that emphasize the ability to perform a task as the main criterion for hiring people. This is typical of individualist organizations. Conversely, organizations that emphasize the collective dimension also consider values such as the employee loyalty, a low employee turnover and the compatibility with the organization (Gomez-Meija & Welbourne, 1991) in their selection process. In terms of selection process, the studies analysed (Ramamoorthy & Carroll, 1998; Robert & Wasti, 2002) suggest that selection procedures that are based on measuring the abilities of applicants in performing task are typical of individualist organizations. Selection techniques that are oriented at verifying the fit between people and organizations are instead typical of collectivist organizations (Gomez-Meija & Welbourne 1991).

Culture and the performance appraisal/reward system.

In terms of performance appraisal systems, Ramamoorthy and Carroll (1998) indicate that a higher collectivist orientation will be negatively related to the use of a formal system of appraisal of the individual performance. This is in line with the idea that individualist organizations emphasize individual objectives and individual rewards, while collectivist organizations emphasize group objectives and rewards (Gomez-Meija & Welbourne 1991; Sekaran & Snodgrass, 1986). In terms of rewards systems, Ramamoorthy and Carroll (1998) suggest that a higher collectivism orientation will be positively related to preferences for job security and negatively associated with individual-focused, equity-based appraisal. Moreover, they note that collectivist organizations place more emphasis on internal equity and less on external equity, favouring instruments like seniority-based pay or pay based on hierarchical

status more than paying people the market rate of wages. In general, while individualist organizations give more importance to individual rewards, monetary success and performance-based rewards, collectivist-oriented organizations use more group-based rewards, long term employment relationships and seniority or loyalty-based rewards (Ramamoorthy & Carroll 1998). Finally, in terms of career preferences, Ramamoorthy and Carroll (1998) suggest that a higher collectivist orientation will be negatively related to career progression criteria based on individual merit, as they emphasize tenure and commitment to the organization.

In their analysis of collectivism and individualism in Britain, Storey and Bacon (1993) indicate that there is interplay between human resources practices and individualism/collectivism. They argue that in collective systems, HRM practices should be characterized by pay systems that value tenure and rates for the job, high job security, permanence of contracts, and a high identification with symbols, myths and values of the workplace. A system characterized by individualist human resource practices present performance-related pay, a high number of temporary workers, divergent terms and conditions and a low identification with common symbols, myths and values.

Summing up, , in terms of performance appraisal and rewards, individualist organization will present formal performance appraisals and reward systems based on individuals' performance , while collectivist organizations emphasize group objectives and rewards (Gomez-Meija & Welbourne 1991; Sekaran & Snodgrass, 1986). In terms of career progression, individualist organizations will emphasize merit-based promotions (Robert & Wasti, 2002), while collectivist organizations will use promotion criteria based on seniority and loyalty to the organization.

Culture and the work structure

In a theoretical study investigating the cultural fit between human resource practices and internal work culture in developing countries, Mendonca and Kanungo (1994) suggest that low level of individualism require a work structure based on teamwork, and group-based contingent rewards. The rationale for this is that frequent and repeated interaction among members favour the creation of a shared culture and language.

Culture and the reward system.

More generally, Gomez-Meija and Welbourne (1991) suggest that managerial practices that are oriented at promoting higher individualism tend to emphasize personal goals, autonomy and privacy, while managerial practices oriented at higher collectivism emphasize loyalty to the group, commitment to its norms and involvement into its activities. Basing on this idea, I can suggest some more HRM practices that can be compatible with either individualism or collectivism.

A flexible work structure characterized by flexible work roles, broad job designs, ad-hoc work arrangements, provides the employees with the autonomy to decide the best way to pursue their work objectives (Kang, Morris and Snell, 2007). Conversely, a work structure emphasizing interdependence, such as team-based production, favour a more intense socialization and higher possibilities to be involved in group activities, which is typical of countries and organizations that are low on individualism (Gomez-Meija & Welbourne, 1991).

Culture and training and development

Training and development systems can also be associated to the cultural dimension of individualism/collectivism. Training practices aiming at providing specialist skills to the individuals will typically improve the individual initiative, promoting therefore the individual

achievement. Training systems oriented at the group, such as formal socialization programs, cross and group training, can reinforce the group culture, the commitment of the members to its norms, and underlie collective achievement, as typically happens in collectivist organizations (Kang et al. 2007).

In sum, different forms of work structure, selection, training, appraisal and reward systems can be respectively be associated to individualist and collectivist organizations. A summary of these practices is reported in table 1.

Based on this, I suggest the following two hypotheses:

Hp 4: Individualistic organizational culture will be positively related to individualist-oriented HRM practices.

Hp 5: collectivistic organizational culture will be positively related to collective-oriented HRM practices.

Table 1. Individualist-oriented and Cooperative oriented HRM practices

Individualist-oriented	Collective-oriented
Use of ability tests for selection	Selection based on person-organization fit
Performance appraisal based on individual performance	Performance appraisal based on group performance
Individual MBO	Group MBO
Rewards based on individual performance	Rewards based on group performance
Merit-based promotions	Promotions based on seniority
Flexible work structure (autonomy, broad design)	Interdependent work structure (teamwork)
Individual-oriented training	Group training

4. The relation between culture, HRM practices and corporate entrepreneurship.

4.1 The role of the HRM system in fostering corporate entrepreneurship

If the three entrepreneurial stages are based on knowledge-related processes that draw on the creation of networks by middle managers, then the HRM systems are likely to play a fundamental role in fostering them. The HR system is an important mechanism by which an organization signals to its member those behaviours that are expected and rewarded, thanks to its ability to create psychological contracts that exert strong influence through the development of social exchanges between the organization and its employees and among employees (Rousseau, 1995). This is valid also for those behaviours, like the ones I am interested in, that are not often explicitly indicated in job descriptions. To do so, they should present practices that are internally consistent and send unambiguous messages (Huselid, 1995, Bowen & Ostroff, 2004) to employees about the behaviours they are expected, explicitly or implicitly, to perform. In addition to indicating the expected behaviours, a system of HRM practices is also able to affect the skills and the motivation of individuals, and provide them with opportunities to enact such behaviours (Locke & Latham, 1990). Basing on these properties of a HRM system, for example, Collins and Clark (2003) identify a set of HRM practices oriented at the creation of internal and external networks by top managers. Such practices are related to: a) performance appraisal and compensation systems, that should influence motivation, b) training systems, that should affect skills, and c) provision of resources in order to develop relations within and outside the organization.

Several studies underline the importance of HRM practices in order to foster the creation of new relationships and develop social capital (Youndt, Snell, Dean and Lepak, 1996; Leignick-Hall & Leignick-Hall 2003; Leana & Van Buren, 1998). Leignick-Hall and Leignick-Hall (2003) show how the HR function can contribute to a firm's bottom line by intervening on the whole set of relations that develop within and outside the organization. Talking, in particular, about relations that develop among individuals, they suggest that the HR function can influence such relations in three basic ways: through policies, programs, training and counselling that affect skills and abilities, through facilitating interaction and the sharing of expertise that create opportunities, and by adopting a partnership perspective with managers and employees in order to elicit the creation of relations.

Consistent with these considerations, I will describe how some particular sets of HRM practices can influence the creation of networks and, in particular, of those specific networks that underlie the two entrepreneurial processes that are based on middle managers' networking behaviours, namely opportunity discovery and opportunity evaluation.

Given that these two stages of the entrepreneurial process require the creation of networks leading to knowledge acquisition or knowledge integration, I suggest the use of different sets of HRM practices to foster different stages of the entrepreneurial process. The focus of the HRM system, therefore, will be on middle managers, as they have been indicated as crucial in helping entrepreneurial initiatives to develop from within the organization (Kuratko et al. 2005, Hornsby et al. 2002). They are the centre of the informal networks where the entrepreneurial idea develops, and are the critical players whose contribution is determinant for the success or failure of an entrepreneurial idea. Therefore, putting middle managers in the best conditions to develop their action is likely to lead to the success of the entrepreneurial initiative, from the discovery of the opportunity to its exploitation. The choice of focusing on key players is also in line with the suggestion of the literature on strategic

HRM, indicating that not all employees are equivalent in terms of their contribution and that firms should tailor their efforts on the specific characteristics of those players (Becker and Huselid, 1998).

4.2 HRM practices and knowledge-related processes.

HRM practices should create the motivation, the ability or skills, and the opportunity to elicit desired behaviours. This framework, that refers to the Ability-Motivation-Opportunity theory of performance, was used by Applebaum et al. (2000) in their seminal work on High Performance work systems in order to link HRM practices and performance through their effects on employee's discretionary behaviours. This framework is increasingly used in contributions in the area of Strategic Human Resource Management. In their review of 104 studies, Paauwe and Boselie (2005) indicated that more than 50% of studies published after year 2000 use this framework to link HRM to performance. I am using this framework as I am focusing on networking behaviours and knowledge exchange processes that are implemented according to middle managers' discretion. Moreover, as and Purcell (2003) suggest, this framework offers a structure in order to identify the desirable components of a HRM system.

Therefore, I now discuss those sets of HRM practices are suitable to create the ability, the opportunities and the motivation in order to induce middle managers to establish those contacts that are useful to sustain opportunity discovery and opportunity evaluation.

Individualist HRM practices for opportunity discovery .

The opportunity discovery process is characterized by networks created in order to acquire knowledge useful to the entrepreneurial venture from key people (customer, providers, professionals etc.) within or outside the organization. An HRM system oriented at

fostering this kind of activities should therefore provide *opportunities, abilities* and *motivation* to create such networks. Individualist HRM practices seem particularly suitable to this purpose.

In terms of *opportunities*, the HRM systems should enable people to establish many contacts with other internal and external actors in order to access diverse knowledge and come up with new ideas. A flexible work structure would provide this opportunity. The organization of the work activities is key with respect to offering opportunities. According to Leignick-Hall and Leignick-Hall (2003), an appropriate way to increase the exchange of ideas is to favour physical proximity among people that are specialized in different areas. Kang et al. (2007) suggest that a flexible work structure characterized by flexible work roles, broad job designs, ad-hoc work arrangements, cross-functional teams, job rotation across teams or lines should be able to provide occasions to meet people working in other areas or in other organizations with whom to exchange ideas about work. In their contribution on the creation of networks by top management teams, Collins and Clark (2003) suggest to provide top managers with reimbursement for all the expenses they have when developing new, work-related contacts. A similar practice could be applied to middle managers, in order to induce them to create and sustain a wide range of contacts with key people with whom to develop and discuss new ideas.

In terms of *abilities and skills*, an HRM system should provide the company with people that are able to enlarge the organization's stock of knowledge, and consequently the knowledge that is held within the firms, through establishing new ties. Individualist HRM practices such as individual-oriented training and use of selection tests will result useful to this purpose. While HRM practices that are oriented to the organization of work activities provide the opportunity to establish new contacts, HR practices oriented at fostering the entrepreneurs' skills help to take advantage of them. As the theory on absorptive capacity

suggests (Bower & Hilgard, 1981; Cohen & Levinthal, 1990), the more a person possesses knowledge, the more he/she will be able to understand its usefulness and see the potential application to the commercial ends of a firm. Therefore, HRM practices that foster the creation of a stock of specialist knowledge by middle managers that overlaps with the specialist knowledge of customers, suppliers and other counterparts with whom they interact, favour the creation and the exploitation of weak ties to spot new opportunities. The two main tools that a HRM system can offer to increase knowledge are training and selection. Kang et al. (2007) indicate that training strategy based on developing translation-specialist and adaptive sense-making skills, creative cultures and empowerment will lead to such results. Similarly, Hayton and Kelley (2006) point out how domain-specific knowledge is a central competence in corporate entrepreneurs that spot new opportunities. Consistently, in terms of staffing, the firm should try to acquire people with high levels of the relevant knowledge. Therefore, an emphasis on selection tests and ways to assess the level of knowledge possessed by the candidates should be used.

Finally, in order to provide *motivation* to establish new relations to discover new opportunities, an HRM system should induce people to look for new contacts, acquire new, divergent knowledge and propose innovative ideas. Appraisal and reward practices based on individual performance will be suitable to this aim. Kang et al. (2007) note that behaviours required to create entrepreneurial networks are difficult to identify a priori. Therefore, reward systems should be based on individual outputs rather than on behaviours. Employees will then determine the best way to create their network of contacts. However, outputs in the case of sparse network characterized by weak ties may be difficult to observe. The contacts that middle managers start to develop in order to look for new opportunities are difficult to quantify and will produce their, uncertain, effects only in the long term. Therefore, reward practices that foster the discovery of new opportunities should be based on what individuals

input in terms of new knowledge or new contacts they are able to bring to the organization, as suggested by Gomez-Meija and Balkin in their study on compensation strategies for innovation (1989).

In sum, HRM practices for entrepreneurial network emphasize flexibility in the work structure in order to allow individuals to search for new knowledge. They include individual incentives and foster the creation of individual knowledge.

Basing on this, I suggest:

Hp 6: Individual-oriented HRM practices will foster opportunity discovery

HRM practices for opportunity evaluation

As discussed above, the opportunity evaluation process is based on the creation of networks of contacts, usually characterized by strong ties, by which to integrate diverse knowledge. This typically takes place when individuals collaborate in self-organized teams or other organizational forms. Therefore, HRM practices oriented at fostering this process should provide the opportunity, the ability and the motivation to create networks oriented at a closer collaboration. Collective-oriented HRM practices have these characteristics.

In terms of *opportunity*, the HRM system should allow people to develop strong ties. Therefore, they should be able to favour frequent interaction among people. Team-oriented work structure should provide this opportunity. Youndt and Snell (2004), indicate that work structures characterized by permeability and network intimacy (McGill & Slocum, 1994) are suitable to create social capital based on long-term, stable relationships. In their view, the absence of divisions among departments or among employees and customers or suppliers and their closeness to their business processes would increase their opportunities to interact and develop their ability to work in teams. Similarly, when talking about the ability to integrate different kinds of knowledge into a new product, Verona (1999) suggests that an organization

should minimize boundaries and operate as a work team. In this way, the integration of knowledge, including tacit knowledge, and its embodiment into a new product is more effective. Consistently, Kang et al. (2007) indicate a work structure characterized by high interdependency, team-based production, job rotations across functions and frequent formal and informal meeting as appropriate in developing strong cooperative networks. Another way to increase the opportunities to foster the creation of cooperative, task-oriented networks is the implementation of strategic rotation and transversal career paths (Verona, 1999; Collinson, 2001). All these practices do not simply provide the opportunity for people to establish contacts and exchange ideas, but, in addition, are meant to provide the closeness and the proximity for repeated interaction. Moreover, the relations that they foster are not mainly functional to the individual middle managers' action and contribution, as they are more oriented at favouring collective achievement.

In terms of *skills and abilities*, an HRM system should ensure to the organization individuals capable of working in team, develop trustworthy work relationships based on the organization's culture and values and possess knowledge that makes them go beyond their specialist view and collaborate effectively. Training and staffing are the two dimensions of the HRM systems that are more likely to affect these aspects. HRM practices compatible with a collectivist culture such as group training and selection based on person-organization fit should be useful to this purpose.

Formal socialization programs, mentoring, cross and group training can provide employees, in our case middle managers, with a broader view, by exposing them to organizational knowledge, culture and values (Kang et al. 2007). On-the-job training and mentoring programs can help develop both job-related knowledge and strong ties across the organization, favouring the process of knowledge integration in new products, processes, or services (Verona, 1999; Collinson 2001, Kang et al 2007).

Staffing should be oriented at hiring people with well developed interpersonal skills and the ability to work in team, in order to make it easier to develop strong, work-oriented relationships (Youndt and Snell 2004). Kang et al. (2007) suggest to use more internal staffing and emphasize the fit between personal and organizational values when hiring from outside. In this way, it would be easier to develop generalized trust based on common values. Finally, Collinson (2001) suggests hiring people that are partially redundant, in terms of competences. In this way, job rotation can take place more easily.

In terms of *motivation*, the HRM practices should foster and reward collective effort. Consistently, group-based appraisal and rewards should be suitable to this aim. As Gomez - Meija and Balkin (1989) note, team based incentives are particularly suitable in presence of interdependent tasks. Kang et al. (2007) suggest that group or firm-level performance management initiatives help the creation of cooperative network as they emphasize collective achievement, thereby aligning people's behaviours through the sharing of common goals and values. Consistently, Youndt and Snell (2004) indicate that performance feedback from customers, peers, team members and subordinates is likely to facilitate knowledge sharing, and therefore, the alignment on a common framework of knowledge.

In sum, HRM practices for opportunity evaluation emphasize interdependent work structures, group-based incentives and common knowledge and values to favour close collaboration. These features are typical of HRM practices compatible with a collectivist culture. Based on this, I suggest that

H_p 7: HRM practices compatible with a collectivist culture will favour opportunity evaluation .

The mediating role of HRM practices.

As discussed above, individualism and collectivism should respectively influence the opportunity discovery and opportunity evaluation processes. Organizational individualism/collectivism influence HRM practices, thanks to the effect of culture on managerial processes and systems (Schein, 1990). HRM practices, in turn, are able to influence the behaviours underlying the opportunity discovery and the opportunity evaluation processes, as shown in the previous section.

In other words, I believe that part of the effect that organizational culture has on corporate entrepreneurship takes place through the setting offered by the human resource management systems in terms of ability, opportunity and motivation.

Therefore, I suggest that:

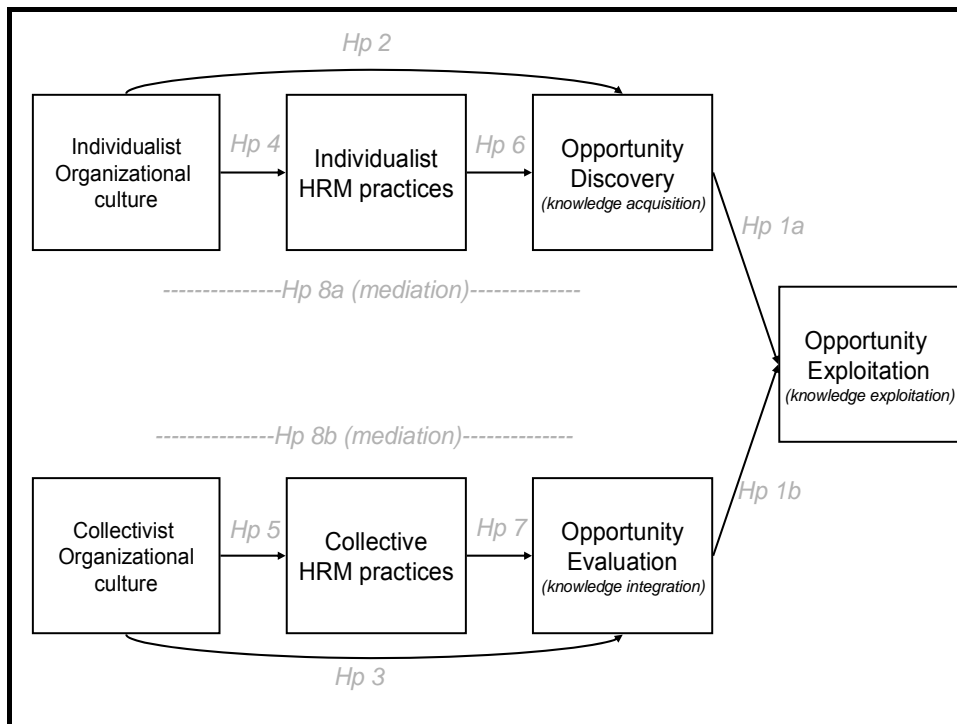
Hp 8: Human resource management systems mediate the relation between organizational culture and entrepreneurial processes.

HP 8a: Individualist human resource management practices mediate the relation between individualist organizational culture and opportunity discovery.

Hp 8b: Collectivist human resource management practices mediate the relation between collectivist organizational culture and opportunity evaluation.

A graphic representation of the hypotheses is reported in figure 3

Figure 3: The eight hypotheses in the model.



4.3 Balancing individualist and collectivist HRM practices.

According to my model, when trying to pursue entrepreneurial opportunities through the discovery, evaluation and exploitation stages, a firm needs to leverage both on individualist and collectivist culture through the use of both individualist and collectivist HRM practices. In the first case, a firm tries to spark individual initiatives in middle managers, in order to come up with innovative ideas and spot opportunities. This process is consistent with the idea of exploration. When evaluating opportunities, an organization leverages on collectivist culture in order to integrate knowledge into products, processes or services. This is similar to the idea of exploitation (March 1991).

Therefore, both individualist and cooperative culture should be achieved and, consequently, a balance between individual-oriented and collective-oriented HRM practices should be used. This is an apparently contradictory objective, that an organization can overcome showing a certain degree of ambidexterity. Ambidexterity consists of simultaneously pursuing exploration and exploitation (March, 1991; Gupta, Smith & Shalley 2006). That's basically what happens in the entrepreneurial process, when an organization simultaneously explores entrepreneurial ideas and evaluates them, working towards their exploitation. Pursuing exploration and exploitation at the same time in this context is a possible task. In fact, exploring and exploiting entrepreneurial opportunities are not in competition, while they are complementary objectives of the same entrepreneurial process. Moreover, through the division of labour within sub-units of the organizations, it is possible for an organization to excel both in exploration and exploitation (Gupta, Smith & Shalley 2006).

5. Methods

5.1 Sample and Data collection

5.1.1 Sample

The sector I investigate is that of industrial machinery. This is a key sector for the Italian economy, as it represented 6 % of Italian GDP with a turnover of 23.4 billions euros in 2006 (Federmacchine, 2007). Italian firms are well positioned in the global machinery sector, as Italy is the second largest producer within the European Union (Eurostat, 2007). EU, in turn, accounts for 30% of the global machinery production (DataMonitor, 2007). Italian industrial machinery has more than 55% of its production devoted to the export. Although Italy is one of the world biggest producers, Italian firms are significantly smaller than their foreign competitors (eg. Japan, Germany and China). Among the 17610 firms that are part of this sector, 295 have more than 250 employees, and 832 have more than 100 (source: AIDA database). One of the major challenges in this industry is represented by the rising costs of raw materials, that have dramatically increased over the last few years (Datamonitor, 2007). Therefore, companies need to increase quality, in order to justify higher prices and protect their margins. Focus on quality and the ability to meet changing market requirements are particularly important for Italian firms, that cannot count either on the low labour costs that characterize their Chinese competitors or on the large scales of their Japanese and German counterparts to compete on costs. Italian firms typically leverage on technology and creativity (Federmacchine, 2006). In this context, the ability to innovate and be entrepreneurial is key to the competitive success of Italian companies. This makes them particularly suited for the

purposes of my study, as corporate entrepreneurial efforts are crucial to prosper in this competitive scenario.

The actual sample of firms that have been surveyed is taken from the AIDA database and is made up of firms that belong to the sector “machinery and equipment”. All these companies are part of Federmacchine, the Italian federation of the associations of manufacturers of capital goods intended for industrial and handicrafts manufacturing processes. I considered only those 731 that have more than 100 employees. Among these, about one third has more than 250. Therefore, the bulk of firms that constitutes my sample had a number of employees between 100 and 250.

The size of the firms I studied looks particularly suitable to investigate the formal and informal aspects of the corporate entrepreneurship model. It is not as big as the size of more formalized, large companies, not as small as the size of micro, unstructured, businesses. Italian companies in the machinery sector are likely to present a sufficient degree of formalization in terms of organizational practices and procedures while, at the same time, the informal aspects of organizational processes are visible and not irrelevant.

5.1.2 Data collection

I collected data about HRM practices, organizational culture and the three entrepreneurial processes by using an on-line survey. E-mails containing the link to the survey were sent out in the second half of September 2008 to the firms included in the sample. A presentation was sent with the link to the website containing the survey, which was made up of a total of 45 questions (14 about HRM practices, 13 about organizational culture and 18 about the entrepreneurial processes), plus seven demographic questions at the end. Two recalls by e-mail followed at a distance of 15 days one from each other. The survey was sent to the HR responsible, and to other three function responsible (typically marketing/commercial,

finance/account and production/logistics). Their email addresses were collected by contacting on the phone each single firm in June 2008. For those firms that did not disclose the personal email addresses of their managers, four emails were sent to a central email account, to be distributed to the targeted managers by each firm's staff. In this way, I was able to collect about 40% of the total surveys collected. The remaining 60% has been collected by phone during the month of November. Typically, I called those firms for which at least one manager answered, in order to make it possible the aggregation at the firm level. In the end, I collected 231 completed surveys, referring to 83 different, identified, firms. Of these, 57 firms had three respondents or more, 14 firms had two respondents, and 12 firms had one respondent only.

82 firms responded, out of 851 (9.6% response rate). Respondents show significantly higher Assets and Revenues from sales. No significant difference on age and number of employees were found, as shown in the table below.

Table 2: T-test on age, employees, assets and sales

Variable	Sample (m)	Population (m)	Sig. t-test
Age	26.95	28.90	0.572
No. of employees	412.80	427.90	0.458
Assets	103,768	76,717,181	0.000
Sales	102,442	80,191,795	0.000

5.2 Measures

5.2.1 Independent variables

HRM Practices

Basing on the literature that relates individualism/collectivism to managerial practices (Robert & Wasti, 2002; Ramamoorthy & Carrol, 1998; Gomez-Meija & Welbourne 1991; Sekaran & Snodgrass, 1986), I have created two different sets of Human Resource Management practices. Each set contains seven HRM practices that relate to work structure, selection, training, appraisal and incentives, that offer the opportunity, the motivation and the ability to foster opportunity discovery and opportunity evaluation. One set is meant to foster an individualist culture, while the other one is supposed to be compatible with a collectivist orientation. The set of practices that fosters an individualist culture emphasizes individual initiative, by providing autonomy, individual-based appraisal and rewards, and specialist training. The set of practices that supports a collectivist culture emphasizes collective achievement and provides interdependent work structure, group-based appraisal and rewards and training programs that underlie the value of common norms and values. Response format was a five-items Likert-like scale. Items for the two sets of practices are reported in the appendix.

Organizational Individualism/collectivism

Literature on collectivism/individualism has initially investigated the concept at the national level (Hofstede 1980). Other studies have subsequently started to explore variations in terms of individualism/collectivism within the same country. Relatively few studies have explored the concept at the organizational level (Morris et al 1993). Robert and Wasti (2002) develop and test an empirical measure for organizational individualism and collectivism. By drawing

on the literature linking individualism and collectivism to organizational culture, they created a six-item index measuring organizational individualism and a seven-item index measuring organizational collectivism. In their study, they show that individualism and collectivism are two constructs that vary independently, and are not the extremes of a continuum, as it was conceptualized in previous contributions. I adopt this measure because in my theoretical framework, collectivism and individualism are seen as two separate constructs that are fostered by two different sets of HRM practices and in turn favour two different stages of the entrepreneurial process (namely opportunity discovery and opportunity evaluation). Following Robert and Wasti (2002), the organizational collectivism and organizational individualism indexes present 5-point Likert response format, that I submitted to middle managers, namely the individuals responsible of the production, marketing/commercial and finance/administration functions.

5.2.2 Dependent variables

Opportunity discovery

I've defined the opportunity discovery process as "the process by which an organization realizes that an opportunity exists and has value". It is based on the ability of middle managers to find new means-end relations thanks to their contacts with customers, suppliers and other people within the organization. In terms of process, as discussed above, opportunity discovery relies on the ability of middle managers to access novel knowledge and ideas (Shane and Vankataraman, 2000). Once an opportunity is discovered, it must be discussed with other people within the organization in order to get empirical validation and hopefully get implemented by the firm. The first step of this process, when the opportunity is communicated as such to somebody else within the organization, is the moment in which the

opportunity goes beyond the realm of an individual and is shared within the organization. This moment represents the ending boundary of the opportunity discovery process. In order to assess this process, I use the scale measuring knowledge creation reported in Smith et al. (2005). In particular, I only use those items that measure the access of employees to other people's knowledge. The ability to access external knowledge can be seen as an operationalisation of the opportunity discovery process. Shane (2000), consistently with the Austrian approach (Kirzner, 1997), suggests that opportunities cannot be discovered through active, systematic search. They can only be discovered through the recognition of value of new information that they happen to receive through other means (p. 451). When new information matches the entrepreneur's idiosyncratic knowledge, new opportunities are recognized (Venkataraman, 1997). Therefore, acquiring new knowledge is actually the process of discovering opportunities. Measurement items for this construct are reported in the appendix.

Opportunity evaluation

I've defined the opportunity evaluation process as the process by which an organization evaluates whether an opportunity is worth pursuing or not. This process is basically the acceptance of a new entrepreneurial idea, which originates from an individual, into the social and organizational knowledge and competencies. This is very similar to the idea of exchange and combination of knowledge as intended by Nahapiet and Ghoshal (1998) that takes place, in our case, within the entrepreneurial process between middle managers and the key people that can contribute to the venture with their time, knowledge, resources or sponsorships. This process is consistent with the idea of knowledge combination as indicated in Nonaka and Takeuchi (1994), when they describe the knowledge-creation process. When the evaluation

process is effective, specialist knowledge from various parts of the firm is integrated into new products, processes or services. I measure integration with the scale used by Zahra and Nielsen (2002) to measure manufacturing integration. This instrument measures the ability of a firm to coordinate different units, involve people in the development of new technologies, and to favour the free exchange of information to get things done. Although their study specifically focuses on manufacturing, their measures are taken by studies that consider more generically product and process innovation, as it is the case in my setting. Items are reported in the appendix.

Opportunity exploitation

I've defined the opportunity exploitation process as the process by which a firm actually takes advantage of entrepreneurial opportunities. This means to appropriate from the rent deriving from the entrepreneurial opportunity through the development of a new product, service or process that generate profits for the company. This parallels the knowledge exploitation process, intended as a firm's ability to harvest and incorporate knowledge into its operations (Zahra & George 2002). The outcomes of this ability are the persistent creation of new goods, systems, processes, knowledge or new organizational forms (Spender 1996). Yli-Renko et al. (2001) investigate how young technology-based firms acquire knowledge from key customer relations and exploit it through social capital. They measure knowledge exploitation in terms of results, that is, in terms of new products developed, technological distinctiveness and reduced sales costs. I will focus on the new product development dimension, as this is typically indicated as the output of knowledge exploitation (Zahra & George, 2002; Zahra et al. 1998). Yli-Renko et al. (2001) asked respondents to estimate how many products, services, or technologies have been developed as a consequence of their relation with their main customer. Similarly, I ask respondents to estimate how many new

products, services of technologies have been developed as a consequence of their relations with their internal and external counterparts (customers, suppliers, banks, service providers, people within the organization).

5.2.3 Control variables

I considered firm age and assets as control variable. The rationale for age is that older firms have been present on the market for more time, therefore they presumably had the possibility to acquire, integrate and exploit more knowledge. Firm size was taken into account because the bigger the company, the wider the range of products. Therefore, I expect a positive relation between firm size and new product development. More, bigger ventures probably have more resources to devote to the development of new products (Autio, Sapienza & Almeida, 2000).

A list of the variables and their sources are reported in table 2.

Table 2: list of variables and sources for their operationalization

Variable	Respondent	Source(s) of items
<i>HRM Practices</i>		
Individualist HRM Practices	HR Director	Sekaran and Snodgrass, 1986; Gomez-Meija and Welbourne 1991; Ramamoorthy and Carrol, 1998 Robert and Wasti, 2002
Collectivist HRM Practices	HR Director	Sekaran and Snodgrass, 1986; Gomez-Meija and Welbourne 1991; Ramamoorthy and Carrol, 1998 Robert and Wasti, 2002
<i>Organizational culture</i>		
Organizational Individualism Index	Middle managers	Robert and Wasti (2002)
Organizational Collectivism Index	Middle managers	Robert and Wasti (2002)
<i>Entrepreneurial processes</i>		
Opportunity discovery	Middle managers	Smith et al. (2005)
Opportunity evaluation	Middle managers	Zahra and Nielsen (2002)
Opportunity exploitation	Middle managers	Yli-Renko et al 2001
<i>Control variables</i>		
Firm age	Secondary data	AIDA
Assets	Secondary data	AIDA

6. Data analysis and results

6.1 Variables

6.1.1 Inter-rater agreement

In order to create the firm-level variable of interests, I aggregated the response of the single managers. The variables related to organizational culture (organizational individualism and organizational collectivism) are obtained by averaging at the company level the scores indicated by all the managers participating in the survey. The rationale for this is that culture is supposed to be a shared construct among the people belonging to the same organization (Schneider, 1990). The firm-level score on the entrepreneurial processes (opportunity discovery, evaluation and exploitation) was obtained by aggregating the answers provided by all the managers except from those belonging to the HR department. I did so because middle managers are directly involved in the flux of knowledge that takes place in the production stage, so they observe it from a closer position than the one of HR managers. For the same reason, the firm-level scores on human resource management practices have been created on the basis of the answers provided by the HR managers.

Given that I aggregated the answers of three different respondents or more in the same firm for the variables related to culture, I calculated the Inter-rater agreement for each single item. In order to do so, I used the rwg index (James, Demaree & Wolf, 1984; 1993). The average rwg index for individualist culture is 0.92 (standard deviation 0.11), that of collectivist culture is 0.87 (standard deviation 0.45). They are both higher than the cut-off point of 0.7 indicated in the literature (LeBreton and Senter, 2008).

6.1.2 Factor analysis

I run three separate factor analyses: one for the HRM practices, one for the culture and one for the discovery and evaluation processes, in order to see how items loaded on two factors (individual vs collectivist). The analysis yielded a clear distinction between individualist vs. collectivist HRM practices, individualist vs. collective culture and discovery vs. evaluation processes. After this, I re-run the analysis keeping only those factor that had a factor loading higher than 0.5. Results are shown in tables 3, 4 and 5.

Table 3: Factor analysis on culture variables

Rotated Factor Matrix^a

	Factor	
	1	2
INDCUL1	,648	,153
INDCUL2	,742	,171
INDCUL3	,681	-,024
INDCUL4	,734	,246
INDCUL5	,786	,059
INDCUL6	,737	-,034
COLLCUL2	,000	,712
COLLCUL3	,088	,714
COLLCUL4	,137	,772
COLLCUL5	,071	,508
COLLCUL6	,107	,788
COLLCUL7	,086	,694

Extraction Method: Principal Axis Factoring.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Table 4: Factor analysis on HRM variables

Rotated Factor Matrix^a

	Factor	
	1	2
HRIND1	,576	,000
HRIND2	,809	,037
HRIND3	,805	,065
HRIND4	,780	,045
HRIND5	,606	,078
HRIND6	,647	-,039
HRIND7	,763	-,009
HRCOL1	,054	,579
HRCOL2	,008	,812
HRCOL3	,089	,759
HRCOL4	-,022	,723
HRCOL6	-,047	,507
HRCOL7	,080	,709

Extraction Method: Principal Axis Factoring.

Rotation Method: Varimax with Kaiser

Normalization.

a. Rotation converged in 3 iterations.

Table 5: Factor analysis on opportunity discovery and evaluation

Rotated Factor Matrix^a

	Factor	
	1	2
DISC1	,149	,766
DISC2	,004	,550
DISC3	,019	,646
DISC4	,135	,710
DISC6	-,151	,544
EVAL1	,837	-,007
EVAL2	,812	-,059
EVAL3	,808	-,034
EVAL4	,754	,032
EVAL5	,693	-,030
EVAL6	,706	,004
EVAL7	,705	-,035
EVAL8	,555	,235
EVAL9	,537	,182
EVAL10	,650	-,067
EVAL11	,671	,169

6.1.3 Reliability

I calculated the Cronbach's alpha in order to be sure of the internal reliability of the measures. Values are well above the 0.7 cut-off threshold used as a rule-of thumb (Nunnally and Barnstein, 2002). Values of the Cronbach's Alpha for each variable are reported in the table below.

Table 6: summary of constructs

Variables	Scale Measurement	Reliability
Individualist culture	6 items	0,864
Collective culture	6 items	0,854
Individual-Oriented HRM culture	7 items	0,877
Collective-oriented HRM practices	6 items	0,835
Opportunity discovery	5 items	0,763
Opportunity evaluation	11 items	0,914
Opportunity exploitation	Single item	N/A

6.2 Test of hypotheses

6.2.1 Correlations

As a first step in order to observe the variables' behaviour, I created a correlation matrix in order to analyze relations among the variables. As shown in table 7 below, it appears a stronger correlation among individualist culture, HRM practices and opportunity discovery. Similarly, we observe a stronger correlation between the collectivist culture, the HRM practices and opportunity evaluation.

Table 7 correlations

Variables	Mean	s.d.	1	2	3	4	5	6
1. Individualist HRM Practices	3.60	0.904						
2. Collectivist HRM Practices	3.12	0.726	0.119					
3. Individualist culture	3.70	0.821	0.890**	0.182				
4. Collectivist culture	3.42	0.737	0.171	0.729**	0.274*			
5. Opportunity discovery	3.48	0.723	0.758**	0.100	0.788**	0.258*		
6. Opportunity evaluation	3.49	0.774	0.161	0.785**	0.274*	0.832**	0.170	
7. Opportunity exploitation	3.78	1.153	0.434**	0.470**	0.429**	0.561**	0.493**	0.561**

n for opportunity exploitation =78; for all other variables n=82; ** p<0.01; *p<0.05

6.2.2 Regression analysis

In order to test hypotheses 1a and 1b, I run a regression analysis having opportunity discovery and opportunity evaluation as independent variables, and opportunity exploitation as dependent variable. I also included the two control variables of firm age and firm assets. Results were significant, as shown in table 8, thus confirming my hypotheses. Variance inflation factor was consistently well below 10, the cut-off point used in social sciences as a rule of thumb to identify multicollinearity (O'Brien 2007).

Table 8: Regression results, Opportunity Discovery and Evaluation on opportunity exploitation

Variables	Model 1	Model 2
<i>Control variables</i>		
Assets (log)	0.060	0.092
Age	0.215	0.161*
<i>Independent variables</i>		
Opportunity discovery		0.397***
Opportunity evaluation		0.481***
Adj. Rsq.	0.028	0.479
Δ Adj. Rsq.	0.028	0.451
Δ F	2.066	32.664***

Standardized coefficients are shown

*** p<0.01; **p<0.05; *p<0.1

I then run two separate regressions using opportunity discovery and opportunity evaluation as dependent variables. For each model, I used a three-step regression. In the first step, I included the control variables. In the second one, I added both individualist and collectivist HRM practices. For both regressions (the one having opportunity discovery and the one having opportunity evaluation as dependent variables) the adjusted R square increased significantly. Individualist HRM practices had a significant, positive, influence on opportunity discovery, while collectivist HRM practices had a significant, positive, effect on opportunity evaluation. In the third stage, I inserted individualist and collectivist organizational cultures. Consistently, individualist HRM practices and culture had a significant, positive, effect on opportunity discovery, while collectivist HRM practices and culture had a significant, positive, effect on opportunity evaluation. These results, that are reported in table 9, confirm hypotheses 2, 3, 6 and 7 of my theoretical model.

Table 9 : Regression results, HRM practices and organizational culture on entrepreneurial opportunities

Variables	Opportunity discovery			Opportunity evaluation		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<i>Control variables</i>						
Assets (log)	0.036	0.076	0.030	-0.070	0.052	-0.13
Age	0.038	-0.031	0.005	0.066	0.024	0.06
<i>Independent variables</i>						
Individualist HRM practices		0.767***	0.330***		0.068	-0.166
Collectivist HRM practices		0.045	-0.111		0.776***	0.336***
Individualist organizational culture			0.475***			0.204
Collectivist organizational culture			0.150			0.565***
Adj. Rsq.	-0.23	0.573	0.627		0.587	0.747
Δ Adj. Rsq.	-0.23	0.596	0.054		0.605	0.142
Δ F	0.120	54.644***	6.502***		57.342**	24.691***
<i>Standardized coefficients are shown</i>						
*** p<0.01; **p<0.05; *p<0.1						

Hypothesis 8a predicted a relation between individualist organizational culture and opportunity discovery mediated by individualist HRM practices. In order to test the mediation, I used the three-steps process suggested by Baron and Kenny (1986). I tested the direct relation between individualist organizational culture and opportunity discovery, which was significant, as shown by model 2 in table 9. Also the effect of individualist culture and the mediator, individualist HRM practices, was significant, as shown in table 10. In the third step, I tested the relation between both the independent variable and the mediator with the dependent variable. Both individualist organizational culture and individualist human resource practices were significant, as shown in model 3 in table 9. This result indicates the presence of partial mediation.

Similar results emerged when testing hypothesis 8b, predicting a relation between collective organizational culture and opportunity evaluation mediated by collectivist HRM practices. The direct relation between the independent variable and the dependent variable was significant (step 1), as shown in model 4 in table 9. Also the relation between the independent variable and the mediator (step 2) was significant, as shown in model 4 in table 12. In the third step, both the independent variable and the mediator had a significant effect on the dependent variable (model 6 in table 9). Also in this case, therefore, a partial mediation was present.

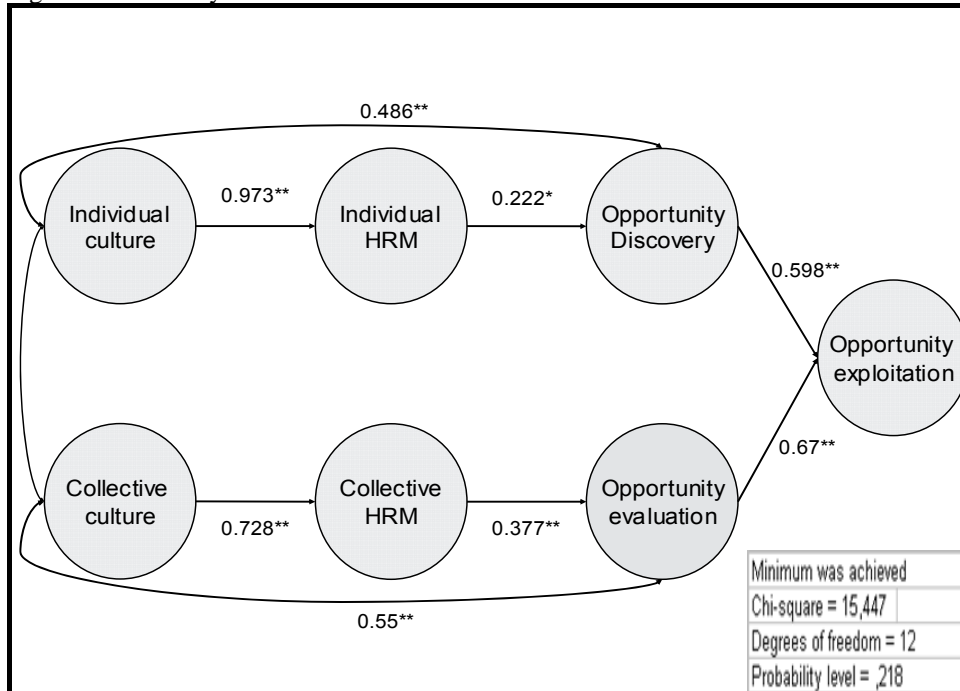
Table 10: Regression results, organizational culture and HRM practices.

Variables	Individualist HRM practices		Collectivist HRM practices	
	Model 1	Model 2	Model 3	Model 4
<i>Control variables</i>				
Age	0,86	0,099*	0.047	-0.34
Asset (log)	-0,42	-0,38	-0,154	-0.134*
<i>Independent variables</i>				
Individualist Culture		0,891***		
Collectivist culture				0.743***
Adj. Rsq.	-0.17	0.794	-0.001	0.552
Δ Adj. Rsq.	-0.17	0.811	-0.001	0.553
Δ F	0.324	304.142***	0.950	96.124***
<i>Standardized coefficients are shown</i>				
*** p<0.01; **p<0.05; *p<0.1				

6.2.3 Path analysis

In order to test the whole model with all the hypotheses included in it simultaneously, and provide a further confirmation to my study, I run a path analysis, using AMOS software. When inputting the model indicated in figure 3, the system yielded no significant Chi Square ($p=0.218$), meaning that the difference between the observed correlation matrix and the one suggested by the model do not differ significantly. In other words, the model proposed fitted pretty well the observed values. A further confirmation for this is provided the RMSEA statistic, which is at the 0.06 level of significance, very close to the 0.05 threshold accepted in the practice (Schumacker, Randall & Lomax, 2004). Moreover, all the regression coefficients hypothesized were significant, confirming the results I obtained in the regression analyses, that were run for single segments of the model. The coefficients and the statistics that came out of the path analysis are presented in figure 4.

Figure 4: Path analysis coefficients



7. Conclusions

7.1 Theoretical implications

My study contributes to both corporate entrepreneurship and human resource management theory. A first contribution that it provides to the CE literature is that it indicates two alternative sets of internally consistent HRM practices which are able to elicit middle managers' entrepreneurial behaviours. With respect to existing studies linking human resource practices and entrepreneurial outcomes, my work recognizes the different specificities of the entrepreneurial process, as indicated by Morris et al. (1993). Consistently, I indicate individualist HRM practices as suitable for the first stage of the entrepreneurial process, when individuals' initiative is oriented at acquiring new knowledge and discover new entrepreneurial opportunities. In contrast, collectivist HRM practices, emphasizing the need for a closer collaboration between individuals, are more appropriate for the opportunity evaluation stage. In addition to this, my work focuses on the individual behaviours of middle

managers. By describing the process underlying corporate entrepreneurship, I also help to provide a description of the mechanisms linking human resource management practices and corporate entrepreneurship outcomes. Until now, a large part of the studies linking HRM to CE was limited to simply finding out a correlation between the two constructs, or provided little explanation on how HRM practices influence CE through employees' behaviours. Moreover, my study focuses on the behaviours of middle managers. By focusing on the behaviours of a limited number of core employees, we can have a more direct and testable relation between HRM practices and employees' behaviours (Becker & Huselid, 2000). In other words, given the specificity of behaviours indicated and the homogeneous nature of the employees to whom the HR practices are directed, we can expect that such behaviours are indeed influenced by human resource management practices. Finally, my work focuses on individuals' behaviours but, at the same time, takes entrepreneurial opportunities into account. This is in line with recent literature on entrepreneurship suggesting that research in the field should better investigate the nexus between entrepreuring individuals and entrepreneurial opportunities (Eckhardt & Shane, 2000). In terms of contributions to the literature on human resource management, my study shows how HRM systems can be useful for the creation of a sustainable advantage over time. In the model I propose, individualist and collectivist HRM practices not only favour corporate entrepreneurship, with consequent positive effects on performance, but also trigger organizational learning. This is so because of the strict relation I highlighted between opportunity discovery and knowledge acquisition, opportunity evaluation and knowledge integration, and opportunity exploitation with knowledge exploitation. When eliciting entrepreneurial behaviours, HRM practices, also favour these knowledge fluxes, which are at the base of the organizational learning process (Floyd & Wooldridge, 1999; Zahra et al., 1999). This, in turn, helps to sustain performance over time. This is in line with the

framework proposed by the Strategic Human Resource Management, suggesting the strategic relevance of HRM practices because of their ability to positively influence over time. My model does so, proposing a contingent relation between HRM practices and organizational culture.

7.2 Managerial implications

In terms of managerial implications, this study provides some insights on the levers HR managers can use in order to foster the corporate entrepreneurship process in their organizations. A first indication that emerges from the analysis is that “one best way” in order to elicit entrepreneurial behaviours in middle managers probably doesn’t exist. Indeed, according to the specific need of the organization in a certain period of time, an emphasis either on opportunity discovery or on opportunity evaluation should be put. Accordingly, individualist or collectivist human resource management practices should be implemented. Similarly, different HRM practices could be tailored according to the specific task of different categories of employees within the same organization. For example, a set of individualist HRM practices oriented at fostering individual initiative to discover new entrepreneurial ideas can be appropriate for middle managers working in the R&S division. On the contrary, a set of collectivist HRM practices could be suitable for team managers having the task to develop a new prototype. Having two different sets of human resource practices that can be emphasized in different periods over time or targeted to different employees within the organization allowing it to be ambidextrous (Gupta, Smith & Shalley 2006) and pursue potentially conflicting objectives.

Another managerial indication emerging from this study is that, when implementing HRM practices to foster corporate entrepreneurship, cultural specificities should be taken into account. For example, in firms presenting a strong collectivist culture, implementing

individualist HRM practices could be of little impact on entrepreneurial behaviour because of the strong influence that culture exerts. Therefore, particular attention to culture issues should be put by managers trying to implement a set of managerial practices that are in contrast with the prevailing culture. Particular attention to the culture dimension should also be put in firms that have branches in different Countries. In this case different national cultures can influence the organizational levels of individualism and collectivism. Consequently, HRM practices that are particular effective in some Countries could be not in another one and vice-versa.

7.3. Limitations and further research

Although this study provides several indications on how to foster corporate entrepreneurial behaviours, it presents some significant limitations. First of all, a higher number of firms would be required in order to have more robust results. This would allow, for example, to carry out a confirmatory factor analysis in order to gain a more robust testing of the model. Moreover, a deeper investigation of the relation between organizational culture and HRM practices would be required. Results show a high correlation between individualist culture and individual-oriented HRM practices, as well as between collectivist organizational culture and collectivist HRM practices. Consistently, theory suggests that there can be a two-ways relation between culture and HRM practices (Deal & Kenney, 1982; Den Hartog & Verbarg, 2004). Therefore, a deeper analysis of this relation, in order to better detect the causal relation between them, could offer more insight and make the model clearer and more compelling.

In terms of measures, validation of the “opportunity exploitation” measure would probably increase the relevance of the study. The variable I used was an adaptation from Yli-Renko et al. 2002. I asked the respondents to state on a 1 to 5 Likert scale, to what degree the new products their firm creates derives from the relations they have with people within and outside the organization. A validation of this measure with secondary data would probably

make this variable a better indicator of the firm innovativeness, which is a very important issue in today's competition. I am including this issue in a further development of the research project from which this dissertation is derived.

Finally, a better understanding of the role of the HRM practices in the relation between organizational culture and entrepreneurial behaviour would certainly be desirable. Also with the help of a larger sample it could be worth to better understand the nature of the role HRM practices play: a full mediator, a partial mediator as it seems to appear from this study, or a moderator that can magnify or reduce the impact of culture on entrepreneurial behaviour.

In terms of further research it would be also interesting to assess whether different national cultures affect the levels of organizational individualism and collectivism and the implications this would have in the management of human resources to promote corporate entrepreneurship in multinational organizational settings.

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Appendix

Human resources practices

Individualist Human Resource Management practices (5 –point likert scale)

1. In this organization we use ability tests for selection
2. In this organization we have performance appraisal systems based on individual performance
3. In this organization we have individual MBO
4. In this organization we have rewards based on individual performance
5. In this organization we have merit-based promotions
6. In this organization we have a flexible work structure providing autonomy
7. In this organization we have individual training

Cooperative Human Resource Management practices (5–point likert scale)

1. In this organization we have selection based on person-organization fit
2. In this organization we have performance appraisal based on group performance
3. In this organization we have group MBO
4. In this organization we have rewards based on group performance
5. In this organization we have promotions based on seniority
6. In this organization we have interdependent work structures (e.g. teamwork)
7. In this organization we have group training

Organizational culture

Organizational Individualism (6 –point likert scale)

1. Each worker is encouraged to realize his or her own unique potential.
2. People with good ideas make sure management knows the idea was theirs.
3. Employees' ability to think for themselves is valued.
4. Individuals who stand out in a high performing group are recognized.
5. Employees value independence in their job.
6. Competition between employees is accepted.

Organizational collectivism (7 –point likert scale)

1. Management and supervisors are protective of and generous to loyal workers.
2. Decisions about changes in work methods are taken jointly by supervisors and employees.
3. Employees are taken care of like members of a family.
4. Everyone shares responsibility for the organizations' failures as well as success.
5. Regardless of hierarchical level, employees take each other's views into consideration.
6. Once someone is hired, the organization takes care of that person's overall welfare.

7. Everyone is kept informed about major decisions that affect the success of the company.

Entrepreneurial processes

Opportunity discovery

It is measured in terms of access to knowledge as in Smith et al 2005.

1. Employees in this organization meet frequently to discuss work-related ideas and new developments.
2. Employees have difficulty getting together to exchange new ideas and developments (reverse coded).
3. Employees feel free to contact anyone in the organization to discuss new ideas or developments.
4. Employees in this organization are always available to discuss new ideas or developments.
5. Employees are restricted from talking to people outside the company about their current projects
6. Employees here feel free to contact anyone outside the organization to discuss new ideas or developments.

Opportunity evaluation

It is measured it in terms of knowledge integration, as in Zahra and Nielsen (2002)

This company tightly coordinates:

1. The activities of its R&D, production and marketing units
2. The activities of its production and marketing units
3. The activities of all its operations
4. The activities of its R&D and marketing units
5. The activities of its R&D and production units

This company has increased the involvement of the following groups in the new product (technology) development:

6. The production unit
7. The marketing unit

This company:

8. Encourages free exchange of operating and financial information
9. Encourages bypassing of formal communication channels, as needed
10. Stresses informal relationships for getting things done
11. Maintains open communication channels in its operations

Opportunity exploitation

It is measured with the dimension “New products developed” as in Yli-Renko, Autio & Sapienza (2001)

1. Products developed by our company are a result of the relations it has with its key internal and external stakeholders.