

**INNOVATION AS A CORPORATE ENTREPRENEURIAL OUTCOME IN
NEWLY ESTABLISHED FIRMS : A HUMAN RESOURCE-BASED VIEW**

Johan Maes¹

Katholieke Universiteit Leuven
Department of Applied Economics
Policy Research Centre “Entrepreneurship, Enterprises and Innovation”
Naamsestraat 69
3000 Leuven (Belgium)
Tel. +32 16 32 68 68 Fax +32 16 32 67 32
Johan.Maes@econ.kuleuven.be

Luc Sels

Katholieke Universiteit Leuven
Department of Applied Economics
Policy Research Centre “Entrepreneurship, Enterprises and Innovation”
Naamsestraat 69
3000 Leuven (Belgium)
Tel. +32 16 32 68 72 Fax +32 16 32 67 32
Luc.Sels@econ.kuleuven.be

Sophie De Winne

Katholieke Universiteit Leuven
Department of Applied Economics
Naamsestraat 69
3000 Leuven (Belgium)
Tel. +32 16 32 68 94 Fax +32 16 32 67 32
Sophie.DeWinne@econ.kuleuven.be



the Autonomous Management School of
Ghent University and Katholieke Universiteit Leuven



¹ Corresponding author

ABSTRACT

The study presented here explores innovation as a corporate entrepreneurial outcome in recently established small firms. We explore the role of upper echelon and employee human capital and HRM as determinants of innovation through a corporate entrepreneurship lens. The results from the analysis of 294 start-ups indicate that both types of human capital matter for start-up innovation. Employee human capital and HRM have a strong positive effect on innovation. Additionally, while we could not trace direct effects of upper echelon human capital on innovation, indirect effects (via HRM or employee human capital) were found.

Key words: innovation, resource-based view, start-up, upper echelon, human capital

1. EXECUTIVE SUMMARY

Newly established firms or start-ups play a major role in the process of economic development. Through their entry, start-ups form a major source of competitive restructuring. But newly established firms or start-ups can also contribute to the process of economic development in a second way: via the growth that occurs as these firms develop and expand the scope of their activities. Thus, start-ups can benefit from trying to preserve their entrepreneurial posture throughout the subsequent development phases. Corporate entrepreneurship in general and innovation in particular are often brought forward in this context as a desired tool to suit the action to the word. After all, it is seen as an instrument for keeping up the entrepreneurial spirit by means of business development, revenue growth, and pioneering the development of new products, services and processes. Notwithstanding this recognition on a theoretical level, most empirical research on corporate entrepreneurship seems to have been concentrating on larger corporations, leading to an empirical research gap. This article aims at starting to bridge this gap.

More precisely, in this article we explore the role of upper echelon and employee human capital and their management as determinants of innovation, studied through a corporate entrepreneurship lens. Building on the resource-based view of the firm, we expect that both types of human capital (upper echelon and employee) as well as the way in which employee human resources are managed stimulate innovation in newly established firms. The focus on employee human capital and the way in which it is managed results from the growing awareness that a firm's ability to develop new products, services or processes is inextricably linked to its human resource pool (the nature of its human capital) and to the way in which it organizes its human capital (HRM-related policies and practices). However, employee human capital is but one type of human capital available to the firm. As a substantial part of a firm's knowledge and skills resides in its entrepreneur/entrepreneurial team, it is imperative to

include entrepreneur/entrepreneurial team human capital elements (or its proxies) into the research model. Delineating the boundaries of the entrepreneurial team is an important matter. After all, in upper echelon theory the definition of the entrepreneurial team takes center stage, suggesting that the management team is not a universally apt unit of analysis. If we are to understand the role of the entrepreneur/entrepreneurial team in small, newly established firms we may want to consider other important actors shaping the behavior and the orientation of the entrepreneur/entrepreneurial team in the restricted sense. Two such pivotal actors residing outside of immediate team boundaries are the board of directors and external business advice sources. All things considered, our demarcation of the entrepreneurial team and its human capital ('upper echelon' human capital) includes demographic elements of the entrepreneur/entrepreneurial team in the restricted sense, as well as elements referring to governance and external business advice.

Five research hypotheses are developed to study the full (direct and indirect) effect of upper echelon and employee human capital on innovation:

Hypothesis 1. Innovation is positively stimulated by the level of employee human capital.

Hypothesis 2. The intensity of the human resource management has a positive effect on innovation.

Hypothesis 3. The level of entrepreneur/entrepreneurial team human capital has a positive effect on innovation.

Hypothesis 4. The level of entrepreneur/entrepreneurial team human capital has a positive effect on the level of employee human capital.

Hypothesis 5. The level of entrepreneur/entrepreneurial team human capital has a positive effect on the intensity of human resource management.

The analyses are based on a sample of 294 start-ups covering a wide range of economic activities, having 1 to 49 employees and being in their second year of life in 2003. Structural equation modeling is used as an analytical tool.

The results indicate that both types of human capital do matter in the context of start-up innovation. First of all, employee human capital and HRM have a strong positive effect on innovation. Second, while we could not trace direct effects of entrepreneur/entrepreneurial team human capital on innovation, indirect effects (via HRM or employee human capital) of for instance education level and business advice are indisputably present. All things considered, the study learns us that valuing human resources in start-ups can contribute to a considerable extent in preserving their innovation performance, thus stimulating their chances of building a viable business model and safeguarding future growth and further development.

2. INTRODUCTION

In the process of economic growth and development entrepreneurship is considered to be a vital component. Entrepreneurship has long been seen as a synonym for establishing new small firms as a suitable vehicle for entrepreneurial endeavor (Rothwell & Zegveld, 1982). Through their entry, start-ups form a major source of competitive restructuring within industries. With little or no exception, entrepreneurs establishing a new firm are strongly convinced that their enterprise has something unique to offer to the economy, such as a new product, a new management model or a new technology, safeguarding the survival of their newly established company (Hsueh & Tu, 2004).

However, newly established firms or start-ups can contribute to the process of economic development in a second way. If the young firm is to survive and/or flourish, it must develop itself from the inception and start-up phase on in a persistent way (Flamholtz, 1986; Gray, 2002). Following, start-ups – as existing companies - can contribute to the industrial transition

via the growth that occurs as these firms develop and expand the scope of their activities (Baldwin & Gellatly, 2003). In other words, start-ups can benefit from trying to preserve their entrepreneurial posture throughout the subsequent development phases. Corporate entrepreneurship in general and innovation in particular are often brought forward in this context as a tool to suit the action to the word (Baldwin & Gellatly, 2003; Drucker, 1985; Hsueh & Tu, 2004). After all, it is seen as an instrument for keeping up the entrepreneurial spirit by means of business development, revenue growth, and pioneering the development of new products, services and processes (Miles & Covin, 2002; Zahra & Covin, 1995; Zahra et al., 1999b). This suggests that corporate entrepreneurship is not something that pertains only to larger, mature companies, but that it is equally appropriate for small or newly established firms (Borch et al., 1999; Gray, 2002; Messeghem, 2003). Corporate entrepreneurship thus points to the efforts made by *all* existing companies - large as well as small, mature as well as newly formed - of retaining or regaining their entrepreneurial spirit throughout the different stages of their development in view of stimulating business development, innovation and so forth. Notwithstanding this recognition on a theoretical level, most empirical research on corporate entrepreneurship has concentrated on larger corporations, leading to an empirical research gap.

This article aims at starting to bridge this gap. It investigates to what extent start-ups can safeguard their entrepreneurial flair. As mentioned earlier, a focus on innovation is considered to be excellent for this purpose as it embodies the entrepreneurial spirit and stimulates the growth, development and performance capabilities of new firms (Baldwin & Gellatly, 2003; Drucker, 1985; Hsueh & Tu, 2004). More precisely, in this article we explore the role of upper echelon and employee human capital and their management as determinants of innovation, studied through a corporate entrepreneurship lens. The focus on human resources and the way in which these are managed results from the growing awareness that a firm's

ability to develop new products, services or processes is inextricably linked to its human resource pool and to the way in which it organizes its human capital (Laursen, 2002). Building on the resource-based view of the firm, we expect that both types of human capital (upper echelon and employee) as well as the way in which employee human resources are managed stimulate innovation in newly established firms. The analyses are based on a sample of 294 start-ups covering a wide range of economic activities, having 1 to 49 employees and being in their second year of life in 2003.

The further outline of this article is as follows. First, in the literature review section we discuss the importance of innovation as a corporate entrepreneurial outcome for newly established firms and we briefly explore the construct of corporate entrepreneurship. Following, we develop our research model and formulate the corresponding research hypotheses. Thereafter, we elaborate on the methodology and present the empirical findings. And finally, we discuss the results. In what follows, the terms ‘human resources’ and ‘human capital’ will be used interchangeably.

3. LITERATURE REVIEW

3.1. Start-ups and innovation

Whenever new firms are established – whether they are large or small – the entrepreneurs responsible for their inception invariably believe that they have found a niche (new technology, new product or service, new market, new management model and so forth), allowing their enterprises to survive (Hsueh & Tu, 2004). As such, the very first development phase in a company’s life cycle - the start-up phase - generally is perceived as entrepreneurial in some (major or minor) extent (Gray, 2002). However, sustained progression is needed from that phase on if the firm is to prosper and/or survive (Flamholtz, 1986; Gray, 2002). Put differently, newly established firms can take advantage of being inclined towards actively

preserving their entrepreneurial posture throughout the post start-up phases of their development, of keeping the entrepreneurial spirit sharply vivid. Corporate entrepreneurship in general and innovation in particular are often considered as a most suitable tool for this purpose, as innovation embodies the entrepreneurial spirit and stimulates the growth, development and performance capabilities of new firms (Baldwin & Gellatly, 2003; Drucker, 1985; Hsueh & Tu, 2004).

By adopting an innovative posture after their creation, start-ups and other small firms may develop the capacity to maintain their entrepreneurial behavior (Messeghem, 2003). Furthermore, if newly established firms succeed in doing so, the expected impact of innovation on firm performance is far more pronounced compared to their larger and more mature counterparts. After all, new enterprises are less burdened with tradition, show greater willingness to innovate and accept the ability to adopt innovation more readily (Hsueh & Tu, 2004).

Based on the view expressed above, the study presented here explores innovation as a corporate entrepreneurial outcome in recently established small firms. Despite its importance for start-ups, innovation has far less frequently been studied in small start-ups compared to larger and/or more mature companies. Moreover, a large part of those previous empirical innovation studies that have focused on start-ups exclusively considered the high-tech or new technology-based end of the start-up spectrum (e.g. Eisenhardt & Schoonhoven, 1990; Lynskey, 2004). In contrast, the newly established firms studied in this article cover the whole for-profit side of the economy, including industrial enterprises as well as commercial and service firms. As innovation is one of the three possible outcomes of corporate entrepreneurship (besides venturing and renewal (Zahra, 1995)) one can take a corporate entrepreneurship research approach in examining innovation in start-ups.

3.2. Corporate entrepreneurship: what's in a name?

A prerequisite for developing a research model on the link between human resources and the innovation outcome dimension of corporate entrepreneurship is clarifying how corporate entrepreneurship is conceptualized. Corporate entrepreneurship is generally considered to be ill defined. There is no consensus on what it means for firms to be entrepreneurial and researchers are often talking about different phenomena, although using the same label (Covin & Miles, 1999; Maes, 2003). This gives rise to a misfit between the labeled phenomenon and its actual operationalization. Entrepreneurship and - its hierarchical sub-construct - corporate entrepreneurship can be seen as broad labels under which a hodgepodge of research is housed (Shane & Venkataraman, 2000). Before developing a research model it is therefore imperative to (1) make clear which main research approach or view is being taken and (2) explain how corporate entrepreneurship is approached within the view withheld. In what follows, both topics are dealt with consecutively.

Entrepreneurship research approaches. Two research approaches dominate the entrepreneurship field: the trait approach and the behavioral approach. In the trait approach researchers try to identify traits and characteristics of individuals in order to differentiate entrepreneurs from non-entrepreneurs. The entrepreneur's traits are seen as the key to explain the entrepreneurship phenomenon (Gartner, 1989). The primary level of analysis is therefore the individual. Despite the attention this approach has received in research and literature, the trait approach still seems to be unable to capture the entrepreneurship phenomenon to the full extent. The flaws in this approach are well documented by Gartner (1989).

The shortcomings of the trait approach have lead entrepreneurship researchers to a second approach. In this so-called behavioral approach entrepreneurship is seen as the *process* of creating entrepreneurial achievements, such as new organizations (Gartner, 1989) or surplus

value (Jones & Butler, 1992). The objective is not to find out ‘who is the entrepreneur’, but to gain understanding as to why and how the entrepreneurial achievement (‘the project’) has come into existence. The behavioral view stresses the contextual nature of the creating process. The entrepreneurial project is therefore seen as an outcome of a complex process with many influences (Gartner, 1989; Maes, 2003). The role of the individual boils down to a series of actions or behavior undertaken to enable the creation of the project. Personal characteristics are considered ancillary to the behavior. However, the behavioral approach also increases the complexity of the entrepreneurship phenomenon compared to the trait approach. After all, within the behavioral view, entrepreneurship is generally accepted as a *multidimensional* construct, as the nexus of several dimensions or process components that can be distinguished, but not separated from each other. In the next paragraph we clarify how we approach corporate entrepreneurship within the behavioral view before developing our specific research model on human resources and innovation.

The corporate entrepreneurship nexus. Within a behavioral framework entrepreneurship is generally seen as a nexus of multiple components (e.g. Shane, 2003; Shane & Venkataraman, 2000) . The study of entrepreneurship then requires taking into account the various process components. However, there seems to be no agreement as to the number of components involved. As explained by Maes (2003), entrepreneurship can be seen as a nexus of three particular core components: the creator, the creating process and new value creation. These three components (that can be distinguished but not separated from each other) form the true nexus or core of entrepreneurship considered from a behavioral point of view. Since corporate entrepreneurship is a hierarchical sub-construct of entrepreneurship (Sharma & Chrisman, 1999) this three-component nexus is equally applicable to corporate entrepreneurship.

Corporate entrepreneurship aims at *creating new value* for the firm (component 1). New value (the outcome component of the nexus) can be created by developing new products, services or processes (innovation), by setting up new activities and moving into new markets (venturing) and by renewing the business concept (strategic renewal) (Lumpkin & Dess, 2001; Zahra & Covin, 1995). As such, new value creation is seen as the sum of a company's innovation, venturing and renewal efforts (Zahra, 1995). A *creating process* (component 2) precedes this new value creation. The creating process can be defined as the process through which the company pursues entrepreneurial opportunities. It entails several steps, such as the discovery and recognition of business opportunities, information search and the acquisition and accumulation of resources (Shane & Venkataraman, 2000; Ucbasaran et al., 2001). Finally, an organization as such or an individual or a group of individuals (the creator; component 3) drives the creating process. The corporate entrepreneurship nexus forms the basis of our research model that will be developed in the following section.

4. RESEARCH MODEL AND HYPOTHESES

The research model depicted in Figure 1 aims at exploring innovation as a particular type of newly created value from a human resource-based view. The research model builds on the corporate entrepreneurship nexus discussed on a general level in the previous section. As such, we will now elaborate on how we have operationalized the nexus in view of the focus of this article, leading to the full theoretical model presented in Figure 1.

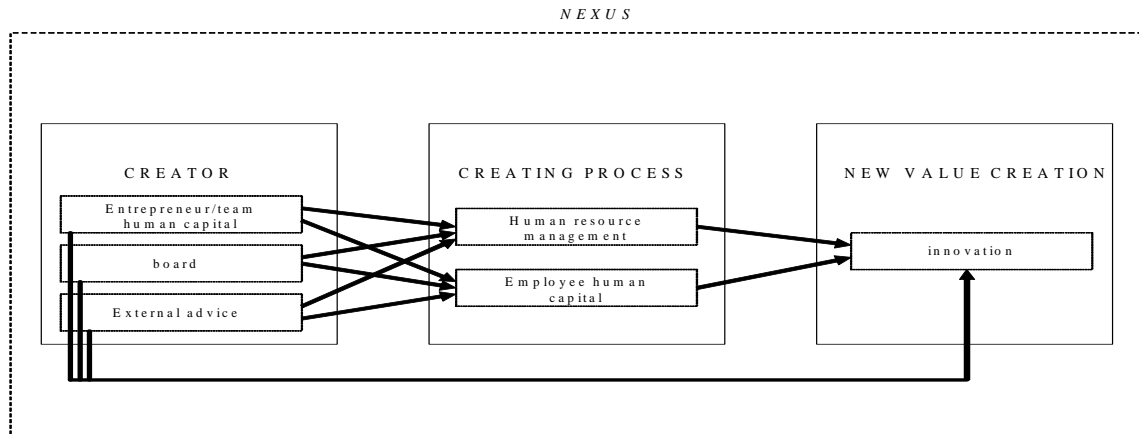


Figure 1. Theoretical model.

4.1. New value creation

In this article, we will focus on the innovation dimension of corporate entrepreneurship since our research population consists of small newly established firms (in their second year of existence). Innovation performance (defined here as improving products, services, production processes and/or supporting processes and as developing new products or services) could prove to be a solid indicator of the degree in which these newly formed firms are able to develop themselves and display a viable business model, thus increasing their chances of surviving the turbulent first years of their existence. After all, innovation embodies the entrepreneurial spirit and stimulates the growth, development and performance capabilities of new firms (Baldwin & Gellatly, 2003; Drucker, 1985; Hsueh & Tu, 2004). In contrast to innovation, we do not study venturing and renewal in this article since renewal and venturing activities may be rather premature in this particular stage of the life cycle. For the same reason also financial performance measures such as profitability may be ill suited as dependent variable in this particular context.

4.2. Creating process

A resource-based view. As discussed earlier, the creating process of corporate entrepreneurship entails several steps, such as the discovery and recognition of opportunities, information search and the acquisition and accumulation of resources (Gartner, 1985; Shane, 2003; Shane & Venkataraman, 2000; Ucbasaran et al., 2001). Put differently, this description suggests that we have to focus on the discovery, acquisition and accumulation of various kinds of resources if we are to understand the process of new value creation by firms. As such, it is intrinsically linked to the resource-based perspective of the firm. This perspective emphasizes firm-specific assets and capabilities as fundamental determinants of different instances of firm performance and wealth creation (Teece et al., 1997). Although originating from strategic management, the resource-based view is also increasingly being used by entrepreneurship scholars to identify and explain persistent performance differences among firms (Barnett et al., 1994; Ireland et al., 2003).

Although researchers have paid attention to resource issues in corporate entrepreneurship in the past, the resource-based perspective has not been adequately applied to corporate entrepreneurship. Most research seems to have concentrated on resource stocks, scarcity/availability or slack resources (e.g. Wiklund, 1999; Zajac et al., 1991). A critical question remains unanswered: how can resources contribute to company performance through corporate entrepreneurial activities (Teng, 2003). Working towards answering this question requires having an eye not only for the resources themselves ('positions'), but also for the management of the resources ('managerial processes') (cfr. infra). The resource-based view implicitly invites this consideration of managerial strategies and practices for developing new competitive advantage and wealth (Ireland et al., 2003; Priem & Butler, 2001; Teece et al., 1997). A growing contingency of scholars acknowledges that resources by themselves rarely

are a source of competitive advantage. They are more likely to be a source of competitive or entrepreneurial advantage if they are used to do something, i.e. if they are exploited through business processes and management practices (Baden-Fuller, 1995; Ray et al., 2004). Or put differently, if they are managed strategically, i.e. structuring the resource portfolio, bundling resources to form capabilities and leveraging these (Ireland et al., 2003). And in our view, it is both the management of the various resources as well as the resource stocks or positions that constitute a core theme of the creating process.

A human resource-based view. Recent innovation studies have moved away from research and development (R&D) centric approaches by focusing more broadly on the diversity of internal activities that help shape the innovation process (Baldwin & Gellatly, 2003). Increasingly, it is recognized that R&D is but one of the many paths to innovation. In fact, activities other than formal R&D may be more appropriate for small newly established firms and service companies. After all, start-ups often cannot afford to establish separate research and development departments (Sundbo, 1999). And in the service sector, innovation consists almost entirely of non-R&D related practices (Baldwin & Gellatly, 2003). Innovation and development in both these types of companies must be done by creative employees coming up with ideas and participating in development work simultaneously.

Obviously, in these circumstances human resources become a resource of crucial importance (Sundbo, 1999). As far as the creating process is concerned in this article, we will therefore focus on this particular type of resources and its management. Of all the managerial processes that can affect the pursuit of corporate entrepreneurial outcomes, human resource management is considered as one of the more vital (Morris & Jones, 1993). A growing number of entrepreneurs and managers recognizes the importance of human resources and their management (HRM) for developing the business. After all, firms increasingly profess

that people are the source of their competitive advantage (Katz et al., 2000). The START 2003 survey (cfr. infra) indicates that more than 45% of the entrepreneurs considers HRM one of the top three of management domains to be developed with priority in order for the newly formed venture to prosper. Effective management of the human resources can spell success or failure of all firms, but especially of the entrepreneurial ones (Katz et al., 2000). As such, the nature of the human resource pool as well as management practices developing it are likely to be conducive to corporate entrepreneurial activity, including innovation.

However, in contrast to the ample attention the human resource pool has received on a more macro-economic level (nationally, globally, and so forth) by for instance the development economics literature, less is known of the relationship between workforce characteristics (employees) and innovation on the firm level. Management researchers have tended to focus more on the effects of workforce management practices and work organization on various measures of company performance, including innovation (Michie & Sheehan, 1999; Shaw, 2004). Without disregarding the importance of human resource management practices, this study also considers the nature or the quality of the firm workforce itself by means of employee human capital. A venture's human resources act as a surrogate indicator of its competence and credibility, affecting the ability to attract other types of resources needed in the innovation, development and growth process (Florin et al., 2003; Pennings et al. 1998). Moreover, as innovation requires the creation, transfer and integration of knowledge (Shadur & Snell, 2002), a highly qualified or educated pool of employees is likely to facilitate innovation as education affects learning and knowledge capabilities (Bartel & Lichtenberg, 1987). Firms that are endowed with better human resources should be more able to effectively plan, troubleshoot and problem-solve, adapt to environmental contingencies, detect new ways to increase benefits and to decrease costs and – last but not least - innovate (Lengnick-Hall,

1992; Snell & Dean, 1992; Youndt et al., 1996). After all, the acquisition and transformation of new knowledge remains a human process (Laursen & Foss, 2003). Recruiting highly qualified employees is an important innovation related practice for small start-ups (Baldwin & Gellatly, 2003). Hence the first research hypothesis:

Hypothesis 1. Innovation is positively stimulated by the level of employee human capital.

As research has been able to demonstrate, organization-level entrepreneurship can be influenced not only by the nature of human resources but also by a large number of HRM-related policies and practices. Human resource management can help entrepreneurs to build a viable business model and secure their organic development (Chandler & McEvoy, 2000). Furthermore, the acquisition and management of the human resources is a very important domain in the discovery and exploitation of entrepreneurial opportunities leading to innovation. A firm's ability to develop new products is inextricably linked to the way in which it organizes and deploys its human resources (Laursen, 2002). Human resource management assists firms to implement their knowledge strategies to generate innovations (Michie & Sheehan, 1999; Shadur & Snell, 2002). The human resource management domain must be developed sufficiently if it is to facilitate innovation. If not worked out intensively enough, it will not stimulate innovative behavior as much as it could. For instance, notwithstanding that poorly developed compensation and performance appraisal systems do not smolder entrepreneurial behavior in established firms, such 'weak' systems may constrain it (Balkin & Logan, 1988). As small, newly formed firms usually work in a less planned, less-formalized way and cannot afford to establish separate research and/or development departments, any development, acquisition or transformation of new knowledge in start-ups depends not only heavily on human resources but also on the way in which these are managed (Hayton, 2003; Sundbo, 1999). The more intense the management of employee human

resources is developed in the firm, the stronger its effect on innovation. Hence the following research hypothesis:

Hypothesis 2. The intensity of the human resource management has a positive effect on innovation.

4.3. Creator

As explained, the ‘creator’ initiating corporate entrepreneurship refers to an organization as such or to an individual or a group of individuals associated with an existing organization. A major part of the available literature focusing on creator aspects of corporate entrepreneurship generally mentions entrepreneur(s) or top management team members as being key creating actors. In the context of small businesses the predictive power of this point of view is expected to be substantial, due to the assumption that small businesses are built around the entrepreneur or owner-manager (Cooper et al., 1994; Peteraf & Shanley, 1997). As such, the knowledge residing in the entrepreneur/entrepreneurial team is deeply embedded in the social context of the firm. This leads to an increase of the tacit component of that knowledge, rendering a firm unique (Dimov & Shepherd, 2005; Spender, 1996). Newly established small firms make no exception to this as characteristics of the entrepreneur or entrepreneurial team are one of the most important categories of factors affecting their entrepreneurial success (Brüderl et al., 1992; Gimeno et al., 1997; Hsueh & Tu, 2004).

Upper echelon theory is very often referred to in studying the value creating role of top management team members. This theory states that an organization and everything that goes on inside is a reflection of its top management (Carpenter et al., 2004; Hambrick & Mason, 1984). Upper echelon theory links observable characteristics such as top management age, tenure, functional track and other career experiences, formal education and management team heterogeneity to the nature of managerial processes and organizational outcomes. Such

demographic variables function as a proxy for the human capital embodied in the entrepreneur or the entrepreneurial or top management team. As most of a firm's knowledge and skills reside in its human capital (including that of the entrepreneur/entrepreneurial team) and as the ability to access and absorb knowledge affects the firm's efforts to create new value (Ireland et al., 2003), it is imperative to include entrepreneur/entrepreneurial team human capital elements (or its proxies) into the research model as creator aspects.

Entrepreneur/entrepreneurial team human capital. Before theorizing on the model links of entrepreneur/entrepreneurial team human capital, it is important to delineate the boundaries of the entrepreneurial team. After all, in upper echelon theory the definition of the top management (or entrepreneurial) team takes center stage, suggesting that the CEO or top management team is not a universally apt unit of analysis (Carpenter et al., 2004). Earlier calls to tailor the unit of analysis to specific research questions have been launched (Pettigrew, 1992). If we are to understand the role of the entrepreneur/entrepreneurial team in small, newly established firms we may want to consider other important actors shaping the behavior and the orientation of the entrepreneur/entrepreneurial team in the restricted sense. One such pivotal actor residing outside of immediate team boundaries is the board of directors (Carpenter et al, 2004; Geletkanycz & Hambrick, 1997). Particularly in those cases where the governance system assigns a number of important tasks affecting firm management and performance specifically to the board, the board should be considered as falling within the boundaries of the entrepreneurial or top management team. Furthermore, founder-managed firms often select alternative governance structures in order for the founder to retain a strong control position (Daily & Dalton, 1993). As such, the board can be an extension of the founder-led management team. Still another source of entrepreneurial knowledge can be found in advice from experts (Vesper, 1996). Such advice has been known to exert a direct

influence on organizational strategy and performance. Moreover, knowledge gained during the early stages of venture development is applied more easily since rigidities constraining adaptation are less frequent (Chrisman & McMullan, 2004). As such, it has been recognized that knowledge residing outside the firm can contribute to the development of innovation (Ireland et al., 2003). This effect is likely to be even more pronounced in small, newly established firms still struggling to develop a viable business model. All things considered, our demarcation of the entrepreneurial team and its human capital includes demographic elements of the entrepreneur/entrepreneurial team in the restricted sense, as well as elements referring to governance and external business advice.

Demographic variables frequently used as proxies for the entrepreneur/team human capital are age, education, industry experience, entrepreneurial and/or management experience (Carpenter et al., 2004; Cooper et al., 1994; Dimov & Shepherd, 2005; Flood et al., 1997; Gimeno et al., 1997; Hoffman & Hegarty, 1993; Hsueh & Tu, 2004; Lyskey, 2004). As Dimov and Shepherd (2005) have made clear, making a distinction between types of education is an interesting way to obtain a fine-grained approach capturing human capital more in depth. In this study we consider both quantitative and qualitative aspects of education: the obtained degree or level of education as well as the type of education (technical- oriented versus management oriented or other). The other demographic variables (age, industry experience and management experience) are studied from the quantitative point of view. All of these variables are used to capture the human capital of the entrepreneur/entrepreneurial team. As far as the board or governance aspects are concerned, we consider the number of board members, the share of independent directors and the number of specific tasks exclusively assigned to fall within board authority scope as interesting variables acting as a source of entrepreneurial knowledge that may lead to innovation. The latter is important since board and management maintain competing goals and agendas next to

assuming distinct roles (Fama, 1980). Looking into the breadth of the task scope exclusively assigned to the board is therefore an apt way of determining the complementary knowledge areas covered by the board. A similar approach is taken with regard to external business advice, taking into account the range of domains for which external advice was called upon. After all, external business advice is often used to fill gaps in entrepreneur/entrepreneurial team knowledge (Chrisman & McMullan, 2004). We refer to the measures section for the specific measures used to capture all of these entrepreneur/entrepreneurial team human capital variables. In what follows, we continue with the development of the specific entrepreneur/entrepreneurial team human capital links in the research model.

Expected effects of entrepreneur/entrepreneurial team human capital. As mentioned, upper echelon theory links entrepreneur/entrepreneurial team variables to the nature of managerial processes and organizational outcomes. Already in the original Hambrick and Mason (1984) upper echelon model, innovation was included as a variable, although not as a performance outcome. But even then it was acknowledged that the particular performance outcomes mentioned were not meant to be exhaustive. As a result, Carpenter et al. (2004) did include innovation as a performance outcome in their stylized model of the upper echelon perspective. Following this view, in this study we will model the effects of entrepreneur/entrepreneurial team characteristics on innovation. Although not from a corporate entrepreneurship nexus point of view, previous research has also examined the top management team – innovation link. For instance, Hoffman and Hegarty (1993) found that executive characteristics influence both product/market and administrative innovations. Flood et al. (1997) noted that top management team age and education have an effect on product pioneering. Both these studies, however, did not focus on small and/or newly established firms. Lyskey (2004) did not find significant results for the managerial variables in his study of determinants of innovative

activity in Japanese technology-based start-ups. On the whole, upper echelon studies are fragmented and inconclusive and have lead to mixed findings (Florin et al., 2003; Reuber & Fisher, 1999). However, it is generally put forward that the entrepreneurial team represents a unique organizational resource ‘position’ affecting performance directly (Daily et al., 2000; Lynskey, 2004). Hence:

Hypothesis 3. The level of entrepreneur/entrepreneurial team human capital has a positive effect on innovation.

Further, entrepreneur/entrepreneurial team human capital can also affect managerial processes. Human capital is a source of knowledge needed to effectively build and use the firm’s financial and other capabilities, such as R&D management and human resource management (Dutta et al., 2002; Lynskey, 2004). After all, the role of the entrepreneur/entrepreneurial team is not only direct, but also more indirect or influential, shaping managerial processes and resource deployments (Hoffman & Hegarty, 1993). Having an eye for these indirect effects of entrepreneur/entrepreneurial team human capital on innovation (via creating process aspects) is likely to improve our understanding of the mechanisms and processes by which entrepreneur/entrepreneurial team elements shape firm outcomes. And the need for such understanding is surging (Carpenter et al., 2004). As such, the entrepreneur/entrepreneurial team human capital is also expected to affect the creating process elements such as resource accumulation (Bates, 1990; Roth, 1995), in this case the nature and the management of employee human resources (cfr. supra). As Borch et al. (1999) noted that certain resource combinations may attract other resources, we can also expect that certain entrepreneur/entrepreneurial team human capital combinations may lead to other employee human resource positions and management practices. This does not only hold for the entrepreneur/entrepreneurial team in the restricted sense, but applies equally to the

entrepreneur/entrepreneurial team in the more elaborated sense, as studied in this article. For instance, board members can facilitate better firm access to important resources (Certo et al; 2001; Deutsch & Ross, 2003). Therefore:

Hypothesis 4. The level of entrepreneur/entrepreneurial team human capital has a positive effect on the level of employee human capital.

Hypothesis 5. The level of entrepreneur/entrepreneurial team human capital has a positive effect on the intensity of human resource management.

5. SAMPLE AND METHODOLOGY

5.1. Sample

Data has been collected by means of the START 2003 survey, financed by the Policy Research Centre “Entrepreneurship, Enterprises and Innovation”. The survey’s targeted respondent was the startup’s CEO or owner(s)/manager(s). The population of this survey consisted of all Flemish for-profit partnerships meeting two conditions: (1) having at least 1 and maximum 49 employees and (2) being in their second year of life in September 2003. The survey yielded data for 637 start-ups (a response rate of 32.5%) on various themes, such as the human capital of owner(s)/manager(s) and employees, ownership structure, strategy and market orientation and management practices in a wide range of functional areas. The population of newly established firms thus demarcated consists of enterprises striving (whether successfully or not) to differentiate themselves from their competitors through innovation and enterprises that do not. In this article we selected only those firms that *try* to differentiate themselves by means of innovation to ensure that innovation is indeed a desired objective for the sample studied (N = 294).

5.2. Measures

Innovation. Innovation was measured by means of an index, composed out of the weighted sum of four dichotomous (0/1) outcome variables (weights mentioned between brackets): innovation w.r.t the supporting processes (e.g. administration) (1), innovation w.r.t. the production process (2), improvement of existing products or services (4) and development of new products or services (8). Innovation has been measured in similar ways (index as a weighted sum) in the past (e.g. Tang & Koveos, 2004). The index ranges from 0 to 15, representing ‘non-innovators’ on one end of the innovation continuum and ‘full innovators’ on the other. The score thus calculated allows us to capture both the nature or type (focus on process or product/service) and the scope (incremental or radical changes, i.e. refinement of existing products/services versus the production of new products/services) of the innovation activities in a single measure. The weights used allow us to account for the transforming degree of the innovation type and scope. The higher the score on this index, the more fundamental or transformational the innovation activity has been.

Employee human capital. The human capital of employees is measured by the percentage of highly skilled employees (i.e. having a degree of formal, higher education of at least bachelor level). We believe this measure to be a good proxy for the amount and level of employee knowledge.

Human resource management intensity. HRM is measured by means of an index, consisting in the sum of eight dichotomous variables referring to HRM practices: (1) the use of valid selection techniques, (2) the presence of an internal labor market, (3) training, (4) the presence of a fixed, yearly training budget, (5) employee participation, (6) performance appraisal, (7) performance related pay and (8) the engagement in competence management with the purpose of knowledge management. Each of these HRM practices can be linked to

knowledge creation or transfer within the firm - a necessary condition for innovation (Lengnick-Hall & Lengnick-Hall, 2003; Shadur & Snell, 2002) - or HRM professionalism. In calculating the index, all eight variables have an equal weight. The index score ranges from 0 to 8 and gives an indication of the extent to which the start-up engages in HRM (HRM intensity).

Entrepreneur/entrepreneurial team human capital. Entrepreneur/entrepreneurial team human capital is operationalized by means of 10 variables: (1) the age of the entrepreneur (or the average age in case of an entrepreneurial team), (2) the share of entrepreneurs having a degree of formal, higher education of at least bachelor level (0-100%), (3) the number of years of experience of the entrepreneur in the industry in which the firm is active (or the average years of industry experience in case of an entrepreneurial team), (4) the number of years of management experience of the entrepreneur (or the average years of management experience in case of an entrepreneurial team), (5) the type of basic education present with the entrepreneur/in the entrepreneurial team: whether or not at least one of the entrepreneurs has a formal degree of a technical oriented basic education (0/1) and whether or not at least one of the entrepreneurs has a formal degree of a management oriented basic education (0/1), (6) the type of supplementary education: whether or not at least one of the entrepreneurs has a formal degree of a technical oriented supplementary education (0/1) and whether or not at least one of the entrepreneurs has a formal degree of a management oriented supplementary education (0/1), (7) the number of board members, (8) the share of independent board members, (9) the number of specific tasks exclusively assigned to the board (list based on the primary functions of the board as described by Monks and Minow (2004)), and (10) the range of areas for which external advice was called upon.

Control variables. The study also includes several control variables believed to be of importance in the context of the operationalized corporate entrepreneurship nexus: (1)

company size (number of employees), (2) industry, (3) an overall index of management professionalism in areas other than HRM and innovation, and (4) company history. Industry is modeled by means of eight sector dummies. The agricultural sector is the point of reference. Industry and company size have to be controlled for since there are likely to be industry and size differences in HRM, innovation and so forth (Laursen, 2002). Management professionalism (excluding HRM, but including other management domains such as purchasing, marketing, ICT, accounting, finance etc.) is important to be included in order to find out if the effect reported is a pure HRM effect, and not a hidden effect of other (than HR) functional domains or management professionalism in general. Company history is particularly important to be taken into account since some newly established partnerships appear to be mere legal transformations of companies that were previously already active instead of de novo start-ups. Since the definition of a start-up depends on the date on which the current legal body was set up, we created a dummy to control for the history of the company activity (1 = de novo start-up ; 0 = start-up as a result of a legal transformation of pre-existing business activity).

6. FINDINGS AND DISCUSSION

Table 1 presents the means, standard deviations and correlations among the study's variables. Structural equation modeling was used to test the research hypotheses formulated earlier. This technique has very rarely been used in entrepreneurship and corporate entrepreneurship research (in only 1% of all cases) (Chandler & Lyon, 2001). Nevertheless, this technique is very appropriate (if not necessary) for testing more complex relationships (direct and indirect effects connected to the nexus concept) and taking into account a series of contingency factors or control variables. The results of the analysis are depicted in Table 2. All goodness-of-fit measures (chi-square, Goodness of Fit Index (GFI), Bentler's Comparative Fit Index, Bentler

& Bonett's Non-normed Index) indicate that the model is supported by the data (Hatcher, 1994). No residuals significantly differing from zero were found, which means that the theoretical model successfully accounts for the actual relationships between the variables.

Effects on innovation. As hypothesis 1 predicts, employee human capital has a strong and positive effect on innovation. The same goes for the intensity of human resource management: in small, newly established firms innovation is stimulated by developing the management of human resources. As such, hypothesis 2 is also confirmed. So, even when controlled for an elaborate series of control variables (including management professionalism and company history), *both* employee human capital and human resource management are to be considered as important elements of the creating process leading to innovation.

TABLE 1
Descriptive Statistics and Correlations (*)

Variable	mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Innovation	5.52	4.53														
2. HRM	2.68	1.85	0.29													
3. Employee human capital	24.55	37.61	0.25	0.25												
4. E/T age	39.32	7.12	-0.06	-0.12	0.08											
5. E/T education level	0.48	0.46	0.11	0.30	0.49	0.05										
6. E/T industry experience	13.61	7.73	-0.07	-0.21	-0.10	0.60	-0.08									
7. E/T management experience	10.31	6.95	-0.06	-0.17	0.02	0.66	-0.04	0.61								
8. E/T basic education type: technical	0.60	0.49	0.05	-0.02	-0.07	0.01	-0.20	-0.01	-0.04							
9. E/T basic education type: management	0.39	0.49	0.00	0.04	0.03	-0.09	0.20	-0.09	-0.05	-0.40						
10. E/T suppl. education type: technical	0.24	0.43	0.04	-0.01	-0.06	-0.12	-0.11	-0.03	-0.02	0.17	0.04					
11. E/T suppl. education type: management	0.40	0.49	0.09	0.08	0.11	-0.01	-0.05	-0.09	0.02	0.17	0.01	0.23				
12. Number of board members	2.61	1.42	0.10	0.24	0.10	-0.02	0.12	-0.11	-0.08	0.17	0.02	0.08	0.20			
13. Share of independent board members	0.17	0.32	0.11	0.11	0.05	0.09	0.17	0.04	0.03	0.02	0.02	0.02	0.02	0.35		
14. Number of tasks excl. assigned to board	2.66	3.61	0.06	0.29	0.26	0.08	0.17	-0.01	0.10	-0.16	0.23	0.02	0.10	0.21	0.13	
15. Range of advice areas	3.31	1.65	0.19	0.23	0.04	-0.10	-0.06	-0.07	-0.09	0.05	0.08	0.04	0.06	0.11	-0.09	0.06

(*) Correlations greater than or equal to 0.15 are significant ($p < 0.05$)

Note: "E/T" stands for "Entrepreneur/entrepreneurial team"

N = 181 (due to missing values 113 of the 294 observations were omitted from the analyses)

TABLE 2

Standardized Path Coefficients

	Path from ... to ...	Innovation	HRM	Employee human capital
HRM	HRM	0.19 **	/	/
Employee human capital	Employee human capital	0.20 ***	/	/
	E/T age	-0.01	0.02	0.09
	E/T education level	-0.08	0.12 *	0.45 ****
	E/T industry experience	0.11	-0.10	-0.18 **
E/T human capital	E/T management experience	-0.07	-0.16 **	0.02
	E/T basic education type: technical	-0.01	0.03	-0.06
	E/T basic education type: management	0.01	-0.03	-0.18 ***
	E/T supplementary education type: technical	0.03	-0.01	0.04
	E/T supplementary education type: management	0.03	0.05	0.09
	Number of board members	0.00	0.08	-0.03
Board	Share of independent board members	0.08	0.07	-0.07
	Number of tasks excl. assigned to board	-0.06	0.15 **	0.05
External advice	Range of advice areas	0.07	0.12 *	0.08
	Company history	0.12 *	-0.05	0.05
	Company size	-0.11	0.20 ****	-0.07
	Management professionalism	0.15 *	0.36 ****	0.19 ***
	Heavy industry	0.12	0.00	-0.05
Control variables	Construction	-0.19	-0.01	-0.03
	Wholesale and retail	-0.09	-0.06	-0.01
	Catering	0.09	0.06	-0.10
	Transportation and communication	-0.02	0.07	-0.06
	Financial services	-0.08	0.00	0.04
	Personal and health services	-0.03	0.18 **	-0.08

Note: "E/T" stands for "Entrepreneur/entrepreneurial team"

* p < 0.10 ** p < 0.05 *** p < 0.01 **** p < 0.001

N=181; chi-square (p-value) 0.63; Goodness of Fit Index (GFI) 1.00; Bentler's Comparative Fit Index 1.00; Bentler & Bonett's Non-normed Index 1.20

As such, it is confirmed that the development, acquisition or transformation of new knowledge (innovation) in small newly established enterprises depends not only on the human resource pool (the ‘position’ aspect of the resource-based view) but also on the way in which these human resources are managed (‘managerial process’) (Baldwin & Gellatly, 2003; Hayton, 2003; Laursen & Foss, 2003; Sundbo, 1999; Youndt et al., 1996).

No support has been found for hypothesis 3. As such, there are no direct effects of entrepreneur/entrepreneurial team human capital (including board/governance and external advice) on innovation. This implies that the direct ‘resource position’ aspect of the entrepreneur/entrepreneurial team human capital is not confirmed here. In other words, creator aspects do not directly lead to new value creation. In this respect, hypotheses 4 and 5 gain importance as to verify whether entrepreneur/entrepreneurial team human capital has an effect on HRM and/or on employee human capital, since the latter strongly affect innovation. Or, put differently, it is important to verify whether the ‘managerial process’ side of the entrepreneur/entrepreneurial team human capital – innovation link holds.

Effects of entrepreneur/entrepreneurial team on HRM/employee human capital.

Hypothesis 4, assuming a positive effect of entrepreneur/entrepreneurial team human capital on employee human capital, is partially supported. Human capital aspects of the entrepreneur/entrepreneurial team in the restricted sense have an effect on employee human capital. More precisely, the entrepreneur/entrepreneurial team education level has a strong and positive influence on the nature of employee human capital. Consequently, this aspect of entrepreneur/entrepreneurial team human capital follows what hypothesis 4 has put forward. However, entrepreneur/entrepreneurial team industry experience and a management oriented basic education affect employee human capital in a negative sense. This runs counter to what has been hypothesized. Furthermore, effects of governance and external advice on employee

human capital are absent. As such, the human resource pool ('position view') is only affected by the entrepreneur/entrepreneurial team in the restricted sense.

Stronger support has been found as far as hypothesis 5 is concerned. Human capital aspects of the entrepreneur/entrepreneurial team in the restricted sense as well as governance issues and external business advice have an effect on human resource management. Again, as with hypothesis 4, the entrepreneur/entrepreneurial team education level has a positive influence. The same goes for the number of tasks exclusively assigned to the board (governance) and the range of areas business advice was called upon. As such, appealing to business advice and allowing strong board involvement stimulate the development of an intensive human resource management system. However, the numbers of years of management experience affects HRM intensity in a negative sense. Concluding, human resource management ('managerial processes view') is affected by the entrepreneur/entrepreneurial team in the restricted sense and by governance and business advice aspects, thus by the entrepreneur/entrepreneurial team in the more elaborated sense.

As we recall, no support has been found for Hypothesis 3, suggesting that there are no direct effects of entrepreneur/entrepreneurial team human capital on innovation. However, since some of these categories of variables have proven to affect HRM and/or employee human capital (which in their turn influence innovation), it is worthwhile mapping the indirect effects of these specific entrepreneur/entrepreneurial team human capital variables on innovation (via HRM and/or employee human capital). Afterwards, this will allow us to calculate the total effects of these variables on innovation. A parallel exercise can be done for the control variables affecting HRM. Table 3 reflects the results.

Table 3 shows us that, while there are no significant direct effects of entrepreneur/entrepreneurial team human capital variables on innovation, total effects of such

variables can be discerned, due to the existing indirect effects (via HRM and employee human capital). More specifically, we notice that entrepreneur/entrepreneurial team management and industry experience and a management oriented type of basic education have a negative total effect on innovation. The level of education on the other hand has a positive total effect on innovation. The same goes for the number of tasks exclusively assigned to the board and for the range of advice areas.

TABLE 3**Indirect and Total Effects on Innovation**

Variable	Indirect effect	Total effect
HRM	/	0.19
Employee human capital	/	0.20
E/T age	0.00	0.00
E/T education level	0.11	0.11
E/T industry experience	-0.04	-0.04
E/T management experience	-0.03	-0.03
E/T basic education type: technical	0.00	0.00
E/T basic education type: management	-0.04	-0.04
E/T supplementary education type: technical	0.00	0.00
E/T supplementary education type: management	0.00	0.00
Number of board members	0.00	0.00
Share of independent board members	0.00	0.00
Number of tasks excl. assigned to the board	0.03	0.03
Range of advice areas	0.02	0.02
Company history	0.00	0.12
Company size	0.04	0.04
Management professionalism	0.11	0.26
Heavy industry	0.00	0.00
Construction	0.00	0.00
Wholesale and retail	0.00	0.00
Catering	0.00	0.00
Transportation and communication	0.00	0.00
Financial services	0.00	0.00
Personal and health services	0.03	0.03

Note: "E/T" stands for "Entrepreneur/entrepreneurial team"

Other effects. Table 2 also reveals that several control variables have significant associations with innovation and/or HRM and employee human capital. First, management professionalism in general (excluding HRM) and being a de novo start-up (company history) stimulate innovation. Second, management professionalism in general is positively connected to HRM and employee human capital, suggesting that the degree of development of HRM goes hand in hand with the development of management in a series of other professional areas (purchasing, marketing, ICT, accounting, finance and so forth). Third, company size and HRM intensity are positively related. Fourth, as indicated earlier, our study allows for inter-industry comparisons. Compared to the point of reference (agricultural sector), HRM intensity is significantly more developed in the sector of personal and health services. Indirect and total effects of the control variables are demonstrated in Table 3.

On the whole, the results of the analyses indicate that entrepreneur/entrepreneurial team and employee human capital are important resources and that HRM is a significant managerial process in pursuit of corporate entrepreneurial outcomes such as innovation. The model tested here accounts for 26% of the total variability in innovation, 39% of the total variability in employee human capital and for 45% of the total variability in HRM. The results also show that all three nexus components (creator, creating process and new value creation) are highly relevant in studying innovation through a corporate entrepreneurship lens. After all, pure (direct) creator effects on innovation could not be discerned. However, the creator does affect the creating process, which in its turn leads to new value creation such as innovation.

7. CONCLUSION

The study presented here explores innovation as a corporate entrepreneurial outcome in recently established small firms. More precisely, we explore the role of upper echelon and employee human capital and human resources management as determinants of innovation. Our approach builds on a ‘human resource’-based view, stressing the importance of (1) entrepreneur/entrepreneurial team (‘upper echelon human resources’) and (2) employee human resources and their management in determining the innovation performance of start-ups. The results indicate that both types of human capital do matter in the context of start-up innovation. First of all, employee human capital and HRM have a strong positive effect on innovation. Second, while we could not trace direct effects of entrepreneur/entrepreneurial team human capital on innovation, indirect effects (via HRM or employee human capital) of for instance education level and business advice are indisputably present.

7.1. Implications for managerial practice

All things considered, the study learns us that valuing human resources in start-ups can contribute to a considerable extent in preserving their innovation performance, thus stimulating their chances of building a viable business model and safeguarding future growth and further development. As a consequence, newly established firms should pay a lot of attention to their human resource pool (both upper echelon and employee) and capitalize on the knowledge and expertise present in the human resource pool through effective and efficient HRM practices. Given that human capital is a pivotal source of knowledge needed to effectively build and use the firm’s financial and other management capabilities, start-ups should be very much concerned with both the composition and the management of their human capital.

7.2. Implications for theory and future research

This study contributes to innovation and corporate entrepreneurship research in several respects. First, in studying innovation through a corporate entrepreneurship research lens, it builds on a new, recently developed theoretical framework (Maes, 2003; Shane, 2003; Shane & Venkataraman, 2000). After all, the nexus idea of corporate entrepreneurship emerged only very recently in entrepreneurship theory (Shane & Venkataraman, 2000). Second, the study focuses on the importance of human capital and human resources and the way in which they are managed. As such, it builds a bridge between the fields of (corporate) entrepreneurship and HRM, a combination largely overlooked in past research. Third, the article aims at a more thorough (albeit focused) application of the resource-based perspective on corporate entrepreneurship (innovation), considering both resource positions and managerial processes. Fourth, the approach taken in this article uses a new, situation-tailored demarcation of the entrepreneurial team, including aspects of governance and business advice. As such, it can also contribute to the upper echelon research stream. Fifth, this article looks at innovation in Flemish² start-ups, building on a cohort of nearly 300 firms. As such, it complies with the call for greater diversity in the geographic scope of corporate entrepreneurship research. After all, the vast majority of research on firm-level entrepreneurship has been conducted in the United States or by researchers working in U.S.-based universities (Zahra et al., 1999a). Moreover, the study is also quite unique in targeting newly established firms. Until now, most empirical research on corporate entrepreneurship or innovation seems to have been concentrating on larger, mature corporations. Seventh, compared to previous corporate entrepreneurship research in which 85% of the companies researched were manufacturing companies (Zahra et

² Flanders is one of the states of the federacy of Belgium.

al., 1999a), this approach brings a greater diversity in industry scope and allows inter-industry comparisons. And last but not least, this article uses structural equation modeling as an analytical technique. This particular technique has very rarely been used in entrepreneurship and corporate entrepreneurship research (in only 1% of all cases) (Chandler & Lyon, 2001). Nevertheless, this technique is very appropriate (if not necessary) for testing more complex relationships (direct and indirect effects connected to the nexus concept) and taking into account a series of contingency factors or control variables.

7.3. Limitations

The study presented here also faces a number of limitations. First, while the study allows testing the nexus idea of corporate entrepreneurship in some extent, it does not capture the full complexity of this type of research. By focusing solely on HRM and employee human capital as elements of the creating process (albeit under control of an index of overall management professionalism) it disregards other important aspects of the creating process, such as other types of resources and their management, both tangible (e.g. financial resources) as well as intangible (e.g. social and intellectual capital). Similar remarks can be made with regard to the creator aspects investigated. As such, future research should keep an open view on the filling-in of the research model in order to try to open the black box and answering 'why' questions, thus also considering other and, preferably, more types of creating process and creator elements. Additionally, the corporate entrepreneurship nexus should also be studied in its environment. In this article we have focused on the nexus as a stand-alone, suppressing environmental influences that have proven to be of importance (Zahra, 1993) as well as ignoring performance outcomes and contingent factors such as strategy. At this point in time, the study can therefore not comply with the call for additional studies focusing on the complex relationships between organizational antecedents of corporate entrepreneurship,

external environment, business strategy and financial and non-financial organizational performance (Ucbasaran et al., 2001; Zahra & Covin, 1995; Zahra et al., 1999a). Third, the study must go even further in adding control variables. While this article did control for important aspects such as company size and history (although the sample applies to start-ups being one year of age and having between one and 49 employees), it should also take into account a control variable for the founding environment. After all, this is likely to affect the development, intensity or professionalism of many managerial processes. Consider for example the probable differences on that matter between a de novo start-up founded by a single, non-serial entrepreneur and a de novo start-up established as a new venture by a multinational corporation. Fourth, although the study is quite unique in targeting non-U.S. start-ups, one should be careful in generalizing the results to other non-U.S. and U.S. states or regions. Further comparative/international research is needed to map the experiences of firms outside Flanders.

All of this, however, heightens the complexity of the research setting in a field still struggling with its basic constructs. Although this type of research would be very welcome, it might be premature at this point in time since the development of the theoretical frameworks on which it has to be built seems to be lagging behind. Such a framework can only be developed on a step-for-step basis whereby evidence-based theoretical advancements are alternated with empirical tests, by means of which theory can be further adjusted and so forth. By means of this article we hope to have taken a first step.

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