

Entrepreneurial Orientation

Multilevel analysis and Consequences

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Entrepreneurial Orientation

Multilevel analysis and Consequences

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Multi-Level analyses en Consequenties

(met een samenvatting in het Nederlands)

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Prof. dr. F.C. Stam

Voor mijn ouders

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1. Introduction

The creation of organizational wealth and firm growth are considered to be important organizational goals. In practice, however, many firms fail to maximize their own economic potential and experience severe problems even while trying to meet their own strategic objectives or financial targets. For some firms, these problems are caused by strong international competitors that enter the market; due to fading physical borders and globalization in a more general sense. Other firms may experience problems with the increasing degree of technological developments and/or are unable to strategically position/reinvent themselves in order to adapt to changing market conditions (Krueger 2000). Although such problems are not new in themselves, the speed at which changes in both the operating environment of the firm and society at large take place, has increased over the last decades. Organizations are therefore forced to implement new organizational processes, new organizational structures and novel managerial strategies, but also need to invest in new products, services, markets and, in a more general sense, need to create a more flexible organization that is able to cope with these rapid changes (see, *e.g.*, Ireland *et al.* 2003).

In order to prosper and survive, established organizations must adopt what Covin and Slevin (1989) have called an 'entrepreneurial orientation', *i.e.* a strategic focus on new opportunities and a willingness to move beyond existing competencies and company resources. Entrepreneurial orientation (EO) is distinguished from entrepreneurship, which is usually studied in relation to new entry, by its focus on the processes, practices, and decision-making activities that define an organization as entrepreneurial (Lumpkin and Dess 1996). Through a continuous and systematic search for new opportunities and entrepreneurial processes, EO infuses established and/or large organizations with the flexibility and innovativeness that is commonly associated with small (entrepreneurial) organizations. The implementation of an EO strategy in established organizations, on the other hand, creates difficulties as organizations, and large organizations in particular, are usually unsuitable environments for entrepreneurial behavior (Burgelman 1983b; Busenitz 1999). Apart from the problems associated with the implementation of entrepreneurial behavior, research sometimes fails to establish a clear relationship between EO and organizational performance (Wiklund and Shepherd 2005). This dissertation will provide insights on: 1) how managers can implement EO within their organization, 2) under which market conditions an EO strategy is likely to be successful, and 3) investigates the value of EO at different hierarchical levels of the firm. For this purpose, the present dissertation makes use of a multilevel approach in combination with quantitative research designs and different statistical techniques.

1.1 Positioning EO within strategic management and corporate entrepreneurship literature

Entrepreneurship and entrepreneurial behavior are usually associated with individuals and the creation of new organizations by those individuals. Entrepreneurship, within this more populist view, is therefore directly related to business ownership and starting new businesses. EO, on the other hand, reflects the organizational processes, methods and styles that firms use to act entrepreneurially (Lumpkin and Dess 1996, p. 139). The

study of EO therefore belongs to the broader field of corporate entrepreneurship (CE), which studies entrepreneurial behavior in and by established organizations (Sharma and Chrisman 1999). The theoretical basis for CE can be traced back to the works of Joseph Schumpeter, who was one of the first to relate entrepreneurship not just to business ownership but also to established firms, non-profit organizations, and other type of institutions. Schumpeter (1934), in this respect, states: "We call entrepreneurs not only those 'independent' businessmen in an exchange economy who are usually so designated, but all who actually fulfill the function by which we define the concept, even if they are, as is becoming the rule, 'dependent' employees of a company, like managers, members of boards of directors,... As it is the carrying out of new combinations that constitutes the entrepreneur" (p. 74).

At the heart, EO is an orientation towards identifying and acting on opportunities, regardless of existing resources (Stevenson and Jarillo 1990). EO emerges from a strategic-choice perspective (Child 1972), and the study of EO is strongly related to that of entrepreneurial management (Stevenson and Jarillo 1990; Hitt *et al.* 2002). Through its focus on the process of entrepreneurship in established organizations, EO can be studied analogous to CE. However, where CE refers to individuals who exhibit entrepreneurial behaviors within an established organization (Sharma and Chrisman 1999), EO usually reflects a firm's overall tendency to respond to challenges in an entrepreneurial manner (Miller 2011). In the context of larger and/or established organizations, such a focus on the firm level seems appropriate, as (groups of) individual(s) commission such behaviors on behalf of an organizational entity. It is this focus on the overall firm level or strategic business unit level, which sets EO research apart from CE.

The study of EO and related concepts that discuss the overall tendency of firms to respond to challenges in an entrepreneurial manner, is closely related to the field of strategic management. Strategic management literature is based upon the notion that an alignment between the organization's internal strengths and offerings and the opportunities and threats in the external environment, creates a competitive advantage. This competitive advantage can, in turn, lead to superior and sustainable financial results when it is built upon: 1) a unique bundle of resources (the resource based view of the firm) (Wernerfelt 1984; Barney 1991), 2) a unique position within a particular industry (strategic positioning models) (Porter 1980, 1996), 3) an ability to renew strategic resources (dynamic capabilities) (Teece and Pisano 1994; Teece *et al.* 1997), or 4) an ability to assimilate external knowledge and apply it to commercial ends (absorptive capacities) (Cohen and Levinthal 1990). However, where strategic management literature focuses on the transformation of opportunities into (sustainable) competitive advantages through, *e.g.*, strategic planning activities, EO refers to the processes and decision making activities that lead to the identification of such opportunities (Ireland and Webb 2007). This intersection between the field of strategic management and EO (or related concepts) has been recently labeled 'strategic entrepreneurship' since it deals with the exploitation of internal strengths (strategic management), which result from the continuous efforts to explore opportunities (entrepreneurship) (Kraus *et al.* 2011). Therefore, EO complements much of the work in strategic management literature through its focus on process of opportunity

recognition, on which (sustainable) competitive advantages can be build (Ireland *et al.* 2003; Alvarez and Barney 2007; Teece 2007).

1.2 The concept of EO

EO research originates from the work of Miller (1983), who linked different types of organizational configurations (simple firms, planning firms and organic firms) to the degree of entrepreneurial behavior in these firms. His measure of entrepreneurship, that consisted of a combination of risk taking, innovativeness and proactiveness, was adapted, modified and relabeled as EO by Covin and Slevin (1989) in their study on strategic management in hostile operating environments. After the 1989 publication of Covin and Slevin, more and more studies adapted EO as the primary measurement scale for entrepreneurship in both large and/or established organizations. Within EO, a firms' innovativeness reflects the predisposition to engage in creativity and experimentation (through R&D) and the introduction of new goods, services and production methods (Rauch *et al.* 2009). The level of pro-activeness within a firm refers to the processes which are aimed at seeking new opportunities, the introduction of new products and brands ahead of competition and strategically eliminating operations which are in the mature or declining stages of the life cycle (Venkatraman 1989, p. 949). Since entrepreneurial activities are always subject to (business) risks (Knight 1921), the element of risk taking within EO reflects the level of uncertainty that results from a firms' entrepreneurial activities (Low and MacMillan 1988). As EO reflects the tendency of firms to respond to changes and opportunities in the operating environment in an entrepreneurial manner, as well as the managerial disposition towards entrepreneurship, EO is usually measured by asking the owner, CEO or CFO to fill in a series of statements regarding risk taking, proactiveness and innovativeness.

At first, EO was primarily used as a measurement instrument to gauge the level of entrepreneurship within a firm. Barringer and Bluedorn (1999), for instance, used the EO scale, as developed by Covin and Slevin (1989), to operationalize the level of CE within a firm. In later years, more and more studies started to focus primarily on EO instead of CE and EO slowly became a research field on its own. Research by Covin and Lumpkin (2011) even shows that, as of 2008, more studies have been dedicated to the concept of EO than the broader field of CE. Given the number of studies dedicated to EO, the specific focus on firm or top-management level of the organization and the context in which an EO strategy is deemed most successful (turbulent environment), EO can be seen as a distinct stream of literature within the broader field of CE that discusses how existing organizations can deal with uncertainty and change within the operating environment. Theoretically, the field of EO is, however, still relatively underdeveloped and there is a need to study how EO comes into existence, how it can be leveraged through internal organizational processes, and a need for more detailed findings on the value of EO in different industries and contexts (Miller 2011).

1.3 The management of EO

Recently, EO has been described as a performance-variance enhancing strategic orientation instead of a performance-mean improving strategic orientation (Hakala 2011; Wiklund and Shepherd 2011). Under this notion, EO would not per se improve

the performance of firms on average but rather creates more extreme financial outcomes; positive as well as negative. Although Morris *et al.* (2008) emphasize that the element of risk taking in EO reflects calculated risks and should not be understood as reckless behavior, firms can suffer substantial losses when inventions, strategic repositioning or new business ventures fail. Where the capital asset pricing model and modern portfolio theory puts forth that risk taking is acceptable behavior for investors when these risks can possibly lead to higher returns and when risk can be diversified (see Markowitz 1952). Firms, and small and medium sized enterprises (SMEs) in particular, have fewer opportunities to diversify risk; thus making them more vulnerable when engaging in risk taking behaviors. Higher levels of managerial risk taking is therefore expected to result in either higher returns or bigger losses and EO may enhance the chances of business success, as well as the chances of business failure. Risk taking, however, is not the only element in EO that can result in both positive and negative outcomes. Literature on ambidexterity (*e.g.*, He and Wong 2004; Jansen *et al.* 2006), argues that firms should find a balance between opportunity exploration and exploitation. Depending on the situation at hand or the context in which a firm has to operate, this balance may shift more towards exploration or exploitation (Raisch and Birkinshaw 2008). A relentless focus on innovation is therefore unlikely to be equally successful for firms of different sizes, that operate in different markets and that produce different type of products. In similar vein, different results can be expected when firms engage in proactive firm behaviors. The extent to which EO is successful is therefore heavily dependent upon the context in which a firm operates and managers should carefully manage the business risks that are associated with EO.

1.3.1 Creating an entrepreneurial organization

Besides the need to carefully manage the business risks associated with EO in different situations, companies experience difficulties in creating an organization that is supportive of EO. Although top managers may possess a very strong EO, opportunities often have to be explored by lower level managers or non-managerial employees. This difference between the implementation of an EO strategy at top management level and the willingness of employees to pursue such strategies has also been labeled as the 'crux' of entrepreneurial management (Stevenson and Jarillo 1990). Intrapreneurship literature specifically focuses on the importance of entrepreneurial behaviors initiated by employees and how such behaviors can be stimulated within an organization (Pinchot 1986; Kanter 1988). Although the focus on employee-initiated entrepreneurial activities has also been criticized for having a relative small impact on the subsequent financial performance of organizations (Day 1994), there is a growing consensus that employees play a key role in the effective translation of an EO strategy into day-to-day operations (Wales *et al.* 2011; Wiklund and Shepherd 2011). A successful implementation of EO, for instance, might require radical product innovation and the pursuit of entrepreneurial opportunities. Employees or lower level managers, on the other hand, may be unwilling to depart from their everyday operations, since they do not see the benefits of entrepreneurial projects, or may experience severe problems while trying to implement such projects on top of their regular tasks. Therefore, tensions arise between, on the one hand, the amount of autonomy, flexibility and consideration of individual input that is needed to stimulate entrepreneurial behavior amongst employees and, on the other hand, the procedures, efficiency and hierarchy

that is needed within the production process. These interrelations between the organizational culture and the prevalent organizational structure (hierarchical relations, job design, procedures, etc.), highlights the links between EO, intrapreneurship research and the field of organizational behavior (OB). The inclusion of individual level theories of human behavior is therefore needed to enhance our understanding of the process of EO. Managers who want to pursue an EO strategy will regularly face difficult choices when it comes to the changes that have to be made and EO research has, so far, paid little attention to the organizational processes that are needed at employee level in order to stimulate EO throughout the organization or the contributions of non-managerial employees to the process of EO.

1.4 Main objective

The main objective of the present dissertation is to further our understanding of the EO concept by examining the value of EO within different settings, by examining the value of EO at different (organizational) levels and examining what factors influence the development of EO amongst individual employees. The present dissertation aims to contribute to the existing literature on EO in two different ways. The first contribution concerns the examination of the value of EO within specific settings. While EO research has often taken contextual factors like environmental hostility and dynamism into account as independent or moderating variables, it has often ignored to what extent the relevance of EO is bounded to certain contexts. Therefore, there is a need to test how and to what extent EO matters for organizational performance in different contexts, necessitating more in depth and comparative studies (Covin and Lumpkin 2011; Dess *et al.* 2011; Miller 2011; Runyan *et al.* 2012).

The second contribution is the analysis of individual employees' EO. Pro-activeness, risk-taking and innovativeness are often regarded as organizational-level constructs in the EO literature, while their conceptual basis can be found in individual level studies in economic and organizational psychology. This dissertation does not exclude this individual level of analysis, like most EO and related corporate entrepreneurship studies have done in the past, but includes both the organizational-level and individual level of analysis, which also brings it closer to intrapreneurship studies (see Antoncic and Hisrich 2001; Bosma *et al.* 2011). Although there has been a sharp increase in the number of organizational-level EO studies (Covin and Lumpkin 2011), only few studies address how an EO is created within an organization or investigate the value of an EO at employee level (Dess *et al.* 2003; Wales *et al.* 2011).

1.5 Research model and questions

Given the main objective and intended contributions of the present dissertation, four research questions are formulated. Two of these research questions address the value of EO at organizational level in different contexts (Q I and II), one addresses the value of EO at employee level (Q III), and one addresses how organizations can stimulate entrepreneurial behaviors amongst their employees (Q IV). Together, the four research questions can be combined into one research model (see Figure 1.1). In this multilevel model, the organization seeks to establish a fit between, on the one hand, the level of EO and the level of turbulence in the operating environment and, on the other hand, a

fit between the level of EO and the underlying structural parameters of the industry. Next to these organizational level research questions, the individual level research questions in the model specify that the organization is influenced by the entrepreneurial actions of employees and that the organization is able to influence the degree of entrepreneurial behavior by its employees. The operating environment of an organization is, within this multilevel research design, defined as the macro level, while the organization and the individuals/teams that work within the organization are defined as, respectively, the meso and micro level.

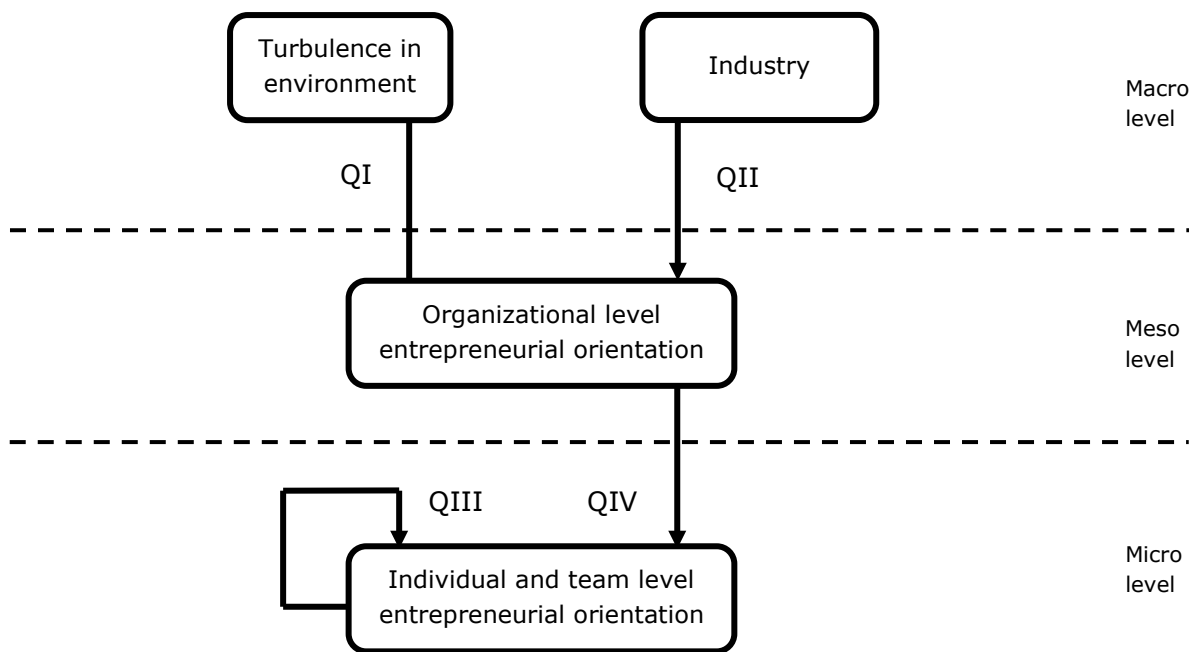


Figure 1.1: Research model

Organizational level research questions

- I *How does EO contribute to the financial performance of SMEs in turbulent and hostile operating environments?*
- II *To what extent is EO of equal importance for organizational performance in service firms and manufacturing firms?*

Individual level research questions

- III *To what extent does EO at employee and team level contribute to workplace performance?*
- IV *To what extent does the formal and informal work context influence the level of employee EO and intrapreneurship within organizations?*

Below, these four different research questions are described in greater detail.

Research question I:

How does EO contribute to the financial performance of SMEs in turbulent and hostile operating environments?

According to, amongst others, Shane and Venkataraman (2000) and Zahra (2007), the development of a collective body of knowledge within the field of entrepreneurship has, so far, been limited due to a lack of agreement on what constitutes as entrepreneurship. Although EO research has been one of the few areas within the entrepreneurship literature in which a cumulative body of knowledge has been developing (Rauch *et al.* 2009), there is still a need for more detailed contextual findings as well as a more coherent approach to the study of EO (Miller 2011). One of the traditional and most common topics of EO research is the moderating effect of environmental conditions on the EO – performance relationship (Covin and Lumpkin 2011). Studies by *e.g.* Covin and Slevin (1989) and Wiklund and Shepherd (2005) have shown the importance of an entrepreneurial mind-set within enterprises when operating in rapidly changing, competitive and hostile environments. Researchers therefore generally agree that in an era where product lifecycles are frequently shortening, industry boundaries are changing continuously and competitive advantages are characteristically unstable, EO has proven to be a useful construct for the purpose of understanding why some organizations are able to regularly renew themselves (Morris *et al.* 2011). However, further research is needed to deliver detailed contextual findings on which EO strategies are important when small and medium sized enterprises (SMEs) are confronted with changing and hostile operating environments. SMEs are used as the object of study as they are more resource–constrained, as opposed to large companies, and are therefore likely to be even more dependent on EO to survive on the short run than large organizations.

Research question II:

To what extent is EO of equal importance for organizational performance in service firms and manufacturing firms?

The need for a more nuanced approach stems from studies that report mixed or insignificant findings (*e.g.*, Covin *et al.* 1994; George *et al.* 2001) and leads to a call for more comparative studies and the necessity to test the boundary conditions of EO. EO research has, so far, used very specific samples, relatively small sample sizes and has applied inappropriate statistical models to address the specific research questions at hand. This, in return, has led to fragmentation regarding the understanding and portraying of the concept (George and Marino 2011; Miller 2011; Slevin and Terjesen 2011; Covin and Wales 2012). EO studies have mainly focused on the difference between a stable and unstable operating environment, but the role of the underlying industrial structural parameters has, so far, been widely neglected. By focusing on the difference between service firms and manufacturing firms, a shift in EO research from the traditional high-tech and manufacturing sectors towards the service industry is made. The service industry distinguishes itself from the manufacturing industry through the intangible nature of its offering and, although service firms account for the majority of firms in most Western economies, entrepreneurship research in this area has been scarce (Dobón and Soriano 2008). Given the difference in nature of the offerings and the lack of research in this area (see Kraus 2013), it is uncertain whether the EO–performance relationship is of equal magnitude in service and manufacturing firms. Given the importance of statistical modeling when making comparisons between

groups, particular attention is paid to the statistical techniques that are needed for such comparisons. Within this study, structural equation modeling is used in order to develop a statistical model of EO that is more suitable for cross industry and cross country comparisons of the EO–performance relationship.

Research question III:

To what extent does EO at employee and team level contribute to workplace performance?

Although the vast majority of research focuses at the organizational level antecedents and outcomes of EO, EO can be present at every hierarchical level within an organization (Monsen and Boss 2009), and an increasing number of studies recognize the value of entrepreneurial behavior by individual employees (employee EO) for the process of EO (e.g., Wales *et al.* 2011; Wiklund and Shepherd 2011). Employee EO differs from organizational–level EO in the following sense: where an organizational EO refers to the process, practices and decision making activities within a company (measured at top management level), employee EO relates to the individual employee and is about bottom-up work related initiatives of individual employees. Employee EO and organizational level EO, thus, share many key characteristics such as taking initiative, the pursuit of opportunity and some element of newness. Key behavioral aspects of employee EO are: personal initiative, pro-activeness, active information search, out of the box thinking, voicing, championing, taking charge, finding new ways to solve existing problems and some degree of personal (e.g., career) and business (e.g., financial) risks (Pinchot 1986; Kanter 1988; Lumpkin 2007; Parker and Collins 2010). Empirical research that focuses on the impact of entrepreneurship on the performance of individual employees is just getting started (see De Jong *et al.* 2011; Wawoe and Stam 2012), and very few studies also take subsequent consequences, like improved team and organizational performance, into account. It is therefore unclear to what extent employee EO contributes to performance in a broad sense, and this study seeks to deliver initial empirical evidence in this area of EO research.

Research question IV:

To what extent do the formal and informal work context influence the level of employee EO and intrapreneurship within organizations?

An EO at the top-management level of public and private organizations often does not result in entrepreneurial behaviors amongst employees, due to organizational constraints. Organizations and large organizations in particular, are often not suitable environments for entrepreneurial behavior (Burgelman 1983b; Busenitz 1999), and disagreements between employer and employee are a major reason why many entrepreneurial employees leave their employer and start their own independent business (Klepper and Thompson 2010). Intrapreneurship refers to initiatives by employees to undertake new business activities within their employer’s organization. Intrapreneurship thus belongs to the domain of employee behavior and, consequently, faces specific limitations that a corporate hierarchy and an intra-organizational context

may impose on individual intrapreneurs, as well as specific means of support that an existing business may offer to an intrapreneur.

Research usually focuses on the informal work context and suggests that entrepreneurial orientation within established organizations require a culture that stimulates risk-taking, innovation and proactiveness (Morris *et al.* 1994). Although a large number of theoretical papers describe how intrapreneurship should be promoted and nurtured within organizations (*e.g.*, Kanter 1988; Krueger 2000; Kuratko 2007), empirical work within this area is still limited (Dess *et al.* 2003). Current studies either measure intrapreneurship as an organizational level construct (*e.g.*, Antoncic 2007), only take a limited number of contextual organizational characteristics into account (see Wakkee *et al.* 2010; Moriano *et al.* 2011), or only study a part of the intrapreneurship framework and, as such, only touch intrapreneurship partly and implicitly (*e.g.*, Axtell *et al.* 2000). This present state of empirical research is an undesirable state of affairs, since research fails to specify which managerial actions should be taken to stimulate intrapreneurship. To overcome this limitation, a combination of formal and informal organizational characteristics have been included in the present study.

1.6 Approach and outline of the dissertation

In order to address the different research questions that have been identified above, four separate research projects have been executed. These four research projects have resulted in four journal articles which form the basis for chapter two to five of this dissertation. Below, a short summary of each chapter is provided, along with an overview of the most important findings and suggestions for future research. The overall conclusions, limitations and suggestions for future research are presented in chapter six.

Chapter 2: Entrepreneurial orientation and the business performance of SMEs: a quantitative study from the Netherlands

In chapter two, we aim to provide an answer to research question number one. Within this chapter, it is our goal to investigate the influence of EO on the business performance of small and medium sized enterprises when such organizations face acute market uncertainty and instability. In order to test the hypothesis that EO leads to increased business performance under turbulent market conditions, data was collected on the EO, market turbulence and the financial performance of 164 Dutch SMEs during 2009, a year that was entrenched in the economic turbulence brought on by the collapse of the global financial sector. Within this study, not the relative advantages of EO in crisis versus non-crisis situations are empirically tested, but it is rather the goal to more adequately examine the impact of EO when the skills associated with entrepreneurship (*e.g.*, the ability to manage uncertainty, innovation for meeting emerging opportunities and threats and the tolerance of risk) would theoretically and empirically be called upon. In doing so, this study contributes not only to the understanding of the consequences of EO, but also to the debate on what types of organizational level capabilities are needed to manage situations of extreme environmental turbulence. The results of the hierarchical multiple regression analysis show that EO risk taking is no viable strategy when organizations are faced with severe

market turbulence, whilst EO innovativeness does contribute to organizational performance under turbulent market conditions. Proactive organizational behaviors contribute, on the other hand, to organizational performance regardless of the level of market turbulence. Further research is, however, needed to understand how organizations build the necessary capabilities to manage situations of severe market turbulence and to study the relative advantages of EO within crisis and 'regular' market circumstances.

Chapter 3: A Comparative Analysis of the Entrepreneurial Orientation/Growth Relationship in Service Firms and Manufacturing Firms

Within chapter three, a systematic comparison of the EO-growth relationship between the service and manufacturing sector was made. In order to achieve this goal, the original EO measurement scale of Covin and Slevin (1989) has been adapted for use within SMEs and an alternative statistical model has been developed. Consistent with the original Miller (1983) and Covin and Slevin (1989) definition of EO and in line with recommendations by George and Marino (2011) and Covin and Wales (2012), EO is modeled as a second order reflective measurement model in which the three individual dimensions of EO (notably: innovativeness, proactiveness and risk taking) positively covary and form the second order construct of EO. Structural equation modeling has been used in order to calculate accurate factor scores on the hypothesized latent second order dimensions. The measurement model has been tested on a large and international (four country) sample of 1,612 SMEs. This research project is the first large scale and international comparison on the EO-growth relationship within manufacturing and service firms. The results show that the EO-growth relationship is of equal importance within both sectors. When it comes to EO risk taking, differences are found in growth in number of employees between the manufacturing sector and service firms. However, future studies should investigate whether there are more fine grained differences between different service sectors (e.g., between financial services and cleaning firms).

Chapter 4: The Entrepreneurial Orientation of Employees, Work Teams and Their Effects on Workplace Performance: An EO study at Two Hierarchical Levels

The EO of individual employees and its contribution to company success is the primary object of study within chapter four. The contribution of Employee EO to workplace performance as well as to team performance is investigated within this study. For this purpose, data was collected within a large Dutch financial service firm at the level of individual employees (N = 1,104) and at team level (N = 99), which makes this one of the first studies that uses a multilevel approach and combines a data collection at the level of the individual employees with a team level analysis. This combination also allows for an investigation of the relative importance of intrapreneurship at the level of the individual employees, as compared to team level. The results of the multiple regression models show that innovative and proactive behaviors by employees contribute to both employee and team performance, while risk taking does not. At team level, the relative importance of these behaviors is even stronger. Given the lack of

empirical research in this area, much more research is needed to provide more detailed insights into the value of employee entrepreneurial behaviors. Research should, for example, address the links between employee EO and EO management and/or provide a more detailed analysis of the relative value of employee EO for an EO strategy execution. Another option is to link Employee EO and Team EO to different type of performance measures. Research by, e.g., Wawoe and Stam (2012) has shown that proactive bankers receive higher bonuses, while they do not receive higher performance evaluations by their direct manager. Employee EO could therefore also have negative side effects.

Chapter 5: Work Context and Employee Behavior as Antecedents for Intrapreneurship

Within chapter five, an organizational characteristics approach is combined with social exchange theory. The organizational characteristics approach sees entrepreneurial behavior as the result of complex processes where environmental and organizational factors shape the opportunity structures in which people or groups function. Although the organizational characteristics approach acknowledges the value of individual entrepreneurship (individuals act entrepreneurially within an organization and not the organization itself see, e.g., Rutherford and Holt [2007]), this approach concentrates on internal context (incentive systems, organizational structures, level of formalization, etc) that can act as catalysts or barriers to entrepreneurship (Zahra and Covin 1995; Dess *et al.* 2003; Burns 2008). By using social exchange theory (Blau 1967; Emerson 1976; Cook and Rice 2006), the importance of reciprocity in the relationship between employer and employee is highlighted. Within this research project data (N = 176) is collected from individual employees working at six different Dutch organizations. The results of structural equation model estimations indicate that the formal organizational context (horizontal participation, resource availability) affects Employee EO, but also highlight informal factors such as trust in the direct manager. We also find that innovativeness and personal initiative, but not risk taking, play a role for an effective translation of employees' behavior into intrapreneurial projects. Further research is, however, needed to provide detailed insights into the intrapreneurial process and the extent to which intrapreneurial initiatives contribute to EO. The extent to which intrapreneurial initiatives contribute to organizational performance also needs to be studied with greater detail, emphasizing the need for more multi-level studies.

2. Entrepreneurial Orientation and the Business Performance of SMEs: A Quantitative Study from the Netherlands¹

2.1 Introduction

Entrepreneurial activities are increasingly regarded as important to firms, but in today's complex global economy, entrepreneurship has become even more crucial towards obtaining a sustainable competitive advantage (Wiklund and Shepherd 2003). Due to globalization, small and medium sized enterprises (SMEs) face increasing pressure from competition from across the world. It becomes apparent that SMEs face increasing difficulty in maintaining and improving business performance, unless they can actively manage these pressures. SMEs are encouraged to implement an entrepreneurial mindset to recognize the threats and opportunities in the environment of the firm in order to make sure that the firm will continue to exist in the future (Krueger 2000). In periods of economic and environmental turbulence, it becomes even more apparent that firms face particularly high levels of market instability and complex business uncertainty that obliges firms to act upon such change (Grewal and Tansuhaj 2001). A firm level response is therefore needed (Chattopadhyay *et al.* 2001).

Environmental turbulence can have a significant impact on the viability of a firm such that it is critical for managers to understand and effectively manage these events, as well as for scholars to determine what elements might explain the business performance difference between those firms rising and falling in complex environmental conditions (Grewal and Tansuhaj 2001). In scholarly literature (*e.g.*, Zahra 1991; Wiklund and Shepherd 2005; Rauch *et al.* 2009), politics (*e.g.*, Balkenende 2007; Dalmeijer 2009) and popular science (*e.g.*, Collins 2001), the current school of thought posits that entrepreneurship is an antecedent of growth, sustainable competitive advantage and excellence. This is particularly true for enterprises operating in rapidly changing and competitive environments (*e.g.*, Zahra and Covin 1995; Chandler *et al.* 2000; Antoncic and Hisrich 2001) and 'hostile' environments (Covin and Slevin 1989).

The questions we propose herein are: 1) could entrepreneurship explain superior business performance during a period of considerable market turbulence? And, 2) how might any effects resulting from elements of a firm's entrepreneurial orientation change in light of market turbulence? The goal of this chapter then is to investigate the influence of entrepreneurship on SME business performance when such firms face acute market uncertainty and instability. To achieve this we collected data during 2009, a year that was entrenched in the economic turbulence brought on by the collapse of the global financial sector. We do not seek to address the relative advantages of

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entrepreneurship in crisis and non-crisis times, rather, we seek to more adequately examine the impact of entrepreneurship on the business performance of SMEs when the skills associated with entrepreneurship (e.g., ability to manage uncertainty; innovate to meet emerging opportunities and threats; tolerate risk) would theoretically be called for.

Surprisingly few studies have examined the firm capabilities and conditions necessary for extreme environmental and market turbulence. Grewal and Tansuhaj (2001) in their analysis of the Asian financial and economic crisis from the late 1990s found that firms that could achieve and maintain strategic flexibility (defined as the organizational ability to respond promptly in a proactive and reactive manner to market threats and opportunities) achieved superior business performance. On the basis that an entrepreneurial orientation might synthesize such strategic flexibility, we aim to contribute not just to our understanding of the consequences of entrepreneurial orientation, but also into the historical conversation on firm capabilities needed to manage situations of complex environmental and market turbulence. Doing so will also help further our appreciation of the value of entrepreneurial orientation to firms.

2.2 Theoretical framework

2.2.1 Entrepreneurship

The term entrepreneurship has been used for decades, yet to this day there is little consensus about its definition (Williams *et al.* 2010). Many perspectives can be found in the literature but the most common themes include: creation of wealth, creation of enterprise, creation of innovation, creation of change, creation of employment, creation of value, and creation of growth (Morris *et al.* 2008). Considerable effort has recently been put into developing a uniform definition. For example, Morris *et al.* (2008) performed a keyword analysis of the definitions of entrepreneurship found in relevant literature and found 18 keywords used at least five times. Subsequently, they defined entrepreneurship according to the definition of Stevenson and Jarillo-Mossi (1986) that "entrepreneurship is a process of creating value by bringing together a unique package of resources to exploit an opportunity" (p. 10), because this definition captured all the core keywords of entrepreneurship encountered in their research.

This definition does not limit the kind of organizations in which entrepreneurial activities may appear. Indeed, entrepreneurial behavior is not only possible in new ventures, but also in firms regardless of their size and age (Kraus *et al.* 2011). The entrepreneurial activities of existing and established firms have for example been described as *corporate entrepreneurship* (Burgelman 1983a; Sharma and Chrisman 1999), *entrepreneurial orientation* (Lumpkin and Dess 1996; Wiklund 1999), or *intrapreneurship* (Antoncic and Hisrich 2001, 2004).

Within the present chapter, the entrepreneurial activities of an established firm will be referred to as its 'Entrepreneurial Orientation' (EO). EO refers to the decision-making styles, practices, processes and behaviors that lead to 'entry' into new or established markets with new or existing goods or services (Lumpkin and Dess 1996; Wiklund and Shepherd 2003; Walter *et al.* 2006). This definition of EO is consistent with the view

that EO leads to new market entry in either new or existing markets, but also explicitly recognizes that this can be achieved with either new or existing goods or services. In a manner of speaking then, a firm that is entrepreneurial oriented ventures into new or existing markets, with innovations that are either based on new or existing products and services, in a manner that is appreciative of the uncertainty and incurs risk in doing so.

The relationship between EO and business performance has been researched intensively. The entrepreneurship research started in the United States of America (USA) and until the year 2000 most studies are conducted in this country setting. Later, researchers performed studies in, among other places, Sweden (Wiklund and Shepherd 2003, 2005), Slovenia (Antoncic and Hisrich 2001, 2004; Antoncic 2006), South Africa (Goosen *et al.* 2002), China (Chen *et al.* 2005), Greece (Dimitratos *et al.* 2004), Finland (Jantunen *et al.* 2005), Germany (Walter *et al.* 2006), Vietnam and Thailand (Swierczek and Ha 2003), Netherlands (Kemelgor 2002; Stam and Elfring 2008), United Kingdom (Hughes and Morgan 2007) and Turkey (Kaya 2006). Among the legacy of studies that have taken place over the years, the business performance consequences of EO have not always been clear.

Recently, Rauch *et al.* (2009) performed a meta-analysis of the relationship between EO and business performance. Their study included 51 articles and showed a significant positive relationship between EO and business performance. The control variable for cultural differences between continents included by the authors turned out to be statistically insignificant, meaning that the relationship between EO and business performance is "of similar magnitude in different cultural contexts" (Rauch *et al.* 2009, p. 779). Of the 51 papers included, only four other studies reported mixed or no significant findings. Slater and Narver (2000) did not find a significant relation between entrepreneurial orientation and business performance at all. Swierczek and Ha (2003) found only a partial positive relationship and Walter *et al.* (2006) found that EO is not directly related with business performance. Covin and Slevin (1989) found that there is a larger positive effect of entrepreneurship on business performance in hostile environments, while there seems to be no significant relation in benign environments. Also, other researchers have included environment as a moderator or as a control variable in their models. Lumpkin & Dess (2001) found environmental hostility to be a significant moderator in the relationship between EO and firm profitability. Wiklund & Shepherd (2003) use environmental munificence and heterogeneity as control variables within their research on knowledge-based resources and EO. Within their research, environmental munificence emerged as a significant control variable.

As our study, the research executed by Kemelgor (2002) and Stam & Elfring (2008) is also performed in the Netherlands. Kemelgor (2002) performed a comparative analysis of the differences in EO between Dutch companies and their direct competitors from the USA. In this analysis, Kemelgor (2002) confirmed the positive relationship between EO and all of the performance measures incorporated in their study (number of new innovations, number of patents received and sales) for US firms. In the Netherlands, however, this relationship was only proven to be significant for the number of patents received and return on sales. Furthermore, the significance is lower (5% compared to

1%) and, more importantly, the relationship is weaker. Kemelgor (2002) suggests two possible reasons for these differences. The first is the difference in culture in the Netherlands and the USA. A second reason, according to Kemelgor (2002), is the existence of a Work Council in Dutch companies, required by Dutch law, where employees can discuss organizational operations. This was argued to lead to a situation in which "participation (in the firm's EO) is a social obligation rather than a vehicle to truly impact business performance" (2002, p. 82).

In theory, for an entrepreneurial orientation to affect firm-wide behavior and be adopted as an organizational mind-set, it is necessary for employees across the firm to participate in the entrepreneurial actions captured within an EO on a voluntary basis. Lumpkin and Dess (1996), for example, commented on the extent to which employees were involved in the use of entrepreneurial activity as supported (or otherwise) by the culture and structure of the firm. In corporate entrepreneurship research for example, Ireland *et al.* (2009) posited that buy-in into an entrepreneurial vision for the business depends on "(t)op-level managers (working) to create organizational architectures in which entrepreneurial initiatives flourish without their direct involvement" (p. 30). Ireland *et al.* (2009), similar to Lumpkin and Dess (1996), suggest that the structure and culture of the firm should encourage "a proclivity toward such qualities as decentralized decision making, low formality, wide spans of control, expertise- (vs. position)-based power, process flexibility, free-flowing information networks, and loose adherence to rules and policies... greater mechanization implies the opposite" (p. 31), as well as "being highly committed to work and willing to accept responsibility for outcomes resulting from it" (p.31). Following Kemelgor's (2002) logic, Dutch firm might be restricted from putting in place such structural and cultural conditions owing to the nature of Work Councils demarcating employees and management. Similar points can be drawn from the work of Hornsby *et al.* (2002) in that employee involvement shapes their understanding of top managers' willingness to facilitate and support entrepreneurial behavior. When coupled with a voluntary acceptance of work discretion and autonomy, the EO of the firm would be expected to be more effective.

Stam and Elfring (2008), on the other hand, performed a different kind of analysis than Kemelgor (2002). They investigated whether and how the founding team's intra- and extra-industry networks influence the performance of new ventures. From their research, it can be concluded there is a strong relationship between EO, measured by its network, and performance, but that it is weakened in firms with low social capital.

Wiklund and Shepherd (2005) concluded after reviewing previous research that "the differences (among study findings) reflect the fact that EO may sometime, but not always, contribute to improved performance" (p. 2). The meta-analysis of Rauch *et al.* (2009) nonetheless leads to an aggregate conclusion that an overall significant relationship between EO and business performance exists. Still, what these studies do suggest is that the value of EO might vary and so it is necessary for researchers to better appreciate the context in which EO is used by firms (*e.g.*, Stam and Elfring 2008).

2.2.2 Dimensions of Entrepreneurial Orientation

According to Wiklund (1999), most researchers agree that EO is a combination of three dimensions: innovativeness, proactiveness and risk-taking. Indeed, many studies (e.g., Covin and Slevin 1989; Naman and Slevin 1993; Zahra and Garvis 2000; Kemelgor 2002) follow this three dimensional model created by Miller (1983). Research by Stetz *et al.* (2000), Kreiser *et al.* (2002) and Hughes and Morgan (2007) have shown that the dimensions can vary independently from each other and should also be allowed to vary (as proposed by Lumpkin and Dess 1996). However, only a few researchers allow the dimensions described above to vary within their model and create a truly multidimensional EO model. The discussion lies in not whether the dimensions can differ from each other but is based on the belief that an entrepreneurial firm should score on all three dimensions (Covin *et al.* 2006). This issue is an important one because Lumpkin and Dess (1996) posited that not all of the dimensions of EO would directly or positively affect business performance under different circumstances. Thus, to more fully appreciate the influence of EO, assessing the relative impact of each dimension of EO separately is arguably necessary.

Schumpeter (1942) was one of the first to point out the importance of innovation in the entrepreneurial process. He called the disruptive innovation process 'creative destruction', a process that occurs when wealth is created by the introduction of new products or services that disrupt the current market and causes a shift in the use of resources. Extrapolating this view further, the EO dimension of *innovativeness* is about pursuing and giving support to novelty, creative processes and the development of new ideas through experimentation (Lumpkin and Dess 1996).

The second dimension is *proactiveness*. Proactiveness refers to processes which are aimed at "seeking new opportunities which may or may not be related to the present line of operations, introduction of new products and brands ahead of competition and strategically eliminating operations which are in the mature or declining stages of the life cycle" (Venkatraman 1989, p. 949). Indeed, proactiveness concerns the importance of initiative in the entrepreneurial process. A firm can create a competitive advantage by anticipating changes in future demand (Lumpkin and Dess 1996), or even shape the environment by not being a passive observer of environmental pressures but an active participant in shaping their own environment (Buss 1987).

The third dimension, *risk-taking*, is often used to describe the uncertainty that follows from behaving entrepreneurially. Entrepreneurial behavior involves investing a significant proportion of resources to a project prone to failure. The focus is on moderated and calculated risk-taking instead of extreme and uncontrolled risk-taking (Morris *et al.* 2008) but the value of the risk-taking dimension is that it orients the firm towards the absorption of uncertainty as opposed to a paralyzing fear of it.

Lumpkin and Dess (1996) posited that the dimensions of EO can vary independently and proposed that each dimension might not necessarily contribute to business performance in each instance. Despite the caution advocated by Lumpkin and Dess (1996), most studies have used a combined measure of risk taking, innovativeness and proactiveness to capture EO. For example, in the meta-analysis performed by Rauch *et*

al. (2009), only 25% of the articles included in their analysis use a multidimensional model in which the dimensions of EO can vary from each other. The authors conclude that the dimensions are of equal value to the EO-performance relationship and therefore can be indexed into one variable. Other studies like Yoo (2001) and Covin *et al.* (2006) confirm this, but some studies suggest otherwise. Swierczek and Ha (2003), for example, found in a sample of firms from Vietnam and Thailand, that the EO dimensions of proactiveness and innovativeness were positively related to firm performance, while risk-taking was not. Hughes and Morgan (2007) show similar results in the UK while investigating incubating firms. In their sample, both risk taking and innovativeness is not significantly related to customer performance.

In concurrence with the work of Covin *et al.* (2006), who argue that including the sub-dimensions to the model could lead to new theories, a multidimensional model with all three sub-dimensions described above will be tested. While the research evidence on the effects of the sub-dimensions of EO are far less clear than those that have assessed their combined effect as a single EO construct, the broad thrust of the literature is that EO should be associated with improvements in the business performance of firms in general (*e.g.*, Lumpkin and Dess 1996; Rauch *et al.* 2009). Indeed, over time a firm deploying an EO would be expected to develop a suite of skills (*e.g.*, ability to manage uncertainty; ability to innovate to meet emerging opportunities and threats; ability to anticipate direction and nature of market change; ability to tolerate risk) that shape a firm entrepreneurship capability to further improve business performance. In line with results from earlier research on EO overall, research including separated dimensions and the high correlations between the dimensions, it is expected that all three dimensions are positively related to SME business performance. Thus, we hypothesize the following:

Hypothesis 1A: *There is a direct positive relationship between the EO dimension of innovativeness and SME business performance.*

Hypothesis 1B: *There is a direct positive relationship between the EO dimension of proactiveness and SME business performance.*

Hypothesis 1C: *There is a direct positive relationship between the EO dimension of risk-taking and SME business performance.*

2.2.3 Environment

In their conceptual paper, Lumpkin and Dess (1996) argued that the characteristics of the environment might have a strong effect on the strength and direction of the relationship between entrepreneurial orientation and firm performance. Empirical research has found support for this view, proposing that the relationship of EO and firm performance is contingent upon the firm's external environment (*e.g.*, Covin and Slevin 1989; Naman and Slevin 1993; Zahra and Covin 1995).

Uncertainty is one of the main characteristics of environmental and market turbulence. Miller (1988) stated that the dimensions of dynamism and unpredictability are "the key components of the overarching construct of uncertainty" (p. 291). Therefore

'unpredictability' and 'dynamism' will be used and incorporated in an overall scale typically called *market turbulence* (Miller and Friesen 1982). 'Dynamic' environments are described as markets in which products have a short life cycle, the level of industry innovation is high and customers' demands as well as competitors' actions are highly 'unpredictable' (Wiklund and Shepherd 2005).

Firms that invest in an EO could be expected to maintain and even improve business performance under conditions of high market turbulence market conditions because these firms tend to possess an ability to react to the constant shifts taking place in the environment by exploring and exploiting new opportunities as opposed to firms without an EO risk strategic paralysis when faced with change. The logic for this belief stems from the argument that EO drives exploration within the firm and allows the reconfiguration of resources and knowledge into better product-market solutions to meet anticipated change (Atuahene-Gima and Ko 2001; Hughes *et al.* 2007; Hughes and Morgan 2007). Firms that have not invested in building an EO may not be able to profit from changing conditions since they are unable to reconfigure their resources and knowledge. It is likely that the products of these firms move out of market demand resulting in lower business performance (Wiklund and Shepherd 2005), or lose competitiveness within the changing market (Atuahene-Gima and Ko 2001).

In the face of complex market turbulence, the skills associated with an EO, such as the ability to manage uncertainty, the ability to innovate to meet emerging opportunities and threats, the ability to anticipate direction and nature of market change, the ability to tolerate risk, would likely lead the managers of an entrepreneurially oriented firm to reframe and interpret events that result from market turbulence as opportunities for further business model change, growth and innovation, as opposed to threats that can only undermine the business. Indeed, Barr and Glynn (2004) found that a greater propensity towards uncertainty avoidance, which might be thought of as an antithesis to classic views of EO, has been associated with greater interpretation of strategically relevant events as threats as opposed to opportunities. Given that the skills engendered and embedded by an EO would be expected to shape a firm entrepreneurship capability in time (see Wiklund and Shepherd 2003, for treatment of EO as a firm rare resource or capability), such a capability should enable a firm to better manage market turbulence such that the firm ought to be able to capitalize when market turbulence is acute. As such, business performance would be expected to improve.

A contingency theory perspective of this kind suggests that the direction and strength of the EO-performance relationship might be influenced by market turbulence (see Luthans and Stewart 1977; Miller 1981). We suggest that, besides the direct effect on EO on business performance, innovativeness, risk-taking and proactiveness will be positive related to the business performance of SMEs in environments where the uncertainty caused by acute market turbulence is high. This expectation is consistent with prior research that has associated EO with superior business performance in hostile environments as opposed to benign environments. For example, Covin and Slevin (1989) found that EO was not directly related to firm performance but only the interaction term with environment; Miller (1988) found that in an uncertain environment, innovation was positively related to business performance; and Zahra's

(1993) empirical research found a strong positive relationship between business performance and entrepreneurship in firms operating in dynamic growth environments. We therefore postulate the following:

Hypothesis 2A: The relationship between innovativeness and SME business performance is moderated by market turbulence. Firms with higher levels of innovativeness perform better in environments with higher levels of turbulence.

Hypothesis 2B: The relationship between proactiveness and SME business performance is moderated by market turbulence. Firms with higher levels of proactiveness perform better in environments with higher levels of turbulence.

Hypothesis 2C: The relationship between risk-taking and SME business performance is moderated by market turbulence. Firms with higher levels of risk-taking perform better in environments with higher levels of turbulence.

2.3 Research method

2.3.1 Sample

Data was collected by means of an email survey from October 2009 until November 2009. Using a key informant approach (Kumar *et al.* 1993), the questionnaire was sent to the Chief Executive Officers (CEOs) of approximately 6,000 SMEs listed in a database of one of the biggest banks in the Netherlands. Due to new 'anti-spam' regulations in the Netherlands, no reminder was sent. Of those 6,000 SMEs, 201 responded and filled in the questionnaire, a response rate of nearly 3.5%. Within the 201 respondents 37 entrees were dropped because these firms did not meet the criteria for SMEs set by the European Union (European Commission 2003), in *casu quo* firms employing less than 10 employees or employing more than 250 employees. This resulted in 164 valid responses for use in the statistical analysis.

The majority of respondents (51.5%) are active in the service industry and 48.5% operate in the manufacturing industry. The average age of the firm is 43.34 years, with a standard deviation of almost 35 years. Most firms—70.7 per cent of the sample—fit in the category of 'small' firm, meaning 10 to 49 employees. Fewer firms—29.3 per cent of the sample—are 'medium' sized firms; employing 50 to 250 people. A short overview of all sample statistics can be found in Table 2.1.

Table 2.1
Overview sample statistics

Total number of returned questionnaires:	201
Effective sample size:	164
Percentage of firms employing 10 to 49 employees (small sized):	70,7%
Percentage of firms employing 50 to 250 employees (medium sized firms):	29,3%
Average firm age in years:	43,34
Percentage of firms operating in the manufacturing industry:	51,5%
Percentage of firms operating in the service industry:	48,5%

In line with the goal of this chapter to investigate the influence of entrepreneurship on SME business performance when such firms face acute market uncertainty and instability, or turbulence, the decision to collect data in 2009 can be considered an appropriate one. The year 2009 saw many markets exposed to economic turbulence brought on by the earlier collapse of the global financial sector. This makes the 2009 time point appropriate to examine the impact of entrepreneurship on the business performance of SMEs when the skills associated with entrepreneurship for benefiting from market turbulence would theoretically be called for.

2.3.2 Measures

Entrepreneurial Orientation

A considerable amount of research exists into EO and its measurement. While some researchers have built their own measurement models, most studies have modified or used the original scales developed by Khandwalla (1977) or Miller (1983).

Until 2000 most research on EO had been carried out in the USA. Therefore most measurement models were developed for and tested only on US firms. Knight (1997) carried out research to test the reliability and validity of the ENTRESALE abroad. This measurement scale is originally developed by Khandwalla (1977) and later refined by Miller and Friesen (1982) and Covin and Slevin (1986, 1989). After testing this measurement tool for entrepreneurial orientation on English and French speaking managers, the ENTRESALE was found to be applicable to measure the level of entrepreneurship in firms abroad (Knight 1997). Kemelgor (2002) followed the same approach as Knight (1997) to test the applicability of the entrepreneurial orientation scale of Covin and Slevin (1986) in the Netherlands. His *t*-test showed no significant differences between the Dutch and English versions of the scale. Within the present research the scale developed by Covin and Slevin (1989) is used to measure the level of EO. The scale includes the three dimensions of EO discussed before: innovativeness, risk-taking and proactiveness. All scales are 7-point Likert-type scales in which respondents are obligated to choose between pairs of opposing statements.

Environment

The measurement scale developed by Miller and Friesen (1982) is used to measure the level of perceived market turbulence. This scale has been proven to be valid and reliable (*e.g.*, Covin and Slevin 1989; Naman and Slevin 1993). The turbulence scale is a 7 point Likert-type scale in which interviewees are obligated to choose between pairs of opposing statements.

SME business performance

The choice of indicators to measure business performance may influence the results of the relationship between EO and performance (Lumpkin and Dess 1996; Hughes and Morgan 2007). In extant empirical works, many indicators tend to be used. 'Performance' is regularly measured in one or a combination of the following three ways: perceived financial, perceived non-financial and archival financial (Rauch *et al.* 2009).

Considering that most firms did not have archival performance numbers over 2009 available at the time of this study (conducted in 2009 itself so as to capture firms' EO at that time), perceived performance indicators are used. While perceived measures of a firm's performance can be disadvantageous in that they rely on a CEO's ability to accurately rate the objective financial performance of their firm with a subjective proxy of it, many studies have reported on the advantages of perceived performance measures as well. For example, Bamford *et al.* (2000) note that "it is quite common for entrepreneurs to refuse to divulge performance information to researchers, and, therefore, the accuracy of such data is questionable" (p. 255). Other researchers have focused on the accuracy and reliability of perceived performance measures. Wall *et al.* (2004) found across three different samples that subjective and objective were strongly positively associated demonstrating convergent validity in turn. Geringer and Hebert (1991) in a study of international joint ventures found there is little difference between subjective and objective measures of performance. Dess and Robinson (1984) found a strong association between subjective and objective performance measures in privately-held firms. Similar results in entrepreneurship research are reported by Sarkar *et al.* (2001) as they show a high correlation between perceived measures of performance and archival measures. These results are confirmed by the meta-analysis of Rauch *et al.* (2009), where no difference in the EO-performance relationship with perceived financial performance, perceived non-financial performance or archival financial performance was found. Furthermore Govindarajan (1988) notes that the use of multiple performance measure methods are permitted if there is reason to question the validity of the single method or in cases where single-measure objective data are not available (see also Dess and Robinson 1984). Thus, by using perceived performance methods the reliability and the validity of the research should hold firm.

Wiklund (1999) suggested that a measurement scale for SME business performance should have indicators for growth as well as for financial performance. In this study, performance measures based upon Wiklund and Shepherd (2005) are used. These scales are chosen because of their reliability and common use in the literature. The authors used five indicators to capture business performance: sales growth rate, employee growth, gross margin, profitability and cash flow. Within the present research, a 5-point Likert-type scale (ranging from 1 "extremely bad performance" to 5 "excellent performance") was used to rate the firm's financial performance on gross margin, profitability and cash flow. Unlike Wiklund and Shepherd (2005), who measure the growth of the firm at two different points in time, two growth measures are used in this study to directly assess the growth in both the number of employees and the growth in turnover. Respondents were asked to rate their firm's business performance compared to his or her assignment or expectations (measured on a 5-point Likert-type scale ranging from 1 "extremely bad performance" to 5 "excellent performance").

Control variables

Firm age, firm size and industry were used as control variables in the model. These control variables are commonly used in EO research (*e.g.*, Zahra and Garvis 2000; Antoncic and Hisrich 2004; Stam and Elfring 2008) as they can affect the resource base of the firm as well as firm behavior. Respondents are asked for the founding year of the firm to calculate firm age. Secondly, respondents were asked to indicate the number of

employees from a selection of less than 10 (micro), 10 to 49 (small), 50 to 250 (medium) and more than 250 (large). Large and micro firms were removed from the analysis because they do not fit the EU definition of SMEs (10-250 employees), the target group for this study (European Commission 2003). The inclusion of firm size therefore served as an additional way of reducing sampling error. Thirdly the respondents were asked to state the industrial sector their firms operated in to account for industry variation.

2.4 Data analysis

2.4.1 Factor analysis

An exploratory factor analysis was performed to test the multidimensionality of the EO concept and gauge construct validity. All independent composite constructs using multiple items were included in this analysis. We used a principal component analysis with Varimax rotation. The Kaiser Criterion (Kaiser 1960) (eigenvalues > 1) has been used to determine the number of factors. The scale items, factor loadings and fit statistics are reported in Table 2.2. Listwise deletion of all missing data led to 111 cases for use within the factor analyses. Since factor loadings are sensitive to sample size, the criteria set out by Stevens (1992) are used to determine if the different factor loading are significant. For a sample size of 100 cases or more, Stevens (1992) reports that factor loadings of .522 or larger can be considered to be significant. In order to assess the discriminant validity of the different items, a general rule of thumb is used that cross-loading should be larger than .300. The results of the factor analyses showed that all items have highly significant loadings on their hypothesized latent variables, no significant loadings on other factors and sufficient cross-loadings (> .310). All of the factors combined account for 64% of the total variance in the dataset. Both the chi-square for the measurement model χ^2 (678.15; *df.* = 91; *p* = < .001) and the Kaiser-Meyer-Olkin measure of sampling adequacy (KMO = .75) suggest that the model fits the data well (see Hutcheson and Sofroniou 1999).

2.4.2 Reliability

The internal consistency or reliability of each measurement scale is estimated by a Cronbach alpha test with listwise deletion of missing cases. Although most scales are found reliable numerous times in previous research, a Cronbach alpha test is performed on all scales using multiple items. A Cronbach alpha above .70 is generally preferred (see Nunnally 1970). The present study shows that most scales are internally consistent (see Table 2.3). However the subscale EO proactiveness showed an initial Cronbach alpha of .61, meaning a lower reliability and internal consistency in the measurement scale than would be deemed preferable. This problem was mainly due to item CE6 and so item CE6 was therefore removed from the measurement scale. This action raised the scale's Cronbach Alpha to an acceptable level of .69.

Table 2.2
Overall exploratory factor analysis

Item	λ	λ	λ	λ
<i>Entrepreneurial orientation innovativeness</i>				
CE1 – Emphasis on exploitation or exploration		.71		
CE2 – Number of new lines of products or services marketed		.82		
CE3 – The impact of changes in product or services		.80		
<i>Entrepreneurial orientation proactiveness</i>				
CE4 – Reactive or proactive compared to competitors		.31		.73
CE5 – Reactive or proactive at introducing new products		.39		.71
CE6 – Competitive attitude				.70
<i>Entrepreneurial orientation risk-taking</i>				
CE7 – Favorability of low risk or high risk projects		.27	.69	
CE8 – Exploration intensity	.28		.70	
CE9 – Reaction to decision-making situations involving uncertainty			.89	
<i>Perceived market turbulence</i>				
ENV1 – Frequency of changes in marketing practices	.66			.35
ENV2 – The rate at which products/services are getting obsolete	.73	.36		
ENV3 – Predictability of actions of competitors	.72			
ENV4 – Predictability of demand and taste of consumers	.67	.33		
ENV5 – Rate of change in modes of production/service	.77			

Notes: Model fit statistics: $\chi^2 (df = 91) = 686.15, p = < .001, KMO = .75$

Factor loadings smaller than .25 have been suppressed

All items were scored from 1 to 7

2.4.3 Statistical checks

Because all data within the present research are collected through the same questionnaire and are self-reported, the observed relationships might be the result of a common measurement source (Podsakoff and Organ 1986; Podsakoff *et al.* 2003). This measurement error is also known as common method variance and can either inflate or deflate observed relationships between constructs, thus leading to both type one and type two errors. As a post hoc statistical test, a Harman one-factor test is used to check whether common method variance is a potential threat to validity. The existence of common method variance is discovered when a factor emerges that accounts for the majority of the variance, or when a single common factor accounts for the majority of the covariance amongst the variables (see also Podsakoff and Organ 1986). All variables were entered into a factor analysis and the results of the un-rotated factor analysis were examined. The Harman one-factor test for common method variance revealed the presence of three distinct factors with eigenvalues greater than one. The three factors combined account for 61.68% of the total variance. Moreover, the first (largest) factor explains only 29.40% of the covariance. These results suggest that common method variance is not a serious problem within the present study.

2.5 Results

Table 2.3 gives an overview of all relationships between all constructs used within the present research. It shows that the EO dimensions of innovativeness and risk-taking are not significantly associated with the business performance measure. However, proactiveness is significantly and positively associated with business performance ($p = < .05$).

The perceived market turbulence construct is not significantly related with the business performance measure but it is with the EO dimensions of innovativeness ($p = < .01$) and risk-taking ($p = < .01$). This relationship is shown in prior research (e.g., Covin and Slevin 1989). Surprisingly, proactiveness is not significantly associated with perceived market turbulence. Of the control variables, the number of employees is the only variable that is significantly associated with business performance ($p = < .05$). Firm age and industry are not associated with SME business performance in the correlation analysis.

Table 2.3
Means, S.D., Correlations and reliability for quantitative variables

Variable	N	M	SD	1	2	3	4	5	6	7	8
1. Firm age	162	43.34	34.90	(-)							
2. Nr. of employees	164	2.37	0.94	.28**	(-)						
3. Manufacturing ind.	134	0.49	0.50	.17	.05	(-)					
4. Market turbulence	152	3.45	1.11	-.14	-.04	-.09	(.80)				
5. EO innovativeness	158	3.75	1.42	-.14	.06	.01	.34**	(.79)			
6. EO proactiveness	155	4.67	1.16	-.05	.16	-.06	.07	.41**	(.69)		
7. EO risk taking	163	3.19	1.02	-.22*	.02	-.10	.35**	.34**	.23*	(.75)	
8. Performance	155	3.18	0.67	-.04	.23*	-.09	-.03	-.02	.23*	.05	(.87)

Notes: N listwise = 111. In the diagonal axis the reliabilities (Cronbach's alpha) are shown. For one-item measures Cronbach's alphas cannot be computed, these are labeled (-).

** $P < .01$. * $P < .05$.

A listwise hierarchical linear regression analysis ($N = 111$) is applied to test the hypotheses. The control variables were added first, then the independent variables and finally the interaction terms. Checks for multicollinearity were also performed. The tolerance levels of the independent variables vary between .67 and .91, with an average variance inflation factor (VIF) of 1.08 in model 1, 1.23 in model 2 and 1.34 in model 3; indicating no apparent multicollinearity. The regression analysis can be found in Table 2.4.

Of the EO variables, only proactiveness has a significant direct positive contribution ($p = < .05$) to SME business performance. This provides support for hypothesis 1B. The remaining EO dimensions, innovativeness and risk-taking did not have a direct significant relationship with business performance at the time of the study (2009), leading to the rejection of H1A and H1C.

The regression analysis including the interaction terms show that the interaction terms of innovativeness with turbulence ($p = < .01$) are significantly positively related to business performance. This supports hypothesis 2A. The interaction term of risk-taking with turbulence is significant ($p = < .01$) too but, different than expected, the relationship with SME business performance is negative. We therefore reject hypothesis 2C. The data did not support hypothesis 2B. It is noticeable that the direct relationship of proactiveness with SME business performance is still significant. All the control variables (number of employees, firm age and industry) are not significant in this model.

Table 2.4
Hierarchical regression overall company performance: control variables, universal model and contingency model.

	Control variables		Universal model, control variables		Contingency model	
	β	S.E.	β	S.E.	β	S.E.
Firm age	-.10	.00	-.10	.00	-.14	.00
No. of employees	.26**	.07	.23*	.07	.17	.06
Manufacturing	-.08	.13	-.07	.13	-.02	.12
Perceived market turbulence			-.01	.07	-.04	.06
EO innovativeness			-.15	.05	-.14	.05
EO proactiveness			.24*	.06	.30**	.06
EO risk taking			.02	.07	.05	.07
Innovativeness * turbulence					.34**	.07
Proactiveness * turbulence					.09	.07
Risk taking * turbulence					-.31**	.08
R ²	.07		.12		.24	
Adjusted R ²	.05		.06		.16	
ΔR^2	.07*		.05		.12**	

Notes: Standardized regression coefficients are displayed in the table.

* $P = < .05$.

** $P = < .01$.

The regression analysis further shows that the control variables explain 7% of the variance in SME business performance. After adding the EO variables and perceived market turbulence, the model explains 12% of the variance in business performance, an additional 5% ($p = >.10$). After adding the interaction terms, the model explains 24% of the variance in performance, an additional 12% ($p = < .01$).

2.6 Discussion

The goal of this chapter was to investigate the influence of EO on SME business performance when such firms face acute market uncertainty and instability. To achieve this we collected data during 2009, a year in which many markets were entrenched in turbulence. We sought to examine the impact of an EO on the business performance of SMEs when the skills associated with an EO (e.g., ability to manage uncertainty; innovate to meet emerging opportunities and threats; anticipate the direction of markets; tolerate risk) would theoretically be called for. Our research shows proactiveness is directly related to the performance of the Dutch SMEs under investigation in this study and its effects on business performance is not affected by market turbulence. Innovativeness and risk-taking did show a significant relationship with business performance but only when accounting for their interaction with market turbulence. Innovativeness' interaction with market turbulence ($p = < .01$) significantly and positively affected business performance while the interaction term of risk-taking with turbulence was significantly but negatively related to SME business performance.

An explanation for our findings might be found in the financial and economic crisis present in 2009. In uncertain times, like the 2009 crisis, risk-taking, although these are supposed to be calculated risks, may lead to more differentiated returns than under normal economic or positive market circumstances. During the 2009 crisis consumer

confidence and spending in the Netherlands dropped significantly (CBS 2010). Often such trauma is responded to within firms by lower R&D expenditures and delayed introduction of new products which would be sold at premium prices. Our research shows that this strategy should not necessarily be changed (as we had no grounds to support H1A since innovativeness was not directly related to SME performance). But, the research also indicates the short-sighted nature of this action because when high levels of uncertainty or market turbulence are present, firms with higher levels of innovativeness perform better in environments with higher levels of turbulence. In this instance then, the firm will need to have a legacy of innovativeness to draw upon to benefit from turbulence as opposed to building it from new at this time due to the lack of a direct relationship.

Becherer and Maurer (1999) focused on the effect of firms' CEO's proactive behavior and found that proactiveness was positively and significantly ($\beta = .17, p = < .01$) related to change in sales (growth). No significant relationship was found with change in profits. They suggested that "proactive leaders are growing the firm as a strategic approach to the market place" (p. 34), however the lack of significance with profits indicates that "the company needs more refined management" and that "concentrating on a bold, aggressive approach alone may not be sufficient to impact the bottom line" (p. 34). However, our research shows that proactiveness was directly related to our multidimensional measure of business performance and this relationship was not influenced by market turbulence. In line with the results of Hughes and Morgan (2007) from their study of UK firms, it would seem that proactiveness is a cornerstone of the role EO plays in driving firm performance.

Other authors like Covin and Slevin (1989) found that EO was not directly related to performance but only the interaction term with environment. Accordingly, the level of EO should be linked to the environment the firm is operating in. A firm in which the level of EO does not match the level of turbulence in the environment, risks generating inferior business performance, particularly in relation to the risk-taking dimension. It is apparent that the effects of EO are not clear cut in relation to firm performance or in conditions of increased or acute turbulence. Investments in proactiveness and innovativeness would appear wise under these conditions coupled with a carefully management of the firm's risk taking activities given its negative interaction effect on firm performance when combined with market turbulence. The latter is likely to be due to flawed understanding of uncertainty in the market place caused by increased levels of unpredictability and dynamism (Miller and Friesen 1982). This implies that risk taking needs to be grounded in market intelligent to make better and more calculated risk decisions. With this in mind, a future investigation might want to map the relationship between dimensions of EO and a market orientation (studies have begun to do this but have only done so at the uni-dimensional level, e.g., Atuahene-Gima and Ko 2001).

In conclusion, although this research did not find a direct positive effect of innovation on performance, it does find that innovative SMEs do perform better in turbulent environments. This is consistent with Miller (1988). In a turbulent market, contrary to our hypothesis, the level of risk-taking is negatively related to SME performance. Earlier in this chapter, it is posited that risk-taking, although these are supposed to be

calculated risks, may lead to more differentiated returns. This might be due to the acute nature of the 2009 crisis than under normal economic or positive market circumstances. During the 2009 crisis, taking risks does appear to negatively contribute to SME performance. Proactiveness on the other hand shows a consistent and important contribution to firm performance regardless of market turbulence.

2.6.1 Practical implications for managers

The present study highlights the importance of refined strategic management within SMEs. Like Hughes and Morgan (2007), we have to conclude that the blind pursuit of the uniform implementation of EO dimensions is not an effective way to create an advantage. Under turbulent market conditions, innovation seems to be an important way of creating superior performance. However given the negative moderation effects with risk-taking found in this study, we have to conclude that innovation is a very delicate matter. Innovation or the introduction of new products always entails certain levels of risk taking. Under complex situations of market turbulence, innovation still pays off, but these innovative projects should be less risky than under normal market circumstances. SMEs therefore are advised to take calculated risk and should, if possible, delay the introduction of highly risky new products, services or projects, since radical innovation might not be as profitable as under normal market circumstances owing to the negative interaction effect shown by risk-taking and market turbulence on business performance.

Again in line with the findings of Hughes and Morgan (2007), we propose that proactivity is the critical activity, not only for firms in the embryonic stage of firm growth as these authors find, but also for SMEs more broadly as we find herein. Firms profit by having a proactive strategy, regardless of the environment the firm is operating in. Even though our sample has been taken during the 2009 economic crisis, the relationship between EO proactivity and firm performance still holds firm.

2.6.2 Limitations

Several limitations constrain our findings. The first limitation lies in the sample. Approximately 6,000 Dutch SMEs received an email of which only 201 responded. Although this response rate is not rare for an online survey, it can influence the research results. Due to the inability to send a reminder owing to legal restrictions in doing so, we could not take measures to investigate the possible influences of non-response. Second, despite the persistent support found for the use of subjective measures of business performance over 20 years of research (e.g., Dess and Robinson 1984; Wall *et al.* 2004), it would have been preferable to have had a combination of subjective and objective performance data to assess the broader effects of an EO on firm performance. Objective data was unavailable at the time and firms often do not wish to willingly disclosure objective financial data but nonetheless, such a mix of measures would be preferable. Third it is uncertain how the results found in this research can be generalized to other market situations. Our thesis is that the value of EO might differ between situations of complex or acute market turbulence than what might otherwise be argued as calm or 'normal' market conditions. In fairness, rarely do studies deploy multiple samples at different points in time to gauge such a dynamic. Rather, as is the case here, a measure is used to gauge the perception of market

turbulence and volatility facing the firm. In which case, it might have been beneficial to have been able to compare the EO of firms during 'normal' times and during crisis times so as to study the performance consequences. We did not seek to address the relative advantages of an EO in crisis and non-crisis times herein; rather, we sought to more adequately examine the impact of EO on the business performance of SMEs when the skills associated with entrepreneurship would theoretically be needed. Still, this presents an interesting opportunity for future longitudinal or repeat observation studies. Fourth, similar to almost all research towards the EO-performance relationship, the entrepreneurial orientation scales and the environment scales are perceived measures. During a crisis it might be hard(er) to estimate both. Furthermore there are no studies into this topic as yet. This impedes the ability to fully compare results. A further limitation, and one that tends to afflict most studies of SMEs, is survivor bias. The email survey was only sent to existing companies, but many businesses failed in their first few years and some later in their existence, more so during the study period. We also do not have data for which firms in our sample went on to survive or fail. Indeed, Wiklund and Shepherd (2005) mention the fact that the higher levels of risk that usually comes with entrepreneurial orientation can lead to higher chances of failure. For these reasons the generalizability of the findings presented in this report are somewhat further constrained.

2.6.3 Recommendations for future research

Further research is needed into how firms can build and use relevant organizational capabilities that enable to manage financial and economic crises. Although perceived performance measures are used frequently, the use of archival information in future might be beneficial, given the difficulties in estimating financial results during a crisis situation. The fact that the entrepreneurial orientation dimensions vary from each other is not surprising since this is stated empirically earlier (*e.g.*, by Stetz *et al.* 2000; Kreiser *et al.* 2002; Hughes and Morgan 2007). But as stated earlier a discussion about whether researchers should treat entrepreneurial orientation as a uni-dimensional (Miller 1983) or a multi-dimensional construct (Lumpkin and Dess 1996) is still taking place. Although it is mainly theoretical, the results of this research confirm the findings of Covin *et al.* (2006), who noted that allowing the dimensions to vary enable new and interesting findings to appear. Therefore it is recommended to use the multidimensional model in further research. At the minimum, the variances in our results suggest that investing in each aspect of EO during a financial and economic crisis, or more generally periods of complex market turbulence, would not appear to be sensible. But its dimensions may have different effects on other aspects of business activity. This possibility offers an intriguing line of future research.

3. A Comparative Analysis of the Entrepreneurial Orientation/Growth Relationship in Service Firms and Manufacturing Firms²

3.1 Introduction

Small and medium-sized enterprises (SMEs) are considered a major contributor to economic prosperity (Henderson and Weiler 2010). SMEs in general and growth-oriented SMEs in particular are an important source of job creation and revenue generation in market economies (Parker 2004; Valliere 2006). SMEs represent more than 90 per cent of all firms in Western economies (Fink and Kraus 2008). This makes the growth of these firms crucial. In this regard, entrepreneurial orientation (EO) is considered a very important growth contributor (Lumpkin and Dess 1996) which consists of three core dimensions: proactiveness, innovativeness, and risk-orientation (Covin and Slevin 1989). The more proactive, innovative, and risk-oriented a firm behaves, the higher its EO and the better the chances for achieving firm growth.

Entrepreneurship deals with the creation and growth of companies. Despite rapid growth in EO research, there are still a number of important research gaps that need to be addressed. A recent special issue of the top Entrepreneurship journal *Entrepreneurship Theory & Practice* (ET&P) that was fully dedicated to EO theory highlighted three important problems within EO: a) EO has not been studied more inside the organization (Wales *et al.* 2011), b) there is fragmentation regarding the understanding and portrayal of the concept (Covin and Lumpkin 2011), and c) there is a need for a more coherent approach towards the study of EO (Miller 2011). The incoherent approach towards the study of EO is mainly due to relatively small sample sizes, country-specific studies, and studies within very specific sub-industries (*e.g.*, Lee and Lim 2009). While some studies show that EO is directly related to company performance (*e.g.*, Lumpkin and Dess 2001; Wang 2008), other studies fail to confirm the EO-performance relationship (*e.g.*, Covin *et al.* 1994; George *et al.* 2001), or highlight the importance of EO in turbulent or hostile environments (*e.g.*, Covin and Slevin 1989; Wiklund and Shepherd 2005). This leaves very little room for studying the deeper patterns in EO, and it is in fact puzzling that the respective industry itself has so far been overlooked as a cause of the differences in the EO-performance relationship.

² This is a preprint of an article whose final and definitive form has been published in the *The Service Industries Journal* © 2013 Copyright Taylor & Francis; *The Service Industries Journal* is available online at www.tandfonline.com <http://www.tandfonline.com/doi/full/10.1080/02642069.2013.778978>. Reference: Rigtering, J.P.C., Kraus, S., Eggers, F., Jensen, S.H. (2013). A Comparative Analysis of the Entrepreneurial Orientation/Growth Relationship in Service Firms and Manufacturing Firms. *The Service Industry Journal*, DOI: 10.1080/02642069.2013.795767. *The Service Industries Journal* is listed at the SSCI Index (impact factor: 2.579), the VHB journal rankings (rating: D), and The Association of Business Schools (ABS) journal rankings (United Kingdom) (rating: 2).

Previous research shows no evidence of whether EO measures and its three subcomponents similarly affect manufacturing and service firms, and whether EO is of equal importance across industries. It is also surprising that within entrepreneurship research, the service industry has so far not assumed a more prominent role. While the service industry has turned out to be an area of increasing research interest (partially because of journals like the SIJ), there are certain fields – such as entrepreneurship within service firms – where we still lack sufficient knowledge (Dobón and Soriano 2008). This is surprising since the service industry has grown steadily over the past four decades, and accounts for the vast majority of new jobs (D'Agostino *et al.* 2006). In German-speaking countries (where this study takes place) the percentage of the service industries sector contributing to GDP is 64.5% in Switzerland, 68.0% in Germany, and 70.8% in Austria.

A recent literature review shows that there are only 13 empirical EO studies dealing with specific service industries' sectors (*e.g.*, health care, banking, software or hotels) and their relationship towards EO (Kraus 2013). This percentage of EO studies dedicated specifically to the service industry is not in balance with the prevalence of service firms in the economy, especially in Western economies. Although current studies provide important and detailed contextual findings (Dess *et al.* 2011) and derive from the question to what extent the EO-performance relationship can be generalized across contexts, the latter remains unanswered because EO research in general fails to deliver true insight into the value of EO within different contexts/industries (Miller 2011). A current study of 310 service sector SMEs from Austria shows that EO is indeed an important driver of company performance within the service sector (Kraus 2013). However – as is the case with many other articles in this field – this study is limited to a specific country, uses a small and context-specific sample and, as such, fails to specify whether the results can be generalized across industries or countries.

The aim of this study is to remedy this significant gap in the EO literature. How generalizable are the findings across industries and countries? What is the role of the context when studying EO? These questions are crucial to the continued growth of this research area. Our contribution is thus to study the relative value of EO and its individual components in order to be able to indicate the generalizability of EO theory. This chapter will therefore use a different methodology, a large (N = 1612) and international (four-country) sample, and seeks to shed light on the role of EO within service firms as compared to manufacturing firms when it comes to firm growth.

3.2 Theoretical framework

3.2.1 Entrepreneurial orientation in general

Entrepreneurship refers to individual opportunistic activities that create value and bear risk, and that are strongly associated with innovation (Sexton and Kasarda 1992). Entrepreneurship is based on identifying market opportunities and creating a unique set of resources and capabilities through which to exploit them (Davidsson *et al.* 2002; Hitt *et al.* 2002). The level of entrepreneurship within a firm can be assessed according to its EO. Miller (1983) states that EO consists of the three dimensions of *proactiveness*, *innovativeness*, and *risk-taking*. EO as a research area has grown immensely during the

last couple of years and is one of the most popular branches within entrepreneurship research (Covin and Lumpkin 2011). This indicates that the concept is indeed a solid measure of the level of entrepreneurship in companies. The three dimensions of EO will be discussed in more detail below.

A firm's *innovativeness* reflects its tendency to engage in and support new ideas, push experimentation, and promote creative processes, which in turn may result in new products, services, or technological processes. Entrepreneurs start entrepreneurial processes by shifting resources from existing endeavors to new projects and companies (Lumpkin and Dess 1996).

Proactiveness represents behaviors in anticipation of future problems, needs, and changes. It involves taking the initiative, anticipating and carrying out new opportunities, and the creation of or participation in emerging markets (Entrialgo *et al.* 2000). Thus, a firm can create a competitive advantage by anticipating future demand changes. Proactiveness includes the tendency to be the first on the market with new products or services. Therefore, a proactive company often is the initiator of things that the competition must then react to (Lumpkin and Dess 1996).

Risk-taking reflects the uncertainty that results from entrepreneurial behaviors (Low and MacMillan 1988; Lumpkin and Dess 1996). Entrepreneurial behavior involves investing a significant proportion of resources into a project with a high probability of failure. So entrepreneurs must embody a strong ability to determine the right path for their businesses in the face of uncertainty (Ricketts 2006). However, the focus here is on moderated and calculated risk-taking instead of extreme and uncontrolled risk-laden endeavors (Morris *et al.* 2008).

The literature has seen an on-going debate on the multidimensionality and the operationalization of EO. So far, most authors have used Miller's (1983) conceptualization of EO and the Miller (1983) and Covin and Slevin (1989) EO scale(s). Other authors such as Lumpkin and Dess (1996) and Hughes and Morgan (2007) have developed alternative conceptualizations and operationalisations of EO. Various authors (Lumpkin and Dess 1996; Rauch *et al.* 2009; Covin and Lumpkin 2011; Slevin and Terjesen 2011; Wales *et al.* 2011) have expressed concern about the lack of consistency in EO conceptualizations and operationalisations, pointing out knowledge gaps in the EO literature. This lack of consistency can seriously harm our understanding of the subject at hand and the commensurability of empirical findings.

Miller's (1983) original conceptualization of EO as an organizational-level phenomenon suggests that EO involves the simultaneous implementation of innovative, proactive and risky firm behaviors. This conceptualization has led to a uni-dimensional approach to the study of EO and the well-known EO scale by Covin and Slevin (1989) in which the three sub-dimensions of EO must positively co-vary in order for EO to be manifested. Later conceptualizations and operationalisations of EO usually follow a different approach and use more detailed conceptualizations of EO, include extra dimensions of EO, and suggest more formative measurement models of EO where the dimensions of EO are allowed to vary independently, see *e.g.* Lumpkin and Dess (1996) and Hughes

and Morgan (2007). Although it could be argued that these conceptualizations of EO are fundamentally different from Miller's (1983) original conceptualization (see Covin and Wales 2012), George and Marino (2011) point out that alternative EO conceptualizations are themselves not different, but instead provide us with a less abstract view of EO because they focus on the impact of the different dimensions of EO instead of EO as a whole; deliver a more detailed description of EO because more dimensions are taken into account; and provide descriptions of subcategories of EO because more specific entrepreneurial behaviors are taken into account.

Different levels of abstraction lead to very different research designs and types. Researchers who tend to apply lower levels of abstraction (*i.e.*, looking at the individual EO dimensions) suggest (although most of the time not explicitly) formative measurement models or first order reflective and second order formative measurement models (type II second order formative models). Formative measurement models do not explicitly specify the pattern of inter-correlation between the individual items/predictors, but are evaluated through the percentage of explained variance in the latent construct at hand (Coltman *et al.* 2008). Formative measurement models are therefore less suitable for theory testing, since they fail to specify relationships *a priori* (Wilcox *et al.* 2008) and as such fail to establish the causality we are investigating. Reflective measurement models on the other hand are evaluated through the assessment of reliability (positive inter-correlation among items) and a similar sign and significance of relationships with consequences on the construct (Coltman *et al.* 2008: 1252). However, as Covin and Wales (2011) point out, EO does not inherently favor formative or reflective modeling. It is instead the job of the researcher to carefully select the level of abstraction and type of modeling that is needed for his/her specific research questions and purposes.

Given the purpose of the present research, we use a reflective measurement model and view EO, consistent with Miller's (1983) original conceptualization, as a second order multidimensional concept with three dimensions: risk-taking, proactiveness, and innovativeness. The use of the three-dimensional model is well established in the literature and allows us to build upon a rich stream of empirical research. A review of the relevant literature has to date not yielded alternative approaches that would provide the same richness in detail or allow for comparisons in the literature (Lumpkin and Dess 1996; Rauch *et al.* 2009; Covin and Lumpkin 2011; Slevin and Terjesen 2011; Wales *et al.* 2011).

3.2.2 Entrepreneurial orientation across industries

Davidson *et al.* (2006) and Dobón and Soriano (2008) have acknowledged a lack of entrepreneurship research in service firms in general, while Kraus (2013) goes further and identifies a gap in research on EO in service firms. This study continues the path set by Lim *et al.* (2008) and can be seen as one of the few papers aimed at filling the research gap in EO when it comes to service firms. Lee and Lim (2009) prove in a study built on the classical set-up proposed by Lumpkin & Dess (1996) that for service firms in Japan there is a clear connection between EO and performance and that the sample of service firms lives up to the general findings in the literature. Competitive aggressiveness and size in particular here play a significant role. The study of Lee and

Lim (2009) however only looks at the restaurant industry and does not compare other types of industries and is, as such, limited. In order to study the differences in EO between manufacturing and service firms, differences in EO levels are first considered. Secondly, we examine how EO will affect the growth rates of SMEs within both industries.

In order to investigate if there are differences in the levels of EO across industries, we shift our focus to underlying dimensions of EO, as the scores on these dimensions will determine the overall level of EO within a firm. The literature shows that there are differences between manufacturing and service firms when it comes to innovation processes (Preissl 2000; Nijssen *et al.* 2006). Typically, service innovation processes are less structured and often non-technical, two reasons why it can be argued that service innovations can be achieved more easily than product innovations (Sundbo 1998). At the same time, however, given the intangibility of services, it is relatively harder to communicate a service innovation to prospective customers (Gronroos 1978). So service innovations are frequently less obvious than product innovations. In addition, existing literature has not yet determined if service firms display a stronger proclivity towards innovation than manufacturing firms or vice versa.

Product innovations typically demand a higher resource commitment than service innovations (Preissl 2000). So from a resource point-of-view, one can argue that manufacturing firms take more risk than their service counterparts (see Cooper and Kleinschmidt 1987). On the other hand, the same argument can be used to show that service providers are more risk-taking than manufacturers. The less a firm has to lose, the more it might be inclined to invest in uncertain outcomes. Again, the literature does not provide strong indications or arguments which support one side or the other.

As stated above, proactiveness represents behaviors in anticipation of future problems, needs, and changes. It involves taking the initiative, anticipating and carrying out new opportunities, and the creation of or participation in emerging markets (Entrialgo *et al.* 2000). Proactiveness is thus a dimension that depends on and interacts with market conditions. Since there are turbulent and stable as well as new and established service and product markets, we do not see solid arguments for why one industry should be more proactive than the other. Therefore, we conclude:

Hypothesis 1: Both service and manufacturing firms display the same levels of EO.

Regarding the effect of EO on firm growth across industries, we also find indications suggesting that the growth rate of manufacturing and service firms will be affected by EO in a similar way. First, there is the robustness of the EO-performance relationship as shown by the meta-analysis by Rauch *et al.* (2009). Although this analysis does not distinguish between service and manufacturing firms, and a large number of the analyzed articles focus on high-tech industries or manufacturing firms, their sheer robustness does in fact suggest that the two industries should show similar results.

Potential differences between the two sectors could be caused by differences in environmental turbulence. Frank *et al.* (2010) conclude that a positive relationship between EO and performance only exists when there is a dynamic context and strong access to financial capital, or a stable context and low access to capital. Since manufacturing and service industries have vastly different frame conditions and yet can fulfill both sets of requirements, it cannot be concluded from the study how this affects EO in the two industries. Segarra-Blasco (2010) studies the effect of innovation and R&D investment on productivity in service firms and manufacturing firms in Catalonia, Spain. Their results show no significant difference between the links in the two industries. While this study does not directly link to EO, it *does* link to innovativeness in the study, which is an important element of EO.

Other research looking at differences between the manufacturing industry and the service industry also fails to find systematic differences in the growth rates in both industries. A recent report on entrepreneurship from the Canadian Ministry of Industry (Fisher and Reuber 2010) compares the birth and death rates of SMEs in manufacturing and service industries in eight countries. This study does not indicate any systematic difference between manufacturing and service firms. For European countries, the study showed a higher growth in the number of employees and sales in service firms compared to manufacturing companies. However, for New Zealand, the US, and Canada, the results are reversed: For these countries, the data shows a slightly higher success rate for manufacturing firms. Research by Oliveira and Fortunato (2006) showed that growth in the service industry is affected by company size. This leads to a rejection of Gibrat's law of proportional growth, stating that growth and size do not correlate. Similar studies carried out in manufacturing firms showed the same results (*e.g.*, Wagner 1992). Although the studies mentioned above do not directly relate to EO, no meaningful differences across the two industries have been found here either when it comes to differences in company growth rates. This leads to our second hypothesis:

Hypothesis 2: Entrepreneurial Orientation leads to similar levels of firm growth in both service and manufacturing firms.

Although we primarily test if EO as a second order construct leads to similar levels of firm growth in both industries, we incorporate suggestions by Miller (2011) and look at EO as a whole, as well as (at the same time) the individual dimensions of EO. By simultaneously looking at EO and its individual dimensions we do in fact recognize that within particular contexts the individual components of EO may generate interesting findings (*e.g.*, Lumpkin and Dess 2001; Hughes and Morgan 2007; Kreiser *et al.* 2010; Kraus *et al.* 2012). Since predicting the relative importance of the individual dimensions while simultaneously taking the higher order construct into account is not possible *a priori*, a number of exploratory tests will be performed. The inclusion of such an exploratory approach is in line with the argumentation found in several of the articles in the special edition of ET&P focusing on EO (*e.g.*, Miller 2011; Slevin and Terjesen 2011; Wales *et al.* 2011; Wiklund and Shepherd 2011).

3.3 Method

3.3.1 Sample

Data was collected in the four German-speaking countries in Europe: Austria, Germany, Switzerland, and Liechtenstein. Following a "key informant approach" (Kumar *et al.* 1993), we contacted CEOs, top level managers, or founders of a heterogeneous set of SMEs in an attempt to create a representative sample of firms in each country. Prior research has considered this target group to be the "single most knowledgeable and valid information sources" (Lechner *et al.* 2006, p. 525). The questionnaires were directly addressed to the respected "head" of the company, identified in the databases described below. The respondents had an average age of 48 years, 80.3% were male, 55% held a university degree (of which 6.2% had a doctoral degree), and the average number of companies being founded was 1.62.

In order to achieve heterogeneousness, different databases were used to randomly select 10,000 companies in different geographical areas. The data collection in Liechtenstein and Switzerland was combined³ using the Swiss Schober database, while the Hoppenstedt Company Database was used in Germany, and the Herold Business Data database in Austria. The respondents received an invitation to participate in the research project by email, and the importance and confidentiality of the research was stressed several times. Due to strict privacy and anti-spam regulations in all four countries, only one reminder to fill in the questionnaire was sent.

Response rates ranged from 6.07% in Germany and 5.83% in Switzerland and Liechtenstein to 5.33% in Austria. This resulted in a total of 1,764 returned questionnaires. 152 surveys were excluded because these firms no longer met the official EU criteria for SMEs, were in *casu quo* firms employing more than 250 employees, or because they did not fill in the question asking about company size. This resulted in 1,612 valid data sets for use in the statistical analysis and an average effective response rate of 5.37%. While this does bring up the issue of non-take-up bias, the response rate is at the similar levels of comparable studies (*e.g.*, Kraus 2013). A majority of the firms (62.9%) operate in the service sector, while 37.1% can be characterized as manufacturing firms. Within our sample, service firms are firms operating in either: 1) the finance and insurance market, 2) the hospitality (*e.g.* restaurants and hotels) market, 3) firms that fall into the category of science or technical services, 4) information and communication firms, 5) commercial traders or business firms, or 6) day care centers and firms active in the education market. Other categories within the database were: 7) construction, 8) agricultural, silviculture (forestry) or fisheries, 9) transportation, 10) production and industry, and 11) other. A detailed overview of all sample statistics can be found in Table 3.1.

³ Liechtenstein and Switzerland are part of a joint customs, trade, and monetary union. Therefore, companies in Liechtenstein also have a Swiss postal code and in this study are part of the same company database.

3.4 Measures

3.4.1 Entrepreneurial orientation

The original Miller (1983) and Covin and Slevin (1989) EO scales were developed to assess the level of EO in a wide selection of firms. Questions like "How many new lines of products has your firm marketed in the past 5 years?" are however less suitable for use within the context of SMEs, given their size and focus (also see Frishammar and Andersson 2009). George and Marino (2011) show that many studies that use the original Miller (1983) or Covin and Slevin (1989) scales often found that one, or sometimes even more, item(s) within their particular study reflected a different dimension of EO than hypothesized. Or, they were not applicable since they significantly reduced reliability. Researchers often respond to this simply by removing these items from their measurement scale. Although this approach is considered valid, George and Marino (2011) note that there are advantages in trying new operationalisations of EO. This is in line with Jambulingam *et al.* (2005), as well as Kraus (2013). The advantages found with including a larger number of items include the possibility for more context-specific measurement as well as improved psychometric scale characteristics. A larger number of items should result in 1) improved ability to average out specific measurement errors, 2) increased reliability, and 3) a finer distinction between subjects (Churchill 1979).

Table 3.1
Overview of sample characteristics

	Austria	Germany	Lichtenstein and Switzerland	Total sample
Sample characteristics				
Number of returned questionnaires	559	607	583	1.764
Response rate	5.59%	6.07%	5.83%	5.88%
Effective response rate	5.33%	5.29%	5.48%	5.37%
Firm characteristics				
Average firm size	16.67	46.57	18.56	27.11
Percentage of family firms	78.5%	77.9%	80.9%	79.1%
Percentage manufacturing firms	28.9%	45%	37.7%	37.1%
Percentage service firms	71.1%	55%	62.3%	62.9%
- Commercial traders and business	10.9%	13.2%	13.3%	12.5%
- Finance and insurance firms	3%	1.9%	6.4%	3.8%
- Free occupations, science and technical services	25.9%	23.3%	21.6%	23.5%
- Restaurants and catering companies	12.6%	2.8%	5.1%	6.8%
- Information and communication firms	17.6%	13.2%	15%	15.4%
- Day care centers and education	1.1%	0.6%	0.9%	0.9%
Respondent characteristics				
Gender				
- Male	76.6%	80.3%	83.8%	80.3%
- Female	23.4%	19.7%	16.2%	19.7%
Average age in years	48.4	48.38	49.33	48.72
Percentage higher education (BSc or higher)	44.6%	66%	61.5%	57.5%

Our goal is not to develop a new conceptualization of EO or to further extend the notion of EO by including new subcategories. Rather, we aim to develop an alternative operationalization of EO which is more suitable for use in research within SMEs. In order to achieve this goal, we adapted items from established EO scales and, to do this, selected questions that are suitable for use within SMEs. All the scale items and their original sources are reported in Table 3.2. We included four items for each EO dimension. Although this is only a small increase in the number of items per dimension, deleting items when these do not reflect the hypothesized factor or reduce reliability has fewer negative impacts with four items than with three. All items were measured using a 5-point Likert-type scale, ranging from “totally disagree” to “totally agree”.

Table 3.2
EO scale items

Dimension	Scale item	Source
Risk-taking 1	We value new strategies/plans even if we are not certain that they will always work.	Miller 1983
Risk-taking 2	To make effective changes to our offering, we are willing to accept at least a moderate level of risk of significant losses.	Vitale <i>et al.</i> 2003
Risk-taking 3	We encourage people in our company to take risks with new ideas.	Hughes <i>et al.</i> 2007
Risk-taking 4	We engage in risky investments (<i>e.g.</i> new employees, facilities, debt, and stock options) to stimulate future growth.	Li <i>et al.</i> 2008
Proactiveness 1	We consistently look for new business opportunities.	Hughes <i>et al.</i> 2007
Proactiveness 2	Our marketing efforts try to lead customers, rather than respond to them.*	Adapted from: Li <i>et al.</i> 2008
Proactiveness 3	We incorporate solutions to unarticulated customer needs in our products and services.	Miller 1983
Proactiveness 4	We work to find new business or markets to target.	Vitale <i>et al.</i> 2003
Innovativeness 1	When it comes to problem solving we value creative solutions more than solutions that rely on conventional wisdom.	Hughes <i>et al.</i> 2007
Innovativeness 2	We consider ourselves to be an innovative company.	Sciascia <i>et al.</i> 2006
Innovativeness 3	Our business is often the first on the market with new products and services.	Hughes <i>et al.</i> 2007
Innovativeness 4	Competitors in this market recognize us as leaders in innovation.	Li <i>et al.</i> 2008

Note: Items marked with an asterisk (*) were reverse coded

3.4.2 Firm growth

Firm growth is assessed according to four dimensions of sales, profit, number of employees, and market share. It is based upon the operationalization by Chen *et al.* (2007) and upon the extensive review of the most commonly used performance indicators in Entrepreneurship as well as in Strategic Management research by Carton and Hofer (2006). All items are measured, similar to other studies in the field of EO such as Wiklund and Shepherd (2005) and Wang (2008), relative to competition using a 5-point Likert-type scale, ranging from “totally disagree” to “totally agree”.

3.4.3 Control variables

We use structural equation modeling to allow for accurate comparisons between groups, exploratory analysis, and the usage of our hypothesized second order factor model. The use of conventional control variables such as firm size, respondent age, respondent gender, etc., is however less common in structural equation modeling since this will likely cause problems with model fit, and increases model complexity (Fletcher *et al.* 2006). In the statistical model, we add three control variables. Firm size is added, since research by Oliveria and Fortunato (2006) has shown that firm growth rates within the service industry are affected by company size. The level of technological turbulence in the environment is added to control for fundamental differences in the technological operating environment. A measurement scale developed by Narver *et al.* (2004) is used to assess the level of technological turbulence. The level of resources available to the company is added, since differences in resources can result in different growth rates of individual firms despite strategic orientations (see, *e.g.*, Wiklund and Shepherd 2005). Resource availability is measured by using a scale developed by Atuahene-Gima (2005) which has been proven to show good discriminant validity (in combination with the use of environmental scales as well), and good reliability. All composite scale items are measured by using a 5-point Likert-type scale, ranging from “totally disagree” to “totally agree”.

3.5 Empirical analysis and results

3.5.1 Analytical procedures

Before evaluating the differences between service and manufacturing firms and the impact of EO on firm growth, we will first examine the psychometric properties of the EO scale developed within our study. As a first step, we conducted a confirmatory factor analysis on the EO scale. Next, we conducted an overall confirmatory factor analysis on all scales to assess the discriminant validity of all independent latent constructs used within the study, and then calculated the reliability of the different scales. Prior to analyzing the differences in the EO, we first test to see whether there are differences in the level of EO between the two sectors. To test the differences in the relationship, we compare both groups by using structural equation modeling (AMOS 18). Post hoc analysis using modification indices (MI) are used to detect further differences between service firms and manufacturing firms. We conclude this section of our research with a number of robustness checks.

3.5.2 Factor analysis and reliability

We computed a confirmative factor model (CFM) to assess our hypothesized second order factor model. To assess model fit, we looked at both absolute fit indices (Confirmative Fit Index (CFI) and Root Mean Square Error Approximation (RMSEA)) and incremental fit indices (Tucker-Lewis Index (TLI) and Normative Fit Index (NFI)). Since our sample size is quite large ($N = 1612$), we do not consider χ^2 to be a good estimator for model fit, since χ^2 is sensitive to sample size. We set the threshold value for the CFI, TIL and NFI at $>.90$ (see Black *et al.* 2007) and the threshold value for the RSMEA at $<.07$ (see Hooper *et al.* 2008). Although these fit indices have also been proven to be sensitive to sample size, the effect of sample size is significantly reduced within these fit indices.

The CFM specified that each dimension of EO is indicated by four items, while EO itself is the higher order. The CFM initially yielded acceptable levels of model fit. One item however (inno1) displayed highly significant cross-loadings on a second factor (proactiveness). We therefore removed this item from the final model. The factor loadings for the individual items, as well as for the first order factors are reported in Table 3.3. The final second order model yields good model fit to excellent model fit (see Table 3.3). The high factor loadings of the first order factors on the higher order factor can be considered as an indication for convergent validity (Byrne 2010). All factor loadings are significant at $p = < .001$.

Resource availability and technological turbulence were added to the confirmatory factor analysis to assess our overall measurement model and the discriminant validity of the measurement instruments. This overall measurement model shows excellent model fit (CFI .955; RMSEA .047; TLI .941; NFI .944). An examination of the factor inter-correlations indicated that all of the constructs met the criteria for discriminant validity (factor inter-correlations < 1.0) and range from .22 to .52. Criteria set by Nunnally and Bernstein (1994) (Cronbach's alpha above .70) were used to assess the reliability of the different measurement scales. The reliability of all composite latent constructs used within the study ranges from .759 to .890. Overall, our measurement model showed good to excellent model fit, convergent validity, discriminant validity, and sufficient to very good reliability.

Table 3.3
Final CFM analysis EO scale

<i>First order factor:</i>	<i>Factor loading on hypothesized second order factor</i>
Risk-taking	.65
Proactiveness	.86
Innovativeness	.78
<i>Item:</i>	<i>Factor loading on hypothesized first order factor</i>
Risk-taking 1	.62
Risk-taking 2	.79
Risk-taking 3	.75
Risk-taking 4	.61
Proactiveness 1	.78
Proactiveness 2	.68
Proactiveness 3	.57
Proactiveness 4	.77
Innovativeness 2	.71
Innovativeness 3	.87
Innovativeness 4	.83

Notes: Model fit indices: CFI .953; RMSEA .069; TLI .925; NFI .948

3.5.3 Differences between service firms and manufacturing firms and differences within the service sector

To test whether there are differences between the level of EO within the service sector and the manufacturing sector, we test for differences in the average score on the EO measure, as well as the individual EO dimensions. A two-tailed *t*-test is used to test

whether any differences between the two sectors are significant. On average, participants reported higher levels of EO within service firms ($M = 3.48$, $SE = .026$) than in manufacturing firms ($M = 3.27$, $SE = .031$), $t(1391) = -5.223$, $p = < .001$. Similar differences can be found in all three sub-dimensions of EO. Within the service sector, participants report higher levels of risk-taking ($M = 3.12$, $SE = .032$) than firms operating in the manufacturing industry ($M = 2.91$, $SE = .036$), $t(1469) = -4.085$, $p = < .001$. The level of proactiveness within the service firms ($M = 3.76$, $SE = .027$) is also higher than in manufacturing firms ($M = 3.56$, $SE = .037$), $t(1529) = -4.442$, $p = < .001$. Within the service industry, firms furthermore display a stronger proclivity towards innovation ($M = 3.56$, $SE = .032$) than firms operating in the manufacturing industry ($M = 3.37$, $SE = .042$), $t(1449) = -3.578$, $p = < .001$. Therefore, we reject H1's statement that both service and manufacturing firms show the same levels of EO.

3.5.4 The relationship between EO and firm growth

Because the proposed measurement model is consistent with the data, we continue with an evaluation of the main theoretical relationships as shown in Figure 3.1. This model tests whether EO leads to increased firm growth, and takes into account the technological operating environment of the firm and firm resources as control variables. Our initial step in testing was to fit this model to the data ($N = 1612$) as a whole.

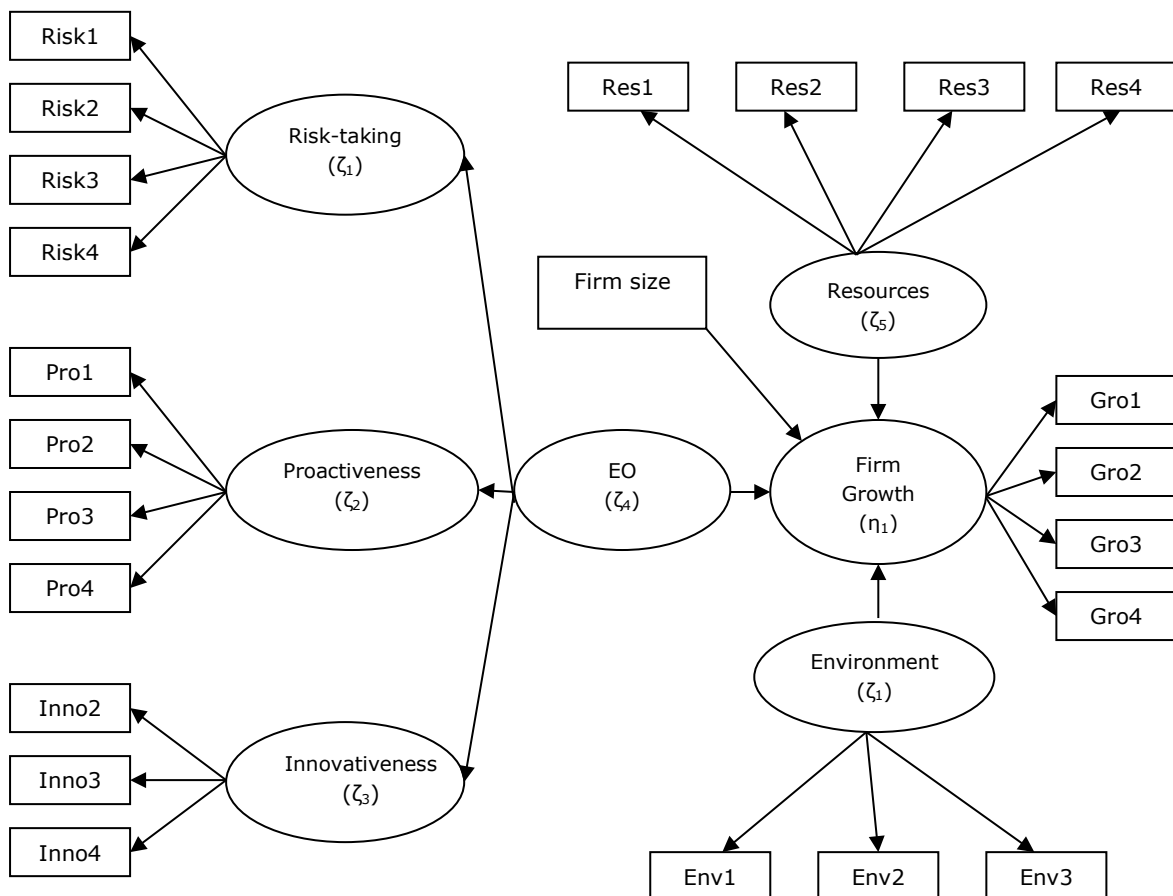


Figure 3.1: Hypothesized structural model

Note: Covariance's between the latent constructs and measurement errors have been omitted for the sake of clarity.

The proposed theoretical model displayed good model fit (CFI .927; RMSEA .058; TLI .907; NFI .907) and shows that EO leads to increased levels of firm growth (standardized regression weight ($\beta = .29, p = < .001$) and that the amount of resources available to a company increases firm growth ($\beta = .39, p = < .001$). Within the model, the technological environment has no (significant) effect on firm growth ($\beta = .01, p = > .05$).

3.5.5 The EO-growth relationship in service firms and manufacturing firms

With the differences in reported levels of EO in service firms and manufacturing firms now clear, we move on to a comparison between the two groups. First we fit our theoretical model to both groups and allow all parameters to be freely estimated. Next we test equivalency of our model between groups by first restricting the relationship between EO and firm growth to be equal for both groups, followed by an additional restriction of the relationships between the control variables and firm growth. We analyze the increase in χ^2 in the measurement model to test for model equivalency.

Table 3.4 shows the structural relationships within the two groups when all parameters are freely estimated. Although the strength of the EO-firm growth relationship differs between service firms and manufacturing firms, EO is, as expected, related to firm growth in both sectors. Next, we test if the strength of the EO-growth relationship differs between the two sectors by fixing the structural parameter to be equal between both groups. This does not lead to a significant increase in χ^2 ($\Delta \chi^2 = 1.858, p = > .05$), suggesting that EO is of equal importance within both sectors, and providing support for Hypothesis H2. Fixing the structural parameters of the control variables also does not lead to a significant increase in χ^2 ($\Delta \chi^2 = 2.410, p = > .05$). The latter provides evidence for model equivalency.

Table 3.4
Structural relationships within service firms and manufacturing firms

Relationship	Manufacturing firms		Service firms	
	β	p -value	β	p -value
EO – growth	.38	< .001	.27	< .001
Resource availability – growth	.31	< .001	.39	< .001
Technological environment – growth	-.03	> .05	.01	> .05
Firm size – growth	.07	< .01	.09	> .05

3.5.6 Post hoc tests for differences between service and manufacturing firms

We continue a series of *post hoc* tests to look for detailed differences between service firms and manufacturing firms at the level of individual sub-dimensions of EO. First we test whether our measurement model can be improved by fitting it to the data as a whole, and calculating modification indices (MI). Because AMOS cannot calculate MI when there is missing data, we first fill in the missing data (5.05% of the total dataset) by using the expectation-maximization (EM) algorithm (Dempster *et al.* 1977). After obtaining the MI we fit the model to the original data.

For the performance relationships we look at the three individual EO dimensions. Previous research has shown that these dimensions can be important within different

contexts. Given the size of χ^2 in our measurement model ($\chi^2 = 948.210$) we set the threshold for MI at 25 in order to look for significant improvements to our model. The measurement model MI suggests different relationships between the error term of item Gro3 (growth in the number of employees) and various measurement errors and error terms (14 times a MI > 25). Covariance between measurement errors represents a systematic rather than a random measurement error (Aish and Jöreskog 1990). This measurement error may be the result of respondent characteristics or item characteristics, and we believe that the latter is more likely to be the case. In the context of small businesses, financial data is often less reliable (Baum *et al.* 2000) and employment growth is considered to be a more stable indicator than *e.g.* turnover growth, since firms only expand their number of workers if they are certain that their business volume can be stabilized in the future (Delmar 1997). Although the Cronbach's alpha of the growth scale is very high (.890), a Cronbach's alpha is not a test for multidimensionality of a scale. Following Aish and Jöreskog (1990) we therefore conclude that growth in number of employees represents a small omitted factor within the growth scale and allow the error term to covariate with the error term of the factor scale item with the highest MI (error term item growth in profits (Gro2) MI = 26.843). In doing so, our model fit is improved (CFI .934; RMSEA .055; TLI .916 NFI .914), making further measurement model modifications that are based upon MI appear unnecessary.

Next we look at whether the individual EO dimensions add to firm growth. Here MI suggests one additional relationship between risk-taking and growth in the number of employees (MI = 65.570). Adding this relationship increases the overall model fit to CFI .938; RMSEA .053; TLI .920 NFI .918.

Our modified model is fitted to the original data, and we allow all structural relationships to be freely estimated within both groups (see Table 3.5). Again, we test whether the EO-growth relationship and the relationships between the control variables and growth are different within the two groups, followed by an additional test of the risk-taking/employment growth relationship. As with the original model, fixing the EO-performance relationship between both groups to be equal ($\Delta \chi^2 = 2.341$, $p = > .05$), as well as when fixing the relationship between all control variables and firm growth to be equal ($\Delta \chi^2 = 2.676$, $p = > .05$), both yield insignificant results. Risk-taking within service firms is however more important than risk-taking within manufacturing firms ($\Delta \chi^2 = 15.529$, $p = < .01$). The latter provides evidence for the importance of risk-taking within service firms when it comes to growth in the number of employees. The final proposed model can be found in Figure 3.2.

Table 3.5
Structural relationships within service firms and manufacturing firms, final model

Relationship	Manufacturing firms		Service firms	
	β	p -value	β	p -value
EO – growth	.37	< .001	.24	< .001
Risk-taking – growth in number of employees	.12	< .01	.32	< .001
Resource availability – growth	.31	< .001	.39	< .001
Technological environment – growth	-.03	> .05	.02	> .05
Firm size – growth	.07	> .05	.09	< .01

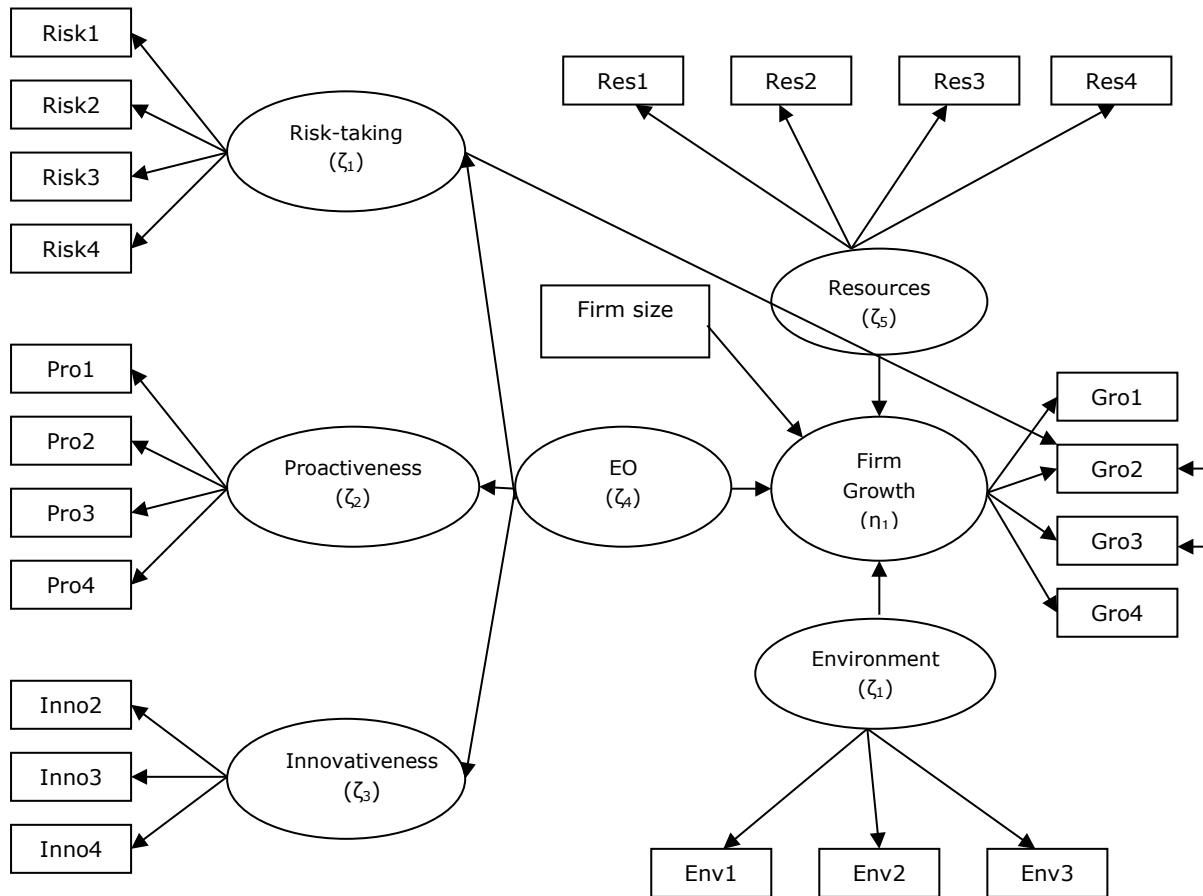


Figure 3.2: Final model

Note: Covariance's between the latent constructs and measurement errors have been omitted for the sake of clarity.

3.6 Robustness checks

3.6.1 Additional control variables

Unlike most papers published on EO and firm growth or performance, we use structural equation modeling to test our hypotheses. Although we think that the more sophisticated way of modeling EO provides substantial benefits over regression analysis, there are also disadvantages to our approach. Most papers on EO include a considerable

number of control variables in their regression models. The inclusion of variables that contribute little to the overall measurement model can cause problems with model fit, and few researchers choose to include a large amount of control variables while using structural equation modeling (Fletcher *et al.* 2006). In order to make our results more comparable to previous studies that have used regression techniques and which include a large number of control variables, we include four extra and commonly used control variables in our model (whether the company is a family firm (measured as: 0 = not a family firm, 1 = family firm), respondent age, gender (0 = female, 1 = male), and education (0 = lower than a Bachelor's degree, 1 = Bachelor's degree or higher).

Within the baseline model, the age of the respondent lowers the growth within the company ($\beta = -.12, p = < .001$), and male respondents report lower growth figures than female respondents ($\beta = -.08, p = < .01$). Whether the firm is a family firm and the level of education of the respondent do not significantly impact firm growth. As a robustness check we evaluate the change in structural weights of our main variables under examination with the inclusion of all control variables and within each different step of the model. Within this analysis we ignore the issue of model fit. Adding these four additional control variables has hardly any effect on the structural weights and, more importantly, does not change our results on a qualitative level. This was also the case within the constrained models. We therefore conclude that our model is robust.

3.6.2 Assessment of common method variance

Since the manager/owner ratings of EO and company growth were collected at the same point in time and via the same questionnaire, the reported relationships may be the result of variance that is attributable to the measurement instrument rather than the constructs themselves (also known as common method variance) (Podsakoff and Organ 1986; Podsakoff *et al.* 2003). We test for the existence of common method variance by performing a Harman's one-factor test. All items from all constructs were included in the analysis. The result of the Harman's single factor test showed that common method variance does not provide a predominant explanation for our results. The single factor only explained 32.11% of the variance, well below the threshold of 50%.

3.7 Discussion

This chapter sets out to investigate whether there is a significant difference between service and manufacturing firms regarding EO, comparing the two industries using (cross-national) data from four countries to ensure that the results were not limited by national contexts or industry specifics.

By comparing the level of EO in service and manufacturing firms, we found that it was significantly higher in service firms both at the overall level and for each of the three sub-categories. Service firms thus appear to be more risk-oriented, proactive, and innovative than manufacturing companies. This is a very important and somewhat surprising finding. As Kraus (2013) mentions, few studies of EO in service firms exist, and none of these offer an explanation for our finding. Some research has been done on service industry innovation (*e.g.*, Sundbo 1997; Hip and Grupp 2005; Castellacci 2008),

although Droege *et al.* (2009) note in an extensive review that the research here is also quite scattered and inconclusive in several areas. While they use this to create a pattern or overview of the different strands of research, the article does not provide us with insights that would be useable in this study. No research has been directed towards the risk-taking attitude of service firms, or even their proactiveness. What this means is that for now at least, we can only speculate about the reason for these differences. Given the characteristics of service firms – the generally lower capital requirement and the less tangible nature of services compared to products – incremental innovations will be less costly than in manufacturing, and can be achieved by altering parts of the service itself or the service delivery system. Here, trial-and-error will be faster to execute and with relatively low risk. This in turn could explain why service firms report higher levels of risk-taking. When innovation and risk-taking are less costly and it is therefore easier to implement these strategies, proactiveness is even more important to stay competitive. Another option is that service firms are more depended on EO to survive in comparison to manufacturing firms, which would, ultimately, result in a higher overall level of EO in the service firms population. However, as this has not yet been studied empirically, it would be necessary to test it by building additional hypotheses based on the results from this study.

Turning to the relationship between EO and growth, a slightly different image emerges. While there is a stronger relationship between EO and growth for manufacturing firms than for service firms, the difference is however not significant, proving that EO as a second order construct is of equal importance within both industries. A more detailed analysis of the individual dimensions of EO revealed the relative importance of risk-taking in service firms when EO is taken into account. The latter was however only true for the growth in the number of employees, which – albeit generally accepted as one of the most important indicators for the corporate success of SMEs (Carton and Hofer 2006) – seems to be a separate dimension of company growth. Service firms seem to benefit more from risk-taking in terms of the growth in the number of employees than manufacturing firms. Given the fact that expansion of the workforce itself can be risky because of the costs associated with both hiring as well as firing personnel, the topic of risk-taking clearly needs more attention in future studies, particularly when it comes to service firms and the premium placed on risk-taking in these kinds of companies.

The findings of our empirical investigation clearly point towards the need for more in-depth studies to fully understand what causes this difference, and as such provides for an additional area for future research in addition to those provided by Covin & Lumpkin (2011) and Miller (2011). It also adds to the findings of Wales *et al.* (2011) by showing the necessity for cross-industry studies to gain more knowledge about the inter-organizational effects on EO for manufacturing and service firms.

3.7.1 Suggestions for future research

In order to advance the body of knowledge on EO, additional, more detailed operationalisations and more systematic comparisons between different sectors, cultural contexts, and geographical areas are needed. A key aspect here is that future research in EO should explicitly relate to the differences in industries both when performing single industry studies and when performing cross-industry studies. For the single

industry studies such as Lim *et al.* (2008) or Lee & Lim (2009), the issues of generalizability need to be addressed more explicitly. This is because the present study shows that industry does in fact seem to have an impact on the level of EO. So limiting the generalizability to the type of industry in question and the inclusion of moderating factors that affect cross-industry generalizability would be advisable in this respect. This will lead to more focused studies and thus generate more precise knowledge on EO regarding specific industries as well as across industries by reducing overall EO conclusions that are not substantiated. It would also certainly be worthwhile to revisit existing studies and test them against our findings. One example would be to take the large multi-industry study performed by Wiklund and Shepherd (2005) and repeat it using only separate sets for the various industries involved.

With studies investigating the relationship between EO and single or multiple factors across industries (such as EO and performance in general [Wiklund and Shepherd 2005], marketing information [Keh *et al.* 2007], or managerial power [Davis *et al.* 2010]), these should further distinguish between the types of industries. The current approach does not fully show this effect, because there is no or little discussion of the variations across industries. However, doing so would allow for much more detailed, richer information concerning how the chosen measures perform in specific industries or industry types. The use of SEM in future research is advisable in this respect, since this statistical technique allows for both the detection of differences on the level of individual EO dimensions, as well as comparisons of the value of EO on a more abstract level.

3.7.2 Practical implications

In terms of practical implications, the most important one is that EO research and, indeed, EO policy recommendations need to take industry into account in a more detailed way than previously seen. A closer investigation into why service firms show higher levels of EO is suggested. Distinction across dimensions such as high and low tech (Rauch *et al.* 2009) needs to be further specified regarding manufacturing and services to see the moderating role of industry. Since entrepreneurship (and thus also EO) is very much on the political agenda at both the national and super-national levels, our study shows the importance of adapting policy measures according to whether they are targeted to manufacturing or services industries. Once the causes are revealed, manufacturing firms might be able to adapt and thereby increase their own EO level. Further, although we found differences in the level of EO, we did not find any differences regarding the EO-performance link between the two industry sectors. However, it is possible that the higher level of EO in service firms could have an impact on another outcome variable that we did not account for in this study. Identifying this will be a task for further research.

3.7.3 Limitations

This study is not without its limitations. First, it relies on the self-reported measures of both EO and company performance by the CEO or owner of the surveyed companies. Although a Harman's one-factor test showed no indications for single-response bias, and although this is a very common way of measuring both EO and performance within EO research (see Rauch *et al.* 2009), it would be desirable to also have access to multiple respondents per company, financial information from company archives, or a

combination of the two. Secondly, 30,000 invitations to participate in the research were sent out, and only 1,764 questionnaires were returned. Although such a response rate is not uncommon with online surveys, we cannot fully rule out a potential non-response bias, even though we took efforts to minimize one by comparing in the German and Austrian data those firms that responded immediately to the invitation email with those that responded only after the reminder email had been sent. Furthermore, the applied databases did not contain an indicator for company age, making it impossible to include this as a control variable in our analysis. A fourth limitation lies in the nature of the sample. Data was only collected within the four German-speaking countries in Europe. Recent research by Kreiser *et al.* (2010) has shown that EO is influenced by the attributes of each individual national culture. The results of the present research should therefore first and foremost be understood as a comparison between service firms and manufacturing firms in Western Europe.

4. The Entrepreneurial Orientation of Employees, Work Teams and Their Effects on Workplace Performance: An EO study at Two hierarchical Levels⁴

4.1 Introduction

Entrepreneurial orientation (hereafter, EO) has become one of the most important foci within the domain of entrepreneurship research (Covin and Lumpkin 2011; Wiklund *et al.* 2011). Although there is a general consensus and ample empirical evidence that EO increases a firm's financial performance and growth rate (see Rauch *et al.* 2009), skepticism about the value of EO remains. The main criticisms revolve around two particular problems: (1) the measurement of EO and the comparability of empirical findings (*e.g.*, George and Marino 2011); and (2) a lack of sufficient theoretical underpinning and empirical evidence on how EO leads to improved firm performance (also labeled as the 'black box' of EO) (*e.g.*, Wales *et al.* 2011).

EO is usually studied as a disposition of top managers or firm owners towards entrepreneurship (Miller, 1983; Lumpkin and Dess, 1996) which will result in strategic renewal (Hayton and Kelley 2006), strategic repositioning (Ireland *et al.* 2009), business venturing (Zahra 1995), organizational flexibility (Ginsberg and Hay 1994) and, ultimately, improved firm performance (Rauch *et al.* 2009). The dominance of the top manager vantage point is well captured in Lumpkin and Dess' (1996) argument that EO represents "the methods, practices, and decision-making styles *managers use* to act entrepreneurially" (p. 136, emphasis added). This view grew out of the work of Covin and Slevin (1989), which focused on the actions taken by top managers to define strategic posture and competitive tactics commensurate with an entrepreneurial approach when engaging the market environment of the firm. Covin and Slevin (1991) extended this perspective to the organizational level, conceptualizing entrepreneurship as an organizational phenomenon, but it is still grounded in the context of a strategic posture, defined by top managers' propensities toward risk-taking, innovative, and proactive behaviors. Significantly, Covin and Slevin (1991) acknowledge that the success of a firm's entrepreneurial endeavors cannot be divorced from the individuals that constitute the broader employee base of the firm.

Foundational EO research studies have, therefore, recognized the importance of individuals across the firm to its entrepreneurial endeavors and, by extension, its business performance. Indeed, the "crux" of managing entrepreneurship, especially in large firms, is that opportunities have to be identified and pursued by individuals within the firm (Stevenson and Jarillo 1990). This implies that it is not only top managers and firm owners who play important roles in the recognition and exploitation of opportunities, but that all organizational members can potentially contribute to the

⁴ This chapter is co-authored by: Rigtering, J.P.C., Hughes, M., Kraus, S., Covin, J.G., Jongejan M. A revised version of this chapter has been submitted to *Entrepreneurship Theory and Practice* (currently first round). *Entrepreneurship Theory and Practice* is listed at the SSCI (impact factor: 2.542), the VHB journal rankings (rating: A), and ABS journal rankings (rating: 4).

overall level of EO within a firm. Indeed, scholars recognize that EO can be present at all organizational levels (Wiklund and Shepherd 2011). Along with top-managers, the role of middle managers in the corporate entrepreneurial process is sometimes highlighted (see Hornsby *et al.* 2002; Hornsby *et al.* 2009; Yang 2008). Still, little empirical research is dedicated to how first-level managers and non-managerial employees contribute to the level of EO within firms (Hayton 2005b).

This issue is perhaps emblematic of Coleman's (1990) logic that the conditions of individual behavior can induce individual actions that can then aggregate into organizational outcomes. Within the confines of their defined roles, individuals can choose to deploy extra-role entrepreneurial behaviors that may manifest in improved performance under the EO thesis. It is on this premise that firms may then go on to accumulate broader positive organizational performance outcomes. Yet the question of how entrepreneurial behaviors by individuals affect their work place performance is hitherto, and oddly, unanswered.

We seek to contribute to EO research in four different ways. First, the extent to which an EO increases firm performance depends on the manner in which EO is exhibited across different organizational levels (Covin *et al.* 2006), and research at different organizational levels is needed to further our understanding of EO (Monsen and Boss 2009; Wiklund and Shepherd 2011). Instead of the traditional focus on top management (teams) or middle managers, we focus on lower-level employees and the work teams in which they function. This view recognizes, in line with Mintzberg and Waters (1985), Bartlett and Ghoshal (1993), and Wales *et al.* (2011), that there are other relevant actors within a firm that have the ability to identify opportunities, that play a key role in establishing the link between organizational strategy and performance, and, accordingly, that drive the performance of an organization.

Second, current empirical work on EO at the employee level mainly highlights the importance of qualifications and education experience (Bantel and Jackson 1989; Chandler *et al.* 2005; Hayton 2005a) or focuses on how organizations can stimulate an EO amongst their personnel (Axtell *et al.* 2000; Kirby 2006; Zampetakis *et al.* 2009; Wakkee *et al.* 2010; Moriano *et al.* 2011). While the first research stream moves away from the original EO conceptualization, the second research stream seems to take for granted that EO at the employee level automatically improves employee performance and that a strong focus on EO at all organizational levels and departments is desirable. Although this assumption seems valid for employees working at R&D departments or in highly competitive commercial jobs, it is unclear how EO at the lower employee level relates to employee performance in a much more general sense. This study will, accordingly, focus on EO in relation to employee performance in situations where such an EO is not automatically called upon. Thus, the current research provides a first empirical analysis of the predictive validity of EO in relation to employee performance in a broad sense.

Third, much of the research which purports to study EO as an individual-level phenomenon employs "traditional" EO measures—such as the Miller/Covin and Slevin scale (see Covin and Wales [2012] for an analysis of this scale)—that were never

intended to measure this phenomenon as an individual-level construct (see, *e.g.*, Weaver *et al.* 2002). Researchers have also misapplied upper echelons logic (as advanced by Hambrick and Mason 1984) that firms can become reflections of their top managers. Rather, when researchers administer firm-level EO scales to individual top managers (particularly the top managers of young and/or small firms) they are in fact measuring those managers' EO levels rather than their firms' EO levels (Joardar and Wu 2011). By contrast, the current research operationalizes EO as an individual-level phenomenon using indicators that are relevant and appropriate at this level of analysis.

Finally, research that explores multiple organizational levels is scarce in the EO literature, most likely due to the difficulties associated with cross-level organizational research in general (Klein and Kozlowski 2000). In addition to examining the level of the predictive validity of EO at the employee level (with relevant job performance as the dependent variable), we also test the predictive validity of EO at the team level. This feature of our research design will allow for a comparison of the relative value of EO at different organizational levels, providing a more in depth analysis of the true value and impact of EO within firms.

4.2 Theoretical background

4.2.1 Entrepreneurial orientation

Over the 200 years entrepreneurship has been studied, no consensus or generally accepted definition of entrepreneurship has been reached and a plethora of perspectives have been put forward, indicating the multidimensional character of the entrepreneurship construct (Audretsch 2003). Although it has been argued that entrepreneurship is limited to the creation of new organizations or "new entry" (Lumpkin and Dess 1996), others take the position that entrepreneurship is also related to "innovating or creating new combinations of resources, pursuing opportunity, acquiring or bringing together necessary resources, risk-taking, profit-seeking, and creating value" (Morris *et al.* 2008, p. 9). This latter approach stresses that entrepreneurship revolves around bundling a unique set of resources in order to exploit opportunities (Stevenson *et al.* 1999) and recognizes that entrepreneurship is not constrained to a small businesses setting but can also be present in larger and established organizations (Sharma and Chrisman 1999).

The tendency of established organizations to respond to changes, new challenges, and competition in an entrepreneurial manner corresponds with the model of EO advanced by Covin and Slevin (1989). Within this model, EO is viewed as an important factor suited to dealing with pressures arising from both a rapidly changing external environment and a natural tendency towards inflexibility as organizations increase in size. In this way, EO can infuse larger organizations with the flexibility and adaptability usually associated with smaller organizations. Typical activities following from the presence of an EO include the introduction of new products and services, the development of new markets, and the rejuvenation of the organization itself by improving internal capabilities, processes, and structures (Covin and Miles 1999).

Several dimensions have been proposed in which the entrepreneurial proclivity of an organization surfaces to form an organizational EO. The most prominent and largely researched are innovativeness, proactiveness, and risk-taking (see Rauch *et al.* 2009), which corresponds with the original conceptualization of EO by Miller (1983) and Covin and Slevin (1989). The element of innovativeness reflects the pursuit of new and unique solutions, including new technologies and administrative techniques, in order to solve the complex challenges that organizations face (Knight 2001). The second dimension, proactiveness, concerns acting in advance of others as opposed to reacting. It involves opportunity-seeking behavior to stay ahead of competition by anticipating future demand (Rauch *et al.* 2009). In this sense, it stresses the importance of being knowledgeable about current and future customer preferences and to subsequently act upon them. The third dimension, risk taking, is defined by Miller and Friesen (1978) as the degree to which managers are willing to make large and risky resource commitments that bear a reasonable chance of costly failure. However, risk-taking within the EO framework should not be misconstrued as recklessness, but as controlled and calculated behavior (Morris *et al.* 2008).

Over the last two decades substantive efforts have been made to investigate the relationship between EO and organizational performance. EO indeed increases a firm's business performance and growth rate, regardless of cultural context (Rauch *et al.* 2009), and this is especially true for firms operating in highly turbulent and hostile environments (Covin and Slevin 1989; Wiklund and Shepherd 2005; Kraus *et al.* 2012). The strength of the EO–performance relationship is, however, influenced by several moderators (Lumpkin and Dess 1996). Important factors that may act as moderators can reside in the individual, the organizational, or the contextual levels (Baum *et al.* 2001).

4.2.2 Employee entrepreneurial orientation

Empirical work has, so far, mainly addressed the way market circumstances (*e.g.*, stable markets versus dynamic or competitive markets), organizational design (*e.g.*, reward structures, job design, top management support, resource availability, organizational culture), and (middle) managers influence the EO–performance relationship or lead to higher levels of EO within a firm, while paying relatively little attention to the role of other employees within the corporate entrepreneurial process (Wales *et al.*, 2011). This focus on the organizational level and company management is somewhat surprising because theoretical work (*e.g.*, Kanter 1985, 1988; Pinchot 1986; Stevenson and Jarillo 1990; Dess *et al.* 2003) does highlight the importance of entrepreneurial initiatives by employees. Also in the management literature in general, the importance of human capital in creating a sustainable competitive advantage is widely established (*e.g.*, Barney 1991; Lado and Wilson 1994; Wright *et al.* 1994; Hatch and Dyer 2004; Hayton 2005b). Within this view the individual skills and knowledge of employees are leveraged and integrated by or through structural capital (*e.g.*, organizational culture, structures, and information systems) at the organizational level (Nelson and Winter 1982; Stewart 1997). In a similar vein, an organization's Employee EO can be leveraged or integrated through a strong focus on EO at (top) management level or an organizational structure/culture that is supportive of EO.

Employee EO can, thus, contribute to the overall level of EO within a firm *and* strengthen the EO–performance relationship.

Consistent with the original conceptualization of EO by Covin and Slevin (1989) and Miller (1983) and other researchers who focus on employees (*e.g.*, Monsen and Boss 2009; Wakkee *et al.* 2010; Moriano *et al.* 2011), we define Employee EO as a disposition, held by individual employees of the organization, towards innovativeness, proactiveness, and risk taking behaviors at the workplace. Employee EO is therefore characterized by the behaviors at the workplace and is distinct from an organizational culture, as a culture represents a non-behavioral attribute of the organization (Covin and Slevin 1991; Wales *et al.* 2011). This conceptualization also acknowledges that those who experiment with promising new technologies, seize opportunities, take risks, or in other ways demonstrate initiative or decision-making competence, are more likely to be successful as entrepreneurs and intrapreneurs (Lee and Peterson 2000). Our position is that the elements traditionally recognized as comprising the EO construct at the firm- or SBU-levels of analyses – namely, innovativeness, proactiveness, and risk-taking – are also relevant to the EO construct at the individual-level of analysis, but the specific indicators of these elements must be tailored to reflect individuals’ behaviors. As conceptualized here, innovativeness refers to idea generation, opportunity recognition, and idea implementation by individual employees; proactiveness relates to a ‘hands-on mentality’, taking initiative, and not only developing plans, but also implementing them; and risk taking refers to the level of unauthorized job-related behavior that employees are willing to exhibit. These three dimensions are deemed essential for the process of creating and implementing incremental as well as radical innovations at the workplace; innovations which contribute to the overall performance of the organization (Stevenson and Jarillo 1990; West and Farr 1990). Moreover, these dimensions reflect frequently appropriate behavioral dispositions when employees are faced with uncertainty or must quickly decide between competing courses of action, thereby they promote employee decisiveness and flexibility.

Previous research suggests that employees typically display lower levels of EO than (top) managers within firms (Kemelgor 2002; Monsen and Boss 2009). This is most likely due to different framing conditions at different hierarchical levels of an organization and an inability of employees to diversify risks (Hayton 2005b). It also might be the reason why the limited body of empirical research that is available has mainly focused on how to stimulate an EO amongst employees, while taking for granted that such an EO would improve performance (*e.g.*, Axtell *et al.* 2000; Zampetakis *et al.* 2009; Wakkee *et al.* 2010; Moriano *et al.* 2011). The latter should, however, not be taken for granted as employee EO can lead to entrepreneurial activities that are developed in commission of the organization, but also in spontaneous, unsanctioned activities (Kanter 1985; Pinchot 1986; Hayton and Kelley 2006). In the first situation, Employee EO is important for improving the innovative character of the firm, and in finding support for and enhancing the implementation of top-down initiated projects. It may also promote behavior on behalf of more senior managers in situations that require an unplanned response or autonomous strategic behavior (Burgelman 1983b; Sashittal and Wilemon 1996). In the second situation, Employee EO can be either a positive or a negative force. Kanter (1988) and Pinochet (1986), for instance, emphasize the value

of employee initiatives for the innovative power of the organization. Employee initiated projects can be in line with the current operations and/or goals of the organization, in which case they are expected to create value for the organization and contribute to its performance on the long run. On the other hand, employee initiated projects may represent unwelcomed deviations from current business activities and operations. When the latter is the case, many employees will fail to find support for their ideas and are likely to be disappointed. In addition, resistance to change, especially in larger, more bureaucratic organizations, can disrupt employee change initiatives and result, perhaps, not in active opposition but in apathy or inaction (Burgelman 1983b; Wernham 1985; Chisholm 1987). Employee EO then carries the potential for negative consequences at two different levels: the individual employee (owing to lower task performance, reduced motivation, or active opposition after a failed project), and the organizational level (due to the disruptive nature of entrepreneurial projects and the loss of resources when projects fail).

Given the importance of the work context to the nature of the Employee EO-performance relationship, Employee EO should be analyzed from a formal job description perspective. Some specific type of jobs require employees to display, at least to some extent, innovative (*e.g.*, researchers), proactive (*e.g.*, sales persons), and risk taking (*e.g.*, stock traders) behaviors. Typical Employee EO behaviors can, therefore, be considered as in-role behaviors as they are required, expected, and are the basis of regular job performance within particular contexts (also see Katz 1964). Extra-role behaviors, on the other hand, are not part of a formal job description, not recognized by formal reward systems and are not a source of punitive consequences when not performed by job incumbents (Dyne and LePine 1998). The same type of behaviors can, therefore, be defined as extra-role behaviors when displayed within a different work context.

It seems apparent that Employee EO is important for employee performance when it can be considered as employee in-role behavior, as the behaviors associated with Employee EO are considered as a primary part of the job. The relationship between Employee EO and employee performance when Employee EO associated behaviors can be characterized as extra-role behaviors is, however, less clear cut as self-initiated entrepreneurial actions by employees may disrupt organizations, distract employees from their regular job and demotivate employees when projects fail. Although research has shown that extra-role behaviors improve employee performance (*e.g.*, Dyne and LePine 1998; Byrne 2005), much of the research in this area focuses on helping behaviors, voice or organizational citizenship behaviors which all bear, almost by definition, positive meaning. Innovations, on the other hand, do not always work, proactive behaviors by employees can be challenging and antagonistic and risk taking may result in costly errors or losses. Examining the predictive validity of Employee EO within a context in which it can be considered as extra-role behavior will, therefore, provide valuable insight into the value of Employee EO for organizations in general and corresponds with the view that EO may pervade the departments of an organization differently (Covin *et al.* 2006; Covin and Lumpkin 2011; Wales *et al.* 2011).

In summary, we posit that the three dimensions of Employee EO (innovativeness, proactiveness, and risk taking) are related to employee performance at the workplace and hypothesize that the ability of employees to generate new ideas (innovativeness), take initiative and implement ideas within the organization (proactiveness), and be willing to take unsanctioned risks during this process (risk taking), promotes employee performance over and above potential negative side effects. While acknowledging the potential downsides of such individual-level EO behavioral patterns, and consistent with the tenets of expectancy theory (Locke and Latham, 2002), we assume that employees will be most inclined to engage in unconventional, speculative, and/or opportunity-driven behaviors (*i.e.*, entrepreneurial behaviors) if they perceive that the exhibition of such behaviors will positively affect their job performance. Accordingly, we offer the following three hypotheses:

Hypothesis 1: Employees with a high level of innovativeness perform better at the workplace.

Hypothesis 2: Employees with a high level of proactiveness perform better at the workplace.

Hypothesis 3: Employees with a high level of risk taking perform better at the workplace.

4.2.3 Entrepreneurial orientation within work teams

Even more than Employee EO, the EO of work teams has largely remained beyond the scope of quantitative empirical studies. This is surprising because many organizations organize their work through work teams, and because the combined human capital of a team is likely to exceed that of individuals. Work teams are, therefore, likely to have a stronger impact on the performance of an organization than individuals, and their contributions are essential for our understanding of what makes an organization entrepreneurial (Shepherd and Krueger 2002). Following Guzzo and Dickson (1996) we define a work team as “a group that is made up of individuals who see themselves and who are seen by others as a social entity, who are interdependent because of the tasks they perform as member of a group, who are embedded in one or more larger social systems (*e.g.*, community, organization), and who perform tasks that affect others (such as customers or co-workers)” (p. 308-309).

A rich stream of literature focuses on how individual members contribute to work group performance in terms of skills, abilities, and behavioral intentions (*e.g.*, Hollenbeck *et al.* 1995; Tesluk and Mathieu 1999). Whereas some authors focus on the collective strength (isomorphic team composition models) of skills, cognition, abilities, and behavioral intentions within teams (*e.g.*, LePine *et al.* 1997), others focus on discontinuous compilation models (teams as complex combinations of individual members) (Kozlowski and Klein 2000). Within these models, it is not the level *per se* but the combination of different backgrounds and skills that are the main focus of analyses, leading to a concentration on team diversity or dissimilarities between team members (Chan 1998). Dissimilarities between team members are believed to be of particular relevance when dealing with non-routine tasks because diversity stimulates

out-of-the-box thinking and creativity (Filley *et al.* 1976; Guzzo and Dickson 1996). However, in line with Shepherd and Krueger (2002) we argue that the relationship between Employee EO and the level of EO within a work team (hereafter referred to as Team EO) can best be described through an isomorphic model in which the average score of individuals responding on behalf of their work team indicates the level of Team EO. Team EO is, thus, made up of the collective behavioral intentions and behaviors of the individual members of a work team that define it as entrepreneurial.

When the individual team members collectively exhibit high levels of entrepreneurial behavior overall team performance is also likely to be high. Specifically, through the knowledge sharing that occurs as a function of being team members, individuals are placed in better positions to judge the appropriateness and likely viability of their individual and collective actions that reflect innovativeness, proactiveness, and risk taking. Growing empirical evidence suggests that the exhibition of an entrepreneurial orientation—at least at the firm level—facilitates learning (*e.g.*, Anderson *et al.* 2009) which, in turn, facilitates high performance outcomes (*e.g.*, Wang, 2008). Similarly, through team membership and associated knowledge sharing, different perspectives and more complete information can be brought to bear on matters pertaining to entrepreneurial acts, the result of which should be that better advised—and higher performing—decisions are made. These arguments lead to the following three hypotheses:

Hypothesis 4: Teams with a high level of innovativeness perform better at the workplace.

Hypothesis 5: Teams with a high level of proactiveness perform better at the workplace.

Hypothesis 6: Teams with a high level of risk taking perform better at the workplace.

4.2.4 The importance of commitment within entrepreneurial teams

The extent to which organizational members are committed to the organization plays an important role in their behavior at the workplace (Meyer and Allen 1991). In scholarly literature, commitment is commonly conceptualized as identification with the organization and the belief in or acceptance of organizational goals (*e.g.*, Porter *et al.* 1974; Mowday *et al.* 1979; Pool and Pool 2007; De Clercq *et al.* 2010). From the definition of what constitutes a work team, commitment can be seen as essential since it highlights the extent to which team members see themselves as embedded within the larger organizational system. Previous studies (*e.g.*, Ellemers *et al.* 1998; Bishop *et al.* 2000) have shown that commitment within teams is an important factor driving team performance, and a meta-analysis by Meyer *et al.* (2002) confirms the overall relationship between identification with the organization and job performance.

Within the context of entrepreneurial teams, commitment might be even more important. That is, the collective exhibition of entrepreneurial behaviors by individual team members may breed commitment to chosen courses of action. This may occur

because entrepreneurial actions (as operationalized in the current research) can potentially facilitate both the recognition and adoption of improved internal team processes and learning in general (Anderson *et al.* 2009). When team members believe in the efficacy of their processes they are more likely to commit to and achieve team goals (e.g., Locke and Latham 2002). Porter *et al.* (1974) and Steers (1977) stress that committed employees are devoted to the goals of the organization and will put in extra effort in order to help the organization to achieve these goals. Commitment has, therefore, the ability to align the initiatives associated with Team EO with organizational goals.

In management literature, the importance of this match between personal goals/interests and the top management's direction for the organization has long been argued (e.g., Guth and MacMillan 1986; Wooldridge and Floyd 1990; Judge Jr and Stahl 1995). Research by De Clercq *et al.* (2010) has revealed that organizational commitment positively moderates the relationship between firm-level EO and a multi-dimensional measure of firm performance. At lower organizational levels, organizational performance should improve through the efforts of highly-committed organizational members to accomplish organizational goals and through the enhanced insights available into how the sometimes disparate pieces of knowledge existing within a team can be effectively combined for the benefit of the organization (De Clercq and Sapienza 2006). These arguments lead to the following two hypotheses:

Hypothesis 7: Teams with a high level of commitment to company goals perform better at the workplace.

Hypothesis 8: Commitment to company goals moderates the relationship between Team EO dimensions and team performance. Teams with high levels of (a) innovativeness, (b) proactiveness, and (c) risk taking perform better at the workplace when they are committed to company goals.

4.3 Research methods

4.3.1 Research setting, design, and sample

The present study was conducted at two divisions of a leading health insurance company in The Netherlands, which we refer to as "The Company". We regard the service sector as a preferred setting for the present study as the intangible nature of its offerings puts a natural emphasis on the importance of the behaviors of organizational members (Lovelock 1984). The Company belongs to a holding company that owns a substantial number of Dutch life and nonlife insurance companies. The Company employs approximately 1,900 people, manages multiple brands, and has offices throughout the country. The Company has reported good and stable financial results during the last three years; it is not listed on the stock exchange. The organizational structure is function-based and encompasses six departments: front-office, operations, purchasing, commerce, IT, and human resources. We carried out our research at the two largest departments of the Company: the front-office and operations department. The front office primarily deals with direct contact with customers. The majority of employees within this department assist customers with all types of questions in a call-

center setting. The majority of the employees in the operations department are responsible for the timely handling of all claim forms and other administrative tasks. Notably, innovativeness and other behaviors associated with Employee EO are *not* a part of their standard job description, and thus form extra-role behaviors.

The Company's many departments consist of multiple formally-recognized teams, each with their own team manager. Before collecting the data we held semi-structured interviews with the higher and middle management of the Company in order to better understand the research setting, company characteristics and how (team) performance is determined within the Company. The data were collected by means of two independent Intranet-based surveys. By collecting the data at two different points in time, the tendency of respondents to provide consistent answers throughout different categories, which is considered to be a major cause of common method variance, is significantly reduced (Podsakoff *et al.* 2003). An Intranet-based survey was the preferred choice since it significantly reduces the chances of human error when preparing the data, especially when dealing with large data sets. Research by Gosling, *et al.* (2004) has shown that the results of Internet-based questionnaires do not deviate from the more traditional pencil-and-paper questionnaires.

The first questionnaire consisted of a small number of questions relating to commitment to company goals, team performance, and some basic control variables. Following recommendations by Dillman (1978), a pre-announcement of the questionnaire was made by the company management. We also took several steps to protect the identity of the respondents and to make sure that they could respond openly to the questions and felt safe while doing so. These steps are also in line with recommendations by Dillman (1978) and include highlighting the confidentiality of the study both before and during data collection, explaining how we report our research findings and how this leads to the anonymity of responses, and ensuring that individual scores would not be reported to the company management. All 1,247 employees, except the (top) management of the respective department, received an invitation to fill in the questionnaire. Team managers were included in the survey as they are part of the various teams. After two weeks, a reminder was sent by the company management to increase response. In total 1,104 questionnaires were returned, yielding a response rate of 88.53%. The 1,104 respondents belonged to 129 different teams. The sample statistics can be found in Table 4.1.

The second dataset provides the data for the individual-level study (labeled study 1). This questionnaire was also collected by means of an online questionnaire, which was sent one month after the first survey. The questionnaire included questions on EO, two measures for individual employee performance, as well as more detailed control variables. Again, pre-announcements were made by the company management and the confidentiality of the research and anonymity of the responses were stressed several times. This also introduces a short lag between when initial information was collected and additional measures of individual and team performance were subsequently collected, helping to alleviate any danger of contemporaneous biasing of individual and team performance by a respondent's view of their commitment to the firm at that initial time point. All 1,247 employees received an invitation to fill in the questionnaire and received a reminder by the company management after two weeks. In total 628

questionnaires were returned, providing a response rate of 50.36%. All sample statistics can be found in Table 4.1.

Both questionnaires included a team code in order to aggregate the individual datasets on team level and to merge the two datasets. Due to internal privacy regulations, the questionnaires did not include a personal and unique respondent number and therefore could not be merged on the individual level. The 628 respondents of the second questionnaire were members of, in total, 103 different teams. To ensure an adequate analysis for the team level study, teams were only included if they consisted of at least two employees. Since no formal indication for team size was given by the company management, the number of respondents per team in the first data set serves as an indication for team size. Considering the very high response rate of the first questionnaire (88.53%), this provides us with a reliable indicator for team size⁵. Teams consisting of team members that only filled in the first questionnaire or the second questionnaire, were excluded from the analysis. The number of usable respondents from the first questionnaire is therefore lowered to 1,046. The total number of teams is 99. The team-level analysis is labeled study 2.

Table 4.1
Overview sample statistics

<i>Survey</i>	<i>Survey nr. 1</i>	<i>Survey nr. 2</i>
Total number of returned questionnaires	1104	628
Response rate	88,53%	50,36%
Effective sample size	1046	628
Number of teams	129	103
<i>Sex:</i>		
Male	27,0%	30,7%
Female	73,0%	69,3%
Average age	39.06 years	39,33 years
Percentage highly educated employees		35,8%
<i>Position within the organization:</i>		
Employee	92,8%	87,3%
Management	7,2%	12,7%
<i>Years employed at the organization:</i>		
Less than one year		3,7%
One to five years		31,7%
Six to ten years		16,9%
More than ten years		47,8%
<i>Year's experience within team:</i>		
Less than one year		15,3%
One to five years		64,8%
Six to ten years		9,4%
More than ten years		10,5%

⁵ There are only two exceptions where the number of respondents on the second questionnaire was higher than on the first questionnaire. For these teams, the team size was calculated from the second questionnaire.

4.3.2 Measures

Employee entrepreneurial orientation

Current prevalent measures of EO, such as the well-known EO measure of Miller (1983) and Covin and Slevin (1986), measure EO as a managerial disposition towards entrepreneurship. Although this typical top-management/CEO view of EO dominates the EO literature, researchers like Kemelgor (2002) and Monsen and Boss (2009) have shown that EO scales can also be extended to the perspectives of middle-managers, staff members, and employees. There are however very few EO scales that are specifically developed to measure EO at middle-manager, staff member, or employee level (Krauss *et al.* 2005), and those available typically move away from the original EO conceptualization and operationalization of Miller (1983) and Covin and Slevin (1986). For the purpose of the present research, we developed a new EO scale which measures the entrepreneurial behavior of employees and team-managers. Accordingly, our research circumvents the common mistake of administering to individuals an EO scale intended to measure firm- or SBU-level behaviors, then referring to the gathered data as individual-level EO data.

For the development of our Employee EO scale, we build upon the well-validated EO scale of Miller (1983) and Covin and Slevin (1989). We reformulated the items of this organizational-level scale to the employee level. Also, since not every item of this EO scale is also applicable to non-managerial employees, we made further revisions to improve its applicability and relevance to the intended audience. The contextual situation within the Company was taken into account while reformulating the items and all items were carefully translated into Dutch. All employee EO items can be found in Appendix B. We felt this was a better approach than to construct a new scale entirely because it remains faithful to the original conceptualization of EO as a construct reflected in the three dimensions of risk-taking, innovative and proactive behavior.

Commitment to company goals

Consistent with Porter *et al.* (1974), we view organizational commitment as the strength of an individual's identification with and involvement in a particular organization. Such a commitment is characterized by (1) a strong belief in and the acceptance of company goals; (2) a willingness to maximize effort within the organizational context; and, (3) a desire to maintain organizational membership (Porter *et al.* 1974: 604). Three commitment items, based upon Porter *et al.* (1974) and Allen and Meyer (1990), are developed within the present study to measure the level of commitment towards company goals at three different levels: the department, the division, and the goals of the company as a whole. All items can be found in Appendix A.

Employee performance

The day-to-day work within the two departments is based upon a substantial amount of repetition, and leaves very little room for errors. The evaluation of employee performance within the front office and operations department of The Company is therefore limited to the timely handling of incoming telephone calls, claim forms, and the timely and correct handling of administrative tasks. The pursuit of opportunities, innovation, and risk-taking therefore constitute extra-role behavior and are not considered to be an integrative part of the performance evaluation by the direct

manager or by higher management. Based upon the interviews held with the company management, we used two questions to measure employee performance. As employees within The Company are evaluated on a regular basis by their direct supervisors, respondents were asked, similar to Slocombe and Bluedorn (1999), to report the grade that they expected to receive at the next upcoming evaluation with their direct supervisor. Grades could range between 1 (lowest) and 10 (highest). Future grades were asked to reflect current performance as well as possible. Next to this quite general measure of employee performance, and given the importance of customer satisfaction (timely handling of calls, claim forms, and complaints) within this sector, we added a second question on customer satisfaction that was measured on a seven-point Likert-type measurement scale. All employee performance items can be found in Appendix B.

Team performance

For team performance, two different measures were used. The first survey included a three-item team performance scale based upon Jung and Sosik (2002) and González-Romá et al. (2009) that covered the team member's perceptions of their teams' focus on quality, customer satisfaction, and relative performance. Similar to employee performance, teams are primarily evaluated on their ability to accurately and timely handle calls, customer complaints, minimize errors, and perform administrative duties. All items were measured on a five-point Likert-type measurement scale, and can be found in Appendix A. The second survey included a single item question that asked respondents to compare their teams' performance relative to other teams within the organization on a seven-point Likert-type scale. This item can be found in Appendix B.

Control variables

Gender, age, and the level of education (lower education versus Bachelor degree or higher) were used to control for differences between individual respondents and team composition. The experience or tenure that someone has within the organization (less than five years of experience versus more than five years of experience), the experience that a respondent has within their current team (less than one year of experience versus more than one year of experience), the team size, and whether a respondent is a team manager are included to control for experience, team size effects, and formal position within the organization. Given the importance of discontinuous compilation models in team composition literature, we also control for the level of Team EO diversity in order to rule out the alternative hypothesis that the diversity of Team EO is more important than the level of Team EO itself. The level of Team EO diversity is calculated by first calculating the average EO score of all individual team members. Next, we calculate the variance in Employee EO between the different team members and aggregate this variance at team level. We refer to this aggregated variance score as "Team EO diversity".

4.4 Statistical checks

4.4.1 Factor analysis for the Employee EO scale

A confirmatory factor analysis (CFA) with maximum likelihood estimation was used to evaluate the factor structure of the Employee EO scale. To assess model fit, we looked at both absolute fit indices (Confirmative Fit Index (CFI) and Root Mean Square Error Approximation (RMSEA)) as well as incremental fit indices (Tucker-Lewis Index (TLI)

and Normative Fit Index (NFI)). Criteria set by Hair *et al.* (2007) are used to determine the threshold values for the different fit indices (CFI, LTI, and NFI > .90, RMSEA < .08).

The initial nine-item, three-dimensional model of Employee EO with three items for each dimension did not show acceptable level of model fit (CFI .841; RMSEA .139; TLI .701; NFI .832). These low levels of model fit were mainly due to highly significant ($p < .001$) factor loadings of items innovation1, proactiveness3, and risk taking1 on another latent factor than hypothesized. As part of measure purification, we removed these items from the measurement scale, since they clearly represent a different factor than hypothesized (risk taking1) or significantly load onto two factors (innovation1 and proactiveness3). The Employee EO model was re-specified as a six-item, three-dimensional scale with two items for each dimension. This modified version of the Employee EO scale shows excellent model fit (CFI .996; RMSEA .034; TLI .986; NFI .990) with highly significant ($p < .001$) factor loadings for each individual item on the hypothesized latent dimension.

We test the convergent validity and discriminant validity of the Employee EO scale by calculating the Average Variance Extracted (AVE) and comparing the AVE with the shared variance between the different factors. When the AVE exceeds the threshold value of .50 and exceeds the shared variance between the different factors, the measurement model displays convergent and discriminant validity, respectively (Fornell and Larcker 1981). As shown in Table 4.2, all Employee EO dimensions meet the criteria for convergent as well as discriminant validity. For each dimension, regression-based factor scores are calculated for further use within the statistical analysis. Regression-based factor scores provide a more accurate and reliable indication of the respondent score on the underlying latent factor than mean scores (Field 2005) and are preferred when obtaining purely uncorrelated factor scores is not necessary (Tabachnik and Fidell 1996).

Table 4.2
Average variance extracted and shared variance estimates

<i>Dimension</i>	<i>Items</i>	<i>1</i>	<i>2</i>	<i>3</i>
1 Employee EO Risk taking	2	.50	.37	.10
2 Employee EO Proactiveness	2	.61	.51	.21
3 Employee EO Innovativeness	2	.32	.46	.50

Note: Correlations are below the diagonal, shared variance estimates are above the diagonal and AVE estimates are presented on the diagonal.

4.4.2 Reliability of the measurement scales

We used criteria set by Nunnally (1978) (Cronbach's Alpha > .70) to assess the reliability of all composite latent constructs within the present study. The Cronbach alphas of these constructs range from .719 (risk taking) to .819 (commitment to company goals), indicating the acceptable reliability of our composite constructs. These reliability statistics are reported in Tables 4.3 and 4.4.

4.4.3 Common method variance

When using self-reported data from the same respondents, variance attributable to the measurement method and not the interplay of variables under investigation (also known as common method variance) might influence the study results (Podsakoff and Organ 1986). Consistent with recommendations by Podsakoff *et al.* (2003), we applied ad-hoc measures to reduce common method variance and test post-hoc for the existence of common method variance.

Two different ad-hoc measures for reducing common method variance were applied within the present study. First, and in line with recommendations by Podsakoff *et al.* (2003), we tried to reduce the tendency to provide socially desirable answers by highlighting the confidentiality of the research several times. Secondly, we minimized the tendency to provide consistent answers throughout different categories within the same survey by collecting the data for the team performance scale through the first survey and the data for the main variable under investigation (Employee EO) through the second survey one month later. Although collecting data at two different points in time also has disadvantages such as data loss due to different response rates, extra costs due to multiple surveys, and the introduction of possible contaminating factors such as changes in company policy and employees that leave the organization during the period of the research itself, it is considered to be one of the most rigorous ad-hoc methods for reducing common method variance when relying on self-reported data (Podsakoff *et al.* 2003).

Since company regulations did not allow us to add a personal respondent number, the data on employee performance were collected in the second survey together with the Employee EO data. This pairing of data collection foci could potentially introduce common method bias. The same applies to the second indicator for team performance, which was also collected together with the Employee EO items. We, therefore, tested if common method variance is a problem within our study by comparing the results of a single-factor CFA to a complex four-factor model that includes all three EO dimensions and performance. Common method variance is considered to be a problem when the simple one-factor model fits the data as well as, or better than, the complex model (Podsakoff and Organ 1986). The result of this common method variance test showed that common method variance is not a concern within the present study. The fit of the complex model (CFI .996; RMSEA .019; TLI .991; NFI .979) is significantly better than the model fit of the one-factor model (CFI .661; RMSEA .155; TLI .435; NFI .651).

4.5 Study I: EO and employee performance

Table 4.3 presents the means, standard deviations, and zero-order correlations for all variables used within Study I. The Employee EO dimensions innovativeness and proactiveness are both significantly correlated with the anticipated performance evaluation grade by direct supervisors ($r = .19, p < .01$; $r = .15, p < .01$) as well as with the employees' contribution to customer satisfaction ($r = .20, p < .01$; $r = .28, p < .01$). Risk taking, on the other hand, is not significantly correlated with either performance indicator.

A listwise hierarchical regression analysis ($N = 557$) was used to test the hypotheses. We examined the regression weights between the EO dimensions and the two performance indicators (see Table 4.4). The control variables were first added to the model (step one) and in step two (full model) the EO scales were added. To check for multicollinearity, we looked at the variance inflation factor (VIF) score for the individual variables in each regression model. All VIF scores are well below 2.0, showing no indications of multicollinearity (Myers 1990). Innovativeness is significantly related to the anticipated evaluation by direct supervisors ($\beta = .18, p < .001$) as well as to customer satisfaction ($\beta = .25, p < .001$). This provides support for Hypothesis 1. Also proactiveness is significantly related to the anticipated evaluation by direct supervisors ($\beta = .17, p < .001$) as well as customer satisfaction ($\beta = .28, p < .001$), providing support for Hypothesis 2. As one would expect, based upon the zero-order correlations, risk taking is not significantly related to either performance indicator, leading to the rejection of Hypothesis 3. The regression analysis further shows that the control variables explain 3% and 2% of the variance in performance, respectively. The inclusion of EO increases the amount of explained variance to 9% ($\Delta R^2 = .06, p < .001$) and 16% ($\Delta R^2 = .14, p < .001$), respectively.

Table 4.3
Means, S.D. and correlations for quantitative variables study one

Variable	N	M	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. Sex	628	0.31	0.46	-											
2. Age	628	39.33	9.70	-.07	-										
3. Education	628	0.36	0.48	.19**	-.24**	-									
4. Team size	628	13.11	4.92	.02	.01	-.13**	-								
5. Experience in organization	628	0.65	0.48	-.03	.46**	-.30**	-.04	-							
6. Experience in team	628	0.15	0.36	-.07	.20**	-.20**	.06	.33**	-						
7. Employee	628	0.87	0.33	-.11**	.05	-.31**	.06	.18**	.14**	-					
8. EO innovativeness	628	5.73	0.87	.14**	-.22**	.20**	.01	-.17**	-.15**	-.17**	(.75)				
9. EO proactiveness	628	5.35	0.53	.00	.05	.02	-.15**	-.01	-.03	.01	.00	(.76)			
10. EO risk taking	579	5.33	1.15	.21**	.07	.17**	-.03	.18**	.09*	-.18**	.00	.00	(.72)		
11. Evaluation by direct supervisor	601	7.39	1.15	-.03	-.17**	-.01	.01	-.11**	.00	-.02	.19**	.15**	-.08	-	
12. Contribution to customer satisfaction	628	5.48	0.85	.00	.11**	-.08	.03	.04	.10*	-.02	.20**	.28**	-.01	.15**	-

Notes: In the diagonal axis the reliabilities (Cronbach's alpha) are shown. For one-item measures Cronbach's alphas cannot be computed, these are labeled (-).

* $P < .05$.

** $P < .01$.

Table 4.4
Hierarchical regression employee performance: control variables and EO

	In your work you are evaluated on a regular basis, what grade do you expect to get the next time?		How big is your own contribution to the level of customer satisfaction within your team?	
	Control model	Full model	Control model	Full model
	β	β	β	β
Variables				
<i>Individual controls</i>				
Sex	-.05	-.06	.02	-.01
Age	-.16**	-.14**	.09	.10*
Education	-.04	-.05	-.09	-.11*
<i>Organizational related controls</i>				
Employee	-.01	-.01	-.06	-.05
Experience within organization	-.05	-.03	-.05	-.03
Experience within team	.05	.07	.08	.10*
Team size	.01	-.03	-.01	.02
Direct effects				
EO innovativeness		.18***		.25***
EO proactiveness		.17***		.28***
EO risk taking		-.05		-.01
Model specifications				
R^2	.03	.09	.02	.16
Adjusted R^2	.02	.08	.01	.14
ΔR^2		.06		.14
F-value	2.704**	11.887***	1.827	30.305***

Notes: Standardized regression coefficients are displayed in the table.

* $P = < .05$.

** $P = < .01$.

*** $P = < .001$.

4.6 Study II: Team EO, commitment, and team performance

4.6.1 Analytical approach

The scores of the individual respondents on the two questionnaires were first aggregated to team level, using the team codes. Next we merged the two data files into one file which was then used for statistical analysis. Because of the different response rates for the first and second questionnaire, team scores on the team performance scale and commitment to company goals scale were, in most cases, aggregated based upon a different number of respondents than the Team EO scales and relative team performance measure. This part of our research design potentially threatens the reliability of our analysis since the reliability of the individual indicators can potentially differ within the same statistical analysis. For example: if a team consists of 10 team members and all 10 team members have filled in the first questionnaire, the average team score on commitment to company goals and the team performance scale is the

result of all team members and can be considered as a very reliable indicator of the level of commitment and performance within the team. If only 2 members of that team have filled in the second questionnaire, then these aggregated scores represent a less reliable indication of, for example, the level of Team EO as the aggregated Team EO scores are based upon only 20% of all team members. To reduce this problem and ensure adequate analysis within study II, we calculated the percentage of team members that filled in the questionnaire (labeled "representative level"), by using the team size indicator. Teams are only included in the analysis if at least 50% of the team members also filled in the second questionnaire, or, in the event of the response rate on the second questionnaire exceeding the first questionnaire, if at least 50% of the team members filled in the first questionnaire. This measure lowered the number of teams within study II to 65. The aggregation of individual scores to the team level, and thus relying on a percentage of team members to provide an indication for the variable under study for the entire team, is quite common within this type of research (e.g., Ancona and Caldwell 1992; Stewart and Barrick 2000). Moreover, Vera and Crossan (2005), who used a very similar research design with two independent surveys for their team-level study, included teams if 30% of the team members filled in the second questionnaire. We, therefore, consider our 50% representation level as conservative and perform robustness checks to see if our results change when the representation level is changed. Because of the relatively low number of teams, we also look at marginally significant relationships ($p = < .10$), reducing the danger of a Type II error.

4.6.2 Study II results

All means, standard deviations and zero-order correlations can be found in Table 4.5. As in study I, team innovativeness is significantly correlated with performance ($r = .41$, $p < .01$). Also, team proactiveness ($r = .36$, $p < .01$) and commitment to company goals ($r = .47$, $p = < .01$) are significantly correlated with the team performance indicator. Team risk taking and EO diversity within the team do not show a significant relationship with the team performance indicator.

A listwise hierarchical regression ($N_{\text{teams}} = 65$) was used to test the hypotheses (see Table 4.6). We added the control variables in step one and the hypothesized direct effects in step two (direct model). In step three (contingency model), we added the interaction terms. In order to reduce the effect of multicollinearity in the contingency model, scores were first mean centered before the interaction terms were computed. The VIF scores within steps one and two of both models show no apparent multicollinearity (maximum VIF = 2.344). In step three, the VIF increases to a maximum score of 3.727. Therefore, in each instance, the VIF stays well below the threshold value (10.0) for multicollinearity problems (see also Myers 1990).

As shown in Table 4.6, the control variables explain 8% of the variance in performance. Adding Team EO, the diversity of EO and commitment to company goals, improves the amount of explained variance to 49% ($\Delta R^2 = .41$, $p < .001$). The inclusion of the interaction terms improves the model further. The amount of explained variance for the team performance scale is 58% ($\Delta R^2 = .08$, $p < .05$).

Table 4.5
Means, S.D. and correlations for quantitative variables study two

Variable	N	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Percentage males	65	33.11	25.85	-												
2. Average age	65	39.90	4.89	-.06	-											
3. Percentage highly educated	65	37.37	30.14	.28*	-.34**	-										
4. Percentage experienced workers	65	68.55	28.46	.05	.55**	-.31*	-									
5. Percentage inexperienced team members	65	15.47	20.31	.16	-.27*	.33**	-.54**	-								
6. Percentage employees in team	65	85.88	16.57	.02	-.03	-.50**	.10	.12	-							
7. Team size	65	10.60	5.44	-.15	-.14	-.23	-.04	.14	.25*	-						
8. Team EO diversity	65	0.38	0.29	-.18	.14	-.26*	.07	.20	.20	.45**	(.75)					
9. EO innovativeness	65	5.75	0.43	.03	-.19	.35**	-.07	-.12	-.15	-.10	-.20	(.75)				
10. EO proactiveness	65	5.39	0.57	.27*	.10	.08	-.06	-.09	.03	-.15	-.14	.02	(.76)			
11. EO risk taking	65	5.40	0.67	.42**	.07	.36**	.14	-.10	-.36**	-.18	-.13	.02	.34**	(.72)		
12. Commitment to company goals	65	3.96	0.28	.15	.02	.35**	.07	-.26*	-.26*	-.43**	-.28*	.40**	-.05	.12	(.82)	
13. Team performance	65	3.04	0.19	.05	-.11	.17	-.12	-.17	-.04	-.20	-.10	.41**	.36**	.18	.47**	(.74)

Notes: In the diagonal axis the reliabilities (Cronbach's alpha) are shown. For one-item measures Cronbach's alphas cannot be computed, these are labeled (-).

* $p < .05$.

** $p < .01$.

Table 4.6
Hierarchical regression team performance: control variables, EO,
and contingency model.

Variables	Team performance		
	Control model	Direct model	Contingency model
	β	β	β
<i>Control variables</i>			
Percentage males in team	-.03	-.15	-.16
Average age	-.07	-.12	-.05
Percentage highly educated	.12	-.14	-.21
Percentage experienced workers	-.02	-.17	-.11
Percentage inexperienced team members	-.10	.07	.09
Percentage employees in team	.08	.11	-.01
Team size	-.22	-.04	-.06
Variance team EO	.04	.12	.02
<i>Direct effects</i>			
EO innovativeness		.26*	.35**
EO proactiveness		.38***	.24 [†]
EO risk taking		.18	-.02
Commitment to company goals		.51***	.55***
<i>Interaction terms</i>			
Innovativeness * Commitment to company goals			-.09
Proactiveness * Commitment to company goals			.46*
Risk taking * Commitment to company goals			-.05
Model specifications			
R^2	.08	.49	.58
Adjusted R^2	-.05	.38	.45
ΔR^2	.08	.41	.08
ΔF -value	.631	10.556***	3.179*

Standardized regression coefficients are displayed in the table.

[†] $P = < .1$.

* $P = < .05$.

** $P = < .01$.

*** $P = < .001$.

To test Hypothesis 4 we examined the significance of the relationship between team innovativeness and the two performance indicators. In the direct model ($\beta = .26, p < .05$) the relationship with team performance is significant. This provides support for Hypothesis 4. Also, team proactiveness is ($\beta = .38, p < .001$) significantly related to team performance. Hypothesis 5 is, therefore, also supported. Commitment to company goals seems to be one of the strongest predictors of team performance. In the direct model ($\beta = .51, p < .001$) there is a strong and significant relationship with team performance. Hypothesis 7 is, therefore, supported. Team risk taking, as one would expect based upon the zero-order correlations, is not significantly related to team performance in the direct model. This leads to the rejection of Hypothesis 6.

The regression results in Table 4.6 show no significant interaction effect for team innovativeness \times commitment to company goals and team risk taking \times commitment to company goals, leading to the rejection of Hypothesis 8a and Hypothesis 8c. However, a positive interaction between the level of proactiveness within the team and the level of commitment to company goals within the team is found within the present study. Teams that, on average, show high levels of proactive behavior and are committed to the goals of the company, report higher levels of team performance (also see Figure 4.1). This provides support for Hypothesis 8b.

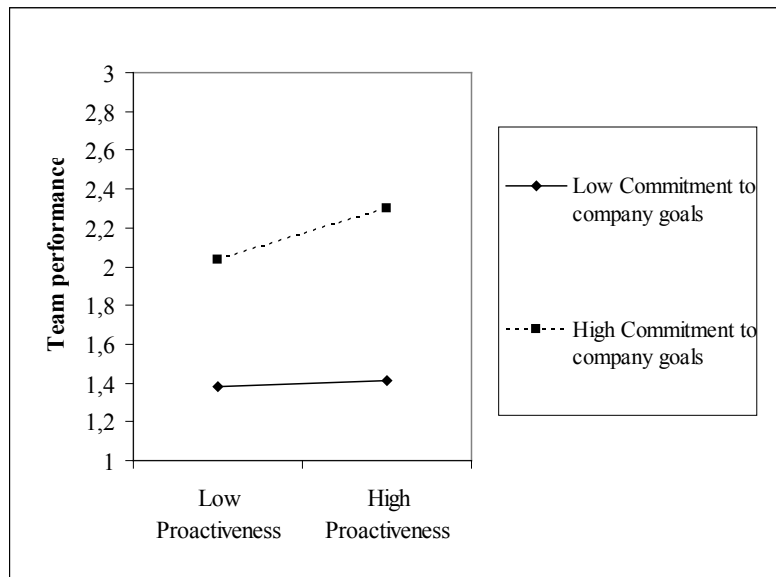


Figure 4.1

Interaction effect and the team performance scale

4.6.3 Robustness checks

Since the chosen level of minimum team representation may influence the results that are reported, we performed a number of robustness checks. These robustness checks are performed at a 40% ($N_{\text{teams}} = 70$) and 30% ($N_{\text{teams}} = 85$) representation level and are only used to check the overall robustness of our results, since these results are expected to be less reliable than the results reported in the tables. Increasing the level of representation is not feasible, since this would significantly decrease our sample size and therefore statistical power of our analysis. Both robustness checks support the robustness of our overall findings and our results do not change at a qualitative level.

4.7 Discussion

This study contributes to EO research in three different ways. First, it shows that two dimensions of EO (innovativeness and proactiveness) are related to employee and work team performance; second it highlights the predictive validity of innovativeness and proactiveness at the team level over and above the employee level; and third it highlights that proactive teams need to have commitment to company goals in order to maximize the use of such proactive behaviors. Together these contributions help address an important gap in the research into EO, which, while recognizing the

important role of individuals in substantiating and enacting an organizational EO strategy, has failed to evaluate how the EO endeavors of individuals singularly and in unison affect work place performance as part of the causal chain between EO and business performance.

The value of innovative and proactive behaviors for employee and team performance indicates that EO also bears value at lower hierarchical levels of the firm and within departments in which it cannot be considered as a standard part of the job description. Individuals and teams that evoke entrepreneurially-oriented behavior in an extra-role capacity, therefore, experience benefits in the form of work place performance. From an organizational perspective, this is important because the potential exists for such actions to drive performance that can aggregate to the firm level. Given that the relationship between EO and firm performance has support but remains equivocal with a persistent undercurrent of studies reporting contrasting effects (see Rauch *et al.* 2009), a reason for this might now be found in the multi-level complexity of EO, as put forward in this study. Covin and Slevin's (1989, p. 77) proposition that "entrepreneurial firms are those in which top managers have entrepreneurial management styles, as evidenced by the firms' strategic decisions and operating management philosophy" remains a dominant standpoint for most research studies. Viewing EO as a product of decisions made on behalf of the entire organization ignores the role of individuals engaging in extra-role entrepreneurial behaviors and their importance and consequences for the firm as a whole, particularly when coalescing in teams. We show the relevance of individual EO behaviors and commitment to organization goals as factors influencing individual and team performance, thereby responding to a call by Wiklund and Shepherd (2011) for a better understanding of the EO-performance relationships across different levels of analysis. We caution, however, that much is still to be done here, particularly since we do not establish whether or how individual and team EO, and subsequently individual and team performance, might accumulate and aggregate to the organizational level.

The absence of a positive relationship between risk taking and performance at employee as well as team level raises questions on the value of risk taking for Employee EO and Team EO⁶. A potential explanation is the limited ways in which taking risk can manifest itself at the organization's operational levels. Whereas risk-taking at the organizational level can involve monetary and business risks, at the operational level risk-taking mainly involves diverging from normal business practice. This divergence may involve costs (for example, in terms of wasted time) that outweigh the benefits or acting without the permission of the direct supervisor. In both cases employee performance ratings can be negatively affected. While firms have ample opportunities to diversify their risks, this is much more difficult for employees (Hayton 2005b) making risk taking at employee level, perhaps, an undesirable type of behavior in many cases. Also, Monsen and Boss (2009), who studied EO at the departmental-level, found the dimension risk-taking relating to the dependent variable (in their case,

⁶ It is important to note that the absence of a positive observed effect of employee and team risk taking on the corresponding performance indicators cannot be taken as evidence that risk taking is not relevant to EO at these levels. The presence or absence of risk taking as a potential element of the EO construct—at any level—is a conceptual matter, not an empirical matter to be resolved through data analysis.

intention to quit) in the opposite way than innovativeness and proactiveness. Our cross-level findings contribute to these prior studies and distil further how individual EO actions can generate beneficial as well as unforeseen implications to the firm at the individual and team level. Nevertheless, building on Hayton (2005a), there is still more to learn about the link between individual employee contributions and organizational-level entrepreneurial phenomena. Mediators and moderators of our observed relationships may emerge from the policies of the firm in managing entrepreneurial activities and could include, for example, organizational HR policies pertaining to employee rewards or controls.

A comparison of the R^2 s of the EO items on the individual level and team level demonstrates the greater predictive validity of Team EO (explained variance of the EO items equals 24.4%) over Employee EO (explained variance of the EO items equals 6.4% and 14.1% respectively) in relation to the corresponding level of performance at the workplace. Since the level of Team EO within this study is measured as a composite of the Employee EO of all team members, this does not directly imply that Team EO is more important than Employee EO. Rather, it indicates that, at the operational level of the firm, employees need to work together in order to maximize the potential of Employee EO, and that value seems to be created through the collective pursuit of opportunities at the team level. At the level of the individual employee such pursuit of opportunity may be less efficacious as teams may have a much more diverse knowledge and skill set through which to turn ideas into successful projects. Another perspective is that incremental innovations by employees usually relate to the work team in which they function and therefore, principally affect the efficiency and performance of the work team itself. Although such incremental innovations directly relate to the performance of the respective team member, it is less clear to what extent managers recognize such innovations as important contributions to individual work performance.

Shepherd and Krueger (2002) posit that work teams are likely to have a stronger impact on the performance of an organization than individuals, and by extension their contributions are deemed important for our understanding of what makes an organization entrepreneurial. We have already noted the difficulty of extrapolating individual or team EO and their performance consequences to the firm level, but our findings contribute fresh impetus to this debate because we specifically examine this issue in the context of extra-role behavior and not in-role behavior. When an individual must behave entrepreneurially as a direct function of their job (in-role behavior), it is readily apparent that direct effect on performance should take place across the individual and organizational level because of the closer congruence of the initiative to the organization objective. When individuals evoke EO as extra-role behavior, there is much greater propensity for variance both in terms of the nature of the behavior and its outcomes and broader implications for the organization. This particular dilemma has been seemingly ignored in the debate thus far, and we contribute much needed insight in this respect. It would seem that the time is ripe for investigation of the organizational factors that might trigger the emergence of such extra-role behavior by employees.

The relationship between team proactiveness and commitment to company goals highlights that proactive behavior within firms' benefits from guidance. Although one could argue that commitment is not necessary when adequate control systems are in place, or when management carefully monitors the actions of work teams, the entrepreneurship literature frequently emphasizes the need for autonomy within entrepreneurial organizations (e.g., Ginsberg and Hay 1994; Menzel *et al.* 2007). In this respect, commitment to company goals can serve as an informal mechanism that guides proactive team behaviors in the right direction by facilitating goal congruence as a pathway to synthesize the accumulation of organizational-level outcomes from the EO-informed activities of teams. Commitment to company goals substitutes for close control and monitoring – activities that potentially suppress beneficial EO behavior by individuals and team. Ireland *et al.* (2009) conceptualize top management vision and its dissemination throughout the organization as a fundamental lynchpin of establishing corporate entrepreneurship. We are among the first to offer empirical support for this proposition, but on the basis that our respondents engaged in EO as extra-role activity. It becomes of prime importance to now understand how and why individuals engage with the goals and vision established for a company and adopts it into their entrepreneurial behaviors.

4.7.1 Practical implications

For (human resource) managers, this research, first and foremost, highlights the importance of entrepreneurial behaviors by employees at the workplace. Despite our conceptualization of Employee EO as extra-role behaviors, our results show that innovative and proactive behaviors by employees are related to employee performance. Moreover, as suggested by our current results, innovative and proactive behaviors are particularly important for the performance of the work teams in which individual employees function. Currently, there is little empirical work available on how to select individuals in team-based settings (Morgeson *et al.* 2005). Our study, however, suggests that managers should select employees that score high on innovativeness and proactiveness, making assessments of those behavioral elements a useful part of a selection process. Next to the selection of innovative and proactive employees, the development of an organizational culture that supports and promotes both entrepreneurial behavior and commitment to company goals can be seen as essential. Managers should however take caution in stimulating too much risk-taking behavior within the company, as the alleged merits of employee- and team-level risk taking were not supported by this study.

An important discussion in the selection of employees and in the work team composition literature is the extent to which teams should be composed of members that are quite similar or diverse in terms of skills and behavioral intentions (e.g., Schjoedt and Kraus 2009). Our results show that when it comes to innovativeness and proactiveness, a diverse team composition is not an advantage. High Employee EO levels for individual team members appear to enable teams to realize the benefits often observed from heterogeneously composed teams (e.g., creativity, flexibility) without incurring the costs commonly associated with such team membership (e.g., conflict, slow decision making). This further highlights the importance of hiring entrepreneurial employees and stimulating entrepreneurial behaviors at the employee level.

4.7.2 Limitations and future research

Results of the current study should be considered in light of several research limitations. First, our measure of Team EO may be conceptually different from the actual level of EO within a team. Shepherd and Krueger (2002) for example argue that the perception of opportunities as perceived by individuals can differ within a team setting. The overall average of Employee EO may, therefore, be different from the actual level of Team EO, although this approach remains a very common practice within this type of research. Given the predictive validity of Team EO for team performance, as shown within the present study, several promising research opportunities for future studies are suggested. Research could, for example, investigate the relationship between Employee EO and the actual level of EO within a team (*i.e.*, where Team EO is measured as a team-level construct rather than as an agglomeration of the team members' scores). There are also likely to be boundaries to the extent to which extra-role Employee EO and Team EO will contribute to performance at the workplace. Such boundaries might be productively investigated through qualitative studies. Moreover, since company regulations did not allow us to include a personal respondent number, we could not test the value of commitment to company goals at the employee level. Future studies could include this within their analyses, together with additional variables that might moderate the relationships between Employee EO, Team EO and work performance. These potential moderating variables might include, for example, goal clarity, goal evolution, and perceived goal achievability.

Another limitation of the present study lies in the generalization of the findings, as the sample of employees is restricted to customer service and administrative employees within a service industry setting. Our assessment of Employee EO as extra-role behavior emphasizes non context-specific indicators of EO that potentially apply to many settings. Nonetheless, future studies should test the robustness of these results within different settings (business units, departments) and industries. We also do not test if Employee EO or Team EO ultimately leads to improved firm performance, while this is an explicit assumption within our study. Hayton (2005a) argues that such an assumption is frequently untested owing to the difficulty of acquiring cross-level data, and Coleman (1990) points to the causal ambiguity of aggregating effects across levels of investigation. Even though many studies (*e.g.*, Nelson and Winter 1982; Barney 1991; Stewart 1997) link the collective human capital of firms to their performance, future research should test the link between Employee EO and performance explicitly. Doing so calls for multi-level research designs.

Finally, in terms of the reliability of our results, we acknowledge that this study relies on self-reported data. Although we took several steps to minimize the influence of common method variance, tested for its existence, and recognize that the use of self-reported performance measures is very common in EO research (Rauch *et al.* 2009) and that most studies that include both objective and subjective performance measures show strong correlations between such measures (Dess and Robinson 1984), it would have been preferable to employ objective performance measures. In our case, company policy prevented us from being able to objectively isolate the performance of individuals and teams as that would have required individuals to be identifiable, (which was against

the wishes of the management and inconsistent with our own commitments to anonymity and confidentiality). In addition, future studies should also make use of longitudinal research designs in order truly confirm the causal relationship between Employee and Team EO and workplace performance.

5 Work Context and Employee Behavior as Antecedents for Intrapreneurship⁷

5.1 Introduction

Due to rapid technological change, the ongoing economic/financial crisis and increasing international competition, the abilities of firms to change, improve and create new value have become ever more important. While some firms seem to have little problems in identifying and exploiting opportunities, others experience severe difficulties. These difficulties may harm firm performance, also in firms that appear to have ample resources available for opportunity seeking and opportunity exploitation (Gertz and Baptista 1996). Corporate entrepreneurship (CE), which is often also referred to as intrapreneurship, has, in this respect, become an increasingly important tool for practitioners to enhance a firm's performance and to foster opportunity exploitation within a firm.

Also in scholarly literature, CE has become an important research topic (Covin and Lumpkin 2011). CE has proven to increase a firm's financial performance (see Rauch *et al.* 2009 for an overview), especially for firms that operate in hostile and dynamic/turbulent environments (Covin and Slevin 1989; Wiklund and Shepherd 2005; Kraus *et al.* 2012). Increased levels of financial performance are mainly due to strategic renewal within the organization (Zahra and Covin 1995; Hayton and Kelley 2006), strategic repositioning of the organization (Ireland *et al.* 2009), business venturing (Zahra 1995), increased levels of innovation (Zahra 1991) and increased flexibility (Ginsberg and Hay 1994).

CE is defined by Sharma and Chrisman (1999, p. 18) as: "the process whereby an individual or a group of individuals, in association with an existing organization, create a new organization or instigate renewal or innovation within that organization". In the literature however, CE is usually studied as a top-down process of creating corporate change, renewal and flexibility through a managerial disposition towards innovative, proactive and risk taking behaviors (*e.g.*, Miller 1983; Covin and Slevin 1989; Lumpkin and Dess 1996; Rauch *et al.* 2009). Entrepreneurship within existing organizations can, however, be present at every level within the organization (Kemelgor 2002; Monsen and Boss 2009) and the various manners in which entrepreneurial behavior is exhibited across organizational levels can be considered as a main driver of the level of CE within a firm (Covin *et al.* 2006; Wales *et al.* 2011). As a result, research at different vertical organizational levels (top-management level, middle management level and employee level), is needed to understand how CE adds value to a company and why CE is more successful in some organizations (Wales *et al.* 2011). For the purpose of this study we

⁷ An earlier version of this chapter has been accepted by the *International Entrepreneurship and Management Journal* in January 2013 and has been published as an online first article: Rigtering, J.P.C., Weitzel, U. (2013). Work Context and Employee Behavior as Antecedents for Intrapreneurship. *International Entrepreneurship and Management Journal*, DOI: 10.1007/s11365-013-0258-3. The *International Entrepreneurship and Management Journal* will be SSCI listed as of 2013. It is currently listed at the VHB journal rankings (rating: D), and the ABS journal rankings (rating: 1).

therefore distinguish between entrepreneurial activities that are initiated top-down by the organization (CE), and entrepreneurial activities that are pursued bottom-up by employees within an organization (intrapreneurship). Although a distinction between top-down and bottom-up initiated entrepreneurial activities is essential in order to acknowledge that there are different frame conditions for entrepreneurial behavior at (top) management level and at the employee level (see Dess *et al.* 2003), the terms CE and intrapreneurship are often used interchangeably. Sharma and Chrisman (1999), for instance, see intrapreneurship as a form of CE while other authors like Pinchot (1986), explicitly define intrapreneurs as employees that develop ideas and take hands on responsibility for the development of innovative new projects .

A strong focus on CE does not automatically result in intrapreneurship (Burgelman 1983b). Organizations, and large organization in particular, are often not suitable environments for entrepreneurial behavior (Burgelman 1983b) and disagreements between employer and employee are a major reason why many intrapreneurs leave their employer and start up an independent business (Klepper and Thomson 2010). In a recent survey of the literature on intrapreneurship, Stam *et al.* (2012) identify six groups of important antecedents: dispositional traits, demography, cognitive abilities, job design, work context and broader environment. Of these antecedents, job design and work context are of particular interest for managers that seek to improve the level of CE within their organization, as they can directly be influenced by organizational policies and managerial actions.

Many studies have shown that job design and work context are important antecedents of CE (*e.g.*, Knight 1987; Sun and Pan 2009; Goodale *et al.* 2011). Other studies have specifically focused on job design and intrapreneurship (*e.g.*, De Jong *et al.* 2011; D'Souza and Mulla 2011). Research on work context and intrapreneurship is, however, much more limited (Dess *et al.* 2003) and there is a lack of empirical work within this area. The pertinent literature on work context and intrapreneurship is either theoretical (*e.g.*, Kanter 1988; Pinchot 1986; Dess *et al.* 2003), focuses on (middle) managers (*e.g.*, Hornsby *et al.* 2002; Yang 2008; Hornsby *et al.* 2009), or on specific entrepreneurial behavior by employees (*e.g.*, Frese *et al.* 1997). Recently, there have been a couple of empirical studies (Axtell *et al.* 2000; Kirby 2006; Zampetakis *et al.* 2009; Wakkee *et al.* 2010; Moriano *et al.* 2011) that analyze intrapreneurial employees and the influence of the work context. However, the question how different organizational characteristics affect employees' entrepreneurial behavior remains largely unanswered. Empirical research has only begun to include a wider range of organizational characteristics as potential predictors of intrapreneurship (Axtell *et al.* 2000; Holt *et al.* 2007; Rutherford and Holt 2007; Zampetakis *et al.* 2009) and it is questionable to what extend results of CE research at the management level can be generalized to the employee level.

The contribution of this chapter is twofold. 1) Most empirical papers in the field of intrapreneurship research include a limited number of organizational level variables, without looking at more complex interactions between variables. Entrepreneurial behavior within organizations is, however, the result of complex processes where environmental and organizational factors shape the opportunity structures in which

people or groups function (Rutherford and Holt 2007). We therefore make a distinction between the formalized work context that can act as a catalyst or barrier to entrepreneurship (Zahra and Covin 1995; Burns 2008) and the informal work context of exchange relationships between the manager and employee. This combination of formal and informal work context has been recommended by Dess *et al.* (2003) and acknowledges that employees interpret formal organizational policies through the interactions with the direct manager. 2) While some papers focus on important innovative projects as the outcome of intrapreneurship (*e.g.*, Knight 1987; Kanter 1988), others regard minor entrepreneurial behaviors displayed by employees as intrapreneurship (*e.g.*, Axtell *et al.* 2000; Zampetakis *et al.* 2009). Although there are pro's and con's to both approaches, there are no empirical studies that combine these approaches and provide a more detailed empirical model. Within the present study, we develop a theoretical model (referred to as the two-step model of intrapreneurship) that predicts how intrapreneurship is stimulated within organizations and provide a simultaneous analysis of entrepreneurial behaviors displayed by employees, and the actual involvement in intrapreneurial projects that are of importance to the organization as a whole. In doing so, we aim to present a more realistic analysis of the process of stimulating intrapreneurship within organizations.

5.2 Theoretical framework

Before developing a two-step model of the intrapreneurship, we start with a description of the individual building blocks of the model (intrapreneurship, employee entrepreneurial orientation, formal work context and informal work context). Within the model, a distinction is being made between employee level (intrapreneurship and employee entrepreneurial orientation) and the organizational level (formal work context and informal work context). We start this section by defining intrapreneurship and the describing the type of entrepreneurial behaviors that are deemed essential for the intrapreneurial process. Next, we focus on the organizational level and describe the type of formal work context and the nature of informal exchange relationships (informal work context) that are needed to foster intrapreneurship within an organization. We conclude the theoretical section of the chapter with the development of the two-step model and hypotheses.

5.2.1 Intrapreneurship

Carrier (1996, p. 6) defines intrapreneurship as: "the introduction and implementation of a significant innovation for the firm by one or more employees working within an established organization." This definition characterizes an intrapreneur, in line with Bosma *et al.* (2012), as an employee that takes the lead in introducing and implementing innovations. It also highlights, consistent with Pinchot (1986), the importance of idea implementation and innovation in intrapreneurship. The actual implementation, impact and level of innovation are considered to be of particular relevance to the definition of intrapreneurship, as intrapreneurship can only contribute to organizational renewal, business venturing, flexibility and profitability when projects move beyond the idea phase, are innovative and have significant impact within the organization.

5.2.2 Employee entrepreneurial orientation

Previous research on work context has typically focused on entrepreneurial behavior and less on intrapreneurship (see Frese *et al.* 1996; Axtell *et al.* 2000; Zampetakis *et al.* 2009; Wakkee *et al.* 2010; Moriano *et al.* 2011). Indeed, a focus on intrapreneurship alone runs the risk of being too narrow, as it only regards those employees as intrapreneurs, who are active in significant, self-initiated projects of organizational renewal. There is however a much broader set of employee behavior that can be regarded as entrepreneurial and therefore as a source for observed intrapreneurship.

CE research at firm level usually conceptualizes CE as a set of innovative, proactive and risk taking behavior (see, *e.g.*, Covin and Slevin 1989; Rauch *et al.* 2009). These three dimensions are seen as essential for the corporate entrepreneurial process of recognizing opportunities and the reconfiguration of resources to exploit those opportunities. Also at employee level these three dimensions can also be considered key elements of entrepreneurial behavior by employees, which will be referred to as employee entrepreneurial orientation (Employee EO) in order to indicate the overall level of entrepreneurial behavior by employees. Employee EO requires behavioral elements as: (i) idea generation, opportunity recognition and idea implementation in order to come up with and implement radical as well as incremental innovations. (ii) A self-starting persistent orientation (also labeled as: personal initiative) towards shaping environmental conditions in order to find support within an organization and to overcome organizational hurdles. (Frese *et al.* 1997). (iii) When displaying Employee EO, employees challenge the status quo within organizations and are likely to go beyond standard job descriptions (Parker and Collins 2010). Entrepreneurial inclined employees could even act without the permission of higher management (Vesper 1984) and Stevenson and Jarillo (1990) emphasize that the pursuit of opportunities is likely to go beyond current controlled resources and, therefore, always entails a certain level of risk.

5.2.3 Formal work context

At the organizational level, the organizational structure of an organization is often mentioned as an important antecedents of intrapreneurship (Kanter 1985; 1988; Hornsby *et al.* 1999; Hayton 2005b). According to Mintzberg (1993) the design of individual positions within an organizational structure is characterized by two parameters: task specialization and formalization. Task specialization can be subdivided into horizontal participation, the extent to which work activities are highly specialized, and vertical participation, the extent to which responsibilities are marked out. Formalization is the extent to which organizations try to control and steer the behavior of their employees through, *e.g.*, formal job descriptions, (work) procedures and rules (Mintzberg 1993). Organizations with high levels of formalization and high task specialization can be characterized as mechanistic organizational structures, while low levels of formalization and task specialization are typically related to organic and flexible organizational structures (Alexander and Randolph 1985).

Next to the organizational structure, the resources available for intrapreneurship are also considered as an important antecedent (Day 1994; Hornsby *et al.* 1993; Hornsby *et al.* 1999; Marvel *et al.* 2007). For the development of intrapreneurial projects, both

time (Knight 1987) and money (Menzel *et al.* 2007) is needed. Although some authors consider time as a more crucial element to spur innovation and intrapreneurship within a company (*e.g.*, Knight 1987; Foss *et al.* 2007), financial resources have proven to be very important when it comes to the implementation of ideas (Hornsby *et al.* 2002).

5.2.4 Informal exchanges at the workplace

The nature of informal exchanges processes within organizations is best described by social exchange theory (Blau 1967; Emerson 1976). Social exchange processes are characterized by uncertain (future) benefits and an inability to (legally) force a second party to fulfill its obligations (Blau 1967). Social exchange therefore depends on trust and reciprocity within the exchange relationship as expectations about performance of a second party are often formulated *a priori* and related to outcome expectations as well as interpersonal treatment (Rousseau 1989). The use of social exchange within intrapreneurship research emphasizes that actions and decisions of individual employees should be seen in a relational context; in which the relationship between the manager, who acts on behalf of the organization, and the employee is of particular relevance. At the heart of this exchange relationship is the notion of trust. According to Gambetta (1988) trust implicitly means that we do not expect that another person will harm us directly or indirectly or will behave in a, for us, unfavorable manner. Given the element of risk associated with intrapreneurial actions, trust in the direct manager is an important condition for employee EO (Dess *et al.* 2003).

5.3 Development of a two-step model and hypotheses

Previous research (Hornsby *et al.* 1999; Axtell *et al.* 2000; Zampetakis *et al.* 2009) has shown that organizational characteristics affect Employee EO. Hence, work context can be seen as an important antecedent for Employee EO within the organization. This orientation is, in turn, needed to initiate and implement intrapreneurial projects. Employees that exhibit Employee EO are, however, likely to bump into organizational inertia, bureaucracy, and other hurdles (Burgelman 1983b; Chisholm 1987). Although overcoming organizational hurdles is considered to be an integrative part of the process of CE (see Hornsby *et al.* 2002), not every employee who displays Employee EO will eventually implement an intrapreneurial project as the risk associated with intrapreneurship (*e.g.*, potential damage to career) can be substantial (Hayton 2005b). Thus, even though an intrapreneurial project may bear high potential for the company as a whole, the decision to opt for intrapreneurship remains an individual and personal decision when intrapreneurship is not a standard part of the job description of the employee. Another reason why Employee EO does not necessarily translate into intrapreneurial projects may be a lack of intrapreneurial opportunities in a firm. As an extreme example, even if all employees clearly display Employee EO, a firm's current business situation may not allow each of them, or even any of them, to find, take up, or lead a new project. Therefore, from a process perspective, intrapreneurship is likely to follow a certain sequence. Employees first have to develop ideas and identify opportunities (Employee EO) before they can initiate and take the lead in innovative projects (intrapreneurship). Accordingly, and as explained in more detail below, we make a distinction between behaviors and the implementation of intrapreneurial projects and propose a two-step model, in which we refer to the stimulation of

Employee EO by the organization as 'step one' and to the individual decision of the employee to be actively involved in an intrapreneurial project as 'step two'.

5.3.1 First step of the model

In line with previous research, we advocate the view that Employee EO, in step one of the model, requires an formal organization that allows employees to think outside the box (Kanter 1988; Hisrich 1990; Frese *et al.* 1996; Menzel *et al.* 2007) and that supports the development of innovative ideas (Knight 1987). Such an organization is usually characterized by flexible (Menzel *et al.* 2007) and flat (Hisrich 1990; Kuratko and Goldsby 2004) organizational structures and by high levels of both communication and cross functional integration in order to promote knowledge sharing and facilitate organizational learning (Hayton 2005b). This suggests high levels of both horizontal participation (broadly defined jobs), vertical participation (a flat organizational structure) and a limited number of organizational procedures (low levels of formalization) in order to give employees control over their job, autonomy at the workplace (Ginsberg and Hay 1994; Menzel *et al.* 2007). Next to the design of individual positions within the organization, it also suggest an organizational willingness to allocate sufficient recourses to employees that want to develop, test, and introduce products, services or other types of innovations within the organization (Day 1994; Hornsby *et al.* 1999). This leads to the following three hypotheses:⁸

Hypothesis 1: Employees that experience high levels of horizontal and vertical participation, display more Employee EO.

Hypothesis 2: Employees that experience the organizational structure as highly formalized, display less Employee EO.

Hypothesis 3: Employees that have more resources available for innovative projects, display more Employee EO.

Next to the formal work context, trust in the manager can be seen as an important condition for Employee EO and intrapreneurship within an organization. Although most authors agree that mutual trust smoothens relationships between organizational members, theoretical arguments that trust increases performance at the workplace are scarce (Bijlsma-Frankema *et al.* 2008). One of the exceptions to this rule is Möllering (2005), who argues that interpersonal trust creates an us-reality in which the goals of the trustor are aligned with the trustee. He concludes that reciprocity in the exchange relationship creates shared goals between the employee and the manager and causes employees to move beyond standard role requirements by exhibiting extra-role behavior. In CE literature, the importance of a trustful relationship between the direct manager and the employee has been frequently substantiated when it comes to promoting intrapreneurship (see Hayton 2005b). Employees have to be able to trust managers that they will not harm their position within the company when they exhibit Employee EO. We therefore postulate the following:

⁸ In all hypotheses the term 'Employee EO' refers to, as explained in the previous section, more innovative behavior, more personal initiative, and more risk taking, compared to other employees.

Hypothesis 4: Employees that have trust in their direct manager, show more Employee EO.

Exchange relationships should not only be analyzed in direct relation to Employee EO, but also in relation to the organizational work context (Dess *et al.* 2003). We put forth that trust in the direct manager acts as an important moderating variable and changes the way employees deal with existing organizational procedures. Although people tend to think in both formal and informal procedures within organizations, their perceptions of the outcome of an organizational decision or procedure largely depends on a combination of formal and personal interactions between people (Folger 1987). Too much formal organizational procedures is expected to cause employees to exhibit less Employee EO. When employees have a relationship with their manager that revolves around mutual trust, bureaucratic procedures and organizational inertia may be less of a hurdle as they will trust upon the support of their manager to overcome such hurdles. This proposition, which puts the middle manager at the heart of the process of stimulating intrapreneurship, is very much in line with CE literature in general. Authors like Hornsby *et al.* (2002) and Kuratko *et al.* (2005) provide strong support for the pivotal role of middle managers in not only identifying and exploiting opportunities, but also in creating and endorsing an environment in which Employee EO can thrive. Based upon in depth interviews with 24 technical intrapreneurs and 20 human resource managers, Marvel *et al.* (2007) concluded that the interpersonal way employees are being managed is one of the most important conditions for continued motivation for intrapreneurship. This leads to the following hypothesis:

Hypothesis 5: The relationship between formalization and Employee EO is moderated by trust in the manager. Employees that trust their manager are less restricted in their Employee EO by high levels of formalization.

5.3.2 Second step of the model

Employees may choose to introduce and take the lead in implementing significant innovations within an organization (intrapreneurship) or may decide not to, as this is unlikely to be a part of a standard job description. Employees that implement such significant innovations, and who therefore choose to become an intrapreneur, need to be innovative and show initiative in order to come up with ideas, get organizational support and to push projects through red tape. This also implies a willingness to be exposed to risks, as employees are likely to invest personal time, put their reputation on the line and as personal benefits, even in the case of success, are uncertain (Folger 1993). The stronger the employees tendency towards Employee EO, the more likely they will culminate in an intrapreneurial project. This leads to the following hypothesis:

Hypothesis 6: Employees with a higher level of Employee EO are more likely to be intrapreneurs.

Employee EO may also affect the strategic and financial importance of intrapreneurial projects. Entrepreneurial activities' within existing organizations are associated with, but not limited to, new product/service development, strategic renewal, strategic

repositioning and new entry (Covin and Slevin 1989; Lumpkin and Dess 1996; Hayton and Kelley 2006; Ireland *et al.* 2009). Regardless whether these activities are commissioned top-down (CE) or bottom-up (intrapreneurship), their importance within the organization depends, amongst others, upon the level of innovation and the extent to which the activities are applicable within the specific organizational context. We therefore expect that an employee with a strong focus on innovation is more likely to initiate more important projects, while a focus on personal initiative and a willingness to accept personal risks helps an employee to find organizational support and to push such projects through red tape. We therefore postulate the following:

Hypothesis 7: Employees with a higher level of Employee EO are involved in more important intrapreneurial projects.

Figure 5.1 provides an overview of the theoretical model and all hypotheses, which will be tested empirically:

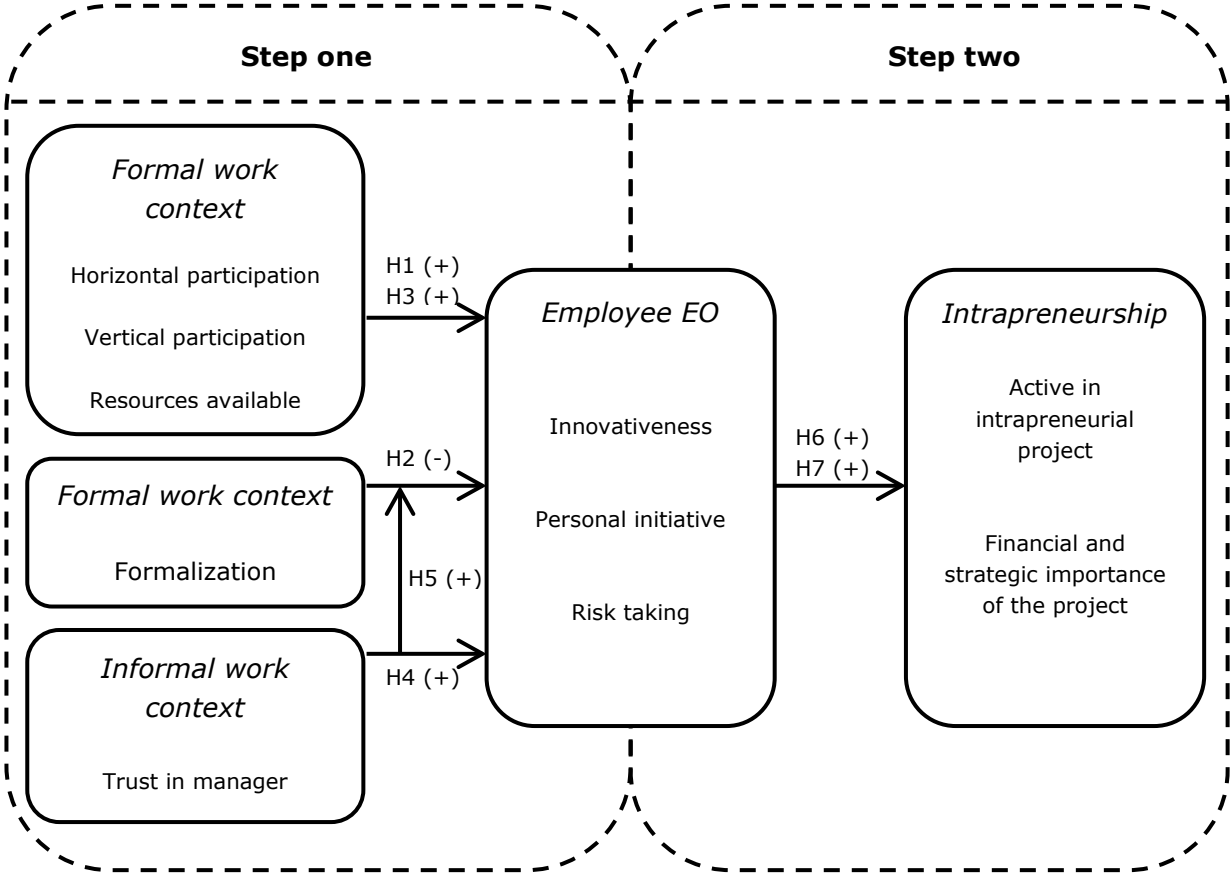


Figure 5.1: Theoretical model and hypotheses

Note: The hypothesized relationships, together with the expected direction (+ or -) of the relationship, are included in the model.

5.4 Method

In order to test our hypotheses, we collect survey data from individual employees. This is in line with other recent intrapreneurship studies such as Zampetakis *et al.* (2009) and Moriano *et al.* (2011). Given our two step model, we primarily use structural equation modeling (SEM) to test our hypothesis. SEM allows us to evaluate our two step model as a whole and provides more reliable results than the use of two successive multiple regression models.

5.4.1 Sample

We collected our data in six different Dutch organizations. Three of the six organizations are for-profit, while the other three can be characterized as non-profit organizations. Four organizations fall under the European Commission (2003) definition of small and medium sized enterprises, in *casu quo* employing ten or more employees but less than 250 employees. Two organizations employ more than 250 employees and can be categorized as large organizations (see European Commission 2003). In our empirical analysis, we control for organizational size and for profit versus non-profit orientation (see below).

Within each organization the same sampling procedure was applied. First, together with company management, the sample size was determined. Both employees and team leaders/operational managers were included in the sample, since the development and implementation of corporate renewal is not considered to be a standard part of their job description. A number of steps were taken to increase the response rate, to ensure that respondents could respond openly to the questions, and that they felt safe in doing so. These steps include an email by the company management sent two weeks prior to the actual survey, in which the management expressed their support for our research and briefly explained its purpose. The online questionnaire itself included an email from the research team, which highlighted the anonymity and the importance of the responses. One-and-a-half to two weeks later, participants received a reminder to fill in the questionnaire. During the entire data collection period, an email address was available for questions by potential respondents. All survey questions were non-compulsory. The measures mentioned above are in line with recommendations by Dillman (1978) for increasing the response rate and reliability of questionnaire results. The response rates within the different organizations ranged from 30% to 66.67%. An overview of all sample statistics can be found in Table 5.1.

5.4.2 Operationalisation of measures

All scales were taken from or based upon existing measures and translated from English to Dutch (if applicable). A back translation procedure was applied to ensure that all items were adequately translated. All items are, unless mentioned otherwise, measured on a 7-Point Likert-type scale ranging from completely disagree to completely agree. All independent variables, as presented in Figure 5.1, were computed as regression based factor scores. The questionnaire is available from the authors upon request.

Table 5.1
Overview sample statistics

Total number of returned questionnaires	176
Response rate	37.0%
Percentage males	40.3%
Percentage females	59.7%
Average age	42.5 years
Percentage highly educated employees (BSc. or higher)	67,4%
Percentage employees with lower or medium education (no BSc.)	32,6%
Percentage team leaders/operational managers	14,3%
Percentage employees	85,7%

Intrapreneurship

Consistent with the operationalisation of entrepreneurial employee behavior in the Global Entrepreneurship Monitor (Bosma *et al.* 2012), intrapreneurship is measured as active involvement in the development of a self-initiated project of corporate renewal and taking the lead within this respective project. Respondents were first asked if they, during the last two years, had participated, alone or within a team, in a project with the purpose of creating renewal within the company (development of new products, services, organizational processes and/or strategies). If respondents had participated in such a project or were currently participating in such a project, they were asked to evaluate their role within this project (leading role, supporting role or both). Respondents that were identified as intrapreneurs (participating in intrapreneurial project and taking the lead within this respective project), were also asked to evaluate both the strategic and financial importance of this project (measured on a five point Likert-type scale ranging from very small to very important).

Employee EO

The three different dimensions of Employee EO are measured by using three different measurement scales. For the level of innovative workplace behavior a measurement scale developed by De Jong and Den Hartog (2010) is used. This measurement scale consists of a total of ten items on idea generation, exploitation, the championing of ideas and idea implementation. Personal initiative is measured through the personal initiative scale of Frese *et al.* (1997). This scale has been used in many other studies and has been proven to be very reliable. The level of employee risk taking was measured by three risk taking items developed by De Jong *et al.* (2011). These items measure both the risk taking propensity of the employee as well as the tendency for more bold (risky) actions within an organization setting.

Organizational structure

The dimensions of organizational structure, horizontal participation, vertical participation and formalization, were measured by twelve questions based upon an instrument developed by Leifer and Huber (1977) and Alexander and Randolph (1985). This instrument has been used in many different organizational settings in the past and has been proven to be reliable.

Resource availability

A scale developed by De Jong and Den Hartog (2005) is used to measure the level of resource availability in the organization. This scale includes questions on the amount of both financial and non-financial (e.g., time) means available in the company to develop new ideas.

Trust in manager

The level of trust in the direct manager is measured with three items, adapted from Bijlsma-Frankema (2000) and Bijlsma and Van de Bunt (2003). The scale includes items on the level of trust in the personal and professional relationship between the manager and employee.

Control variables

We include gender (1=male), age (measured in number of years), and a dummy for the level of education (1= Bachelor degree or higher) in our structural models to control for demographic differences between individual respondents. We also add two control variables to correct for firm-level differences in work context, which are not due to organizational design or policies within the firm. Donaldson (1995), for example, points out that the complexity of the organizational structure and the level of bureaucracy usually increase as firms grow. We therefore added the dummy variable SME (=1) to control for the less complex organizational structures and policies that may result from a smaller firm size. Further, non-profit organizations may be more constrained in the number of resources that they can allocate for innovative projects. We therefore also include a dummy for non-profit organizations (=1) as a second firm level control variable.

5.5 Data analysis

5.5.1 Factor analysis and reliability

Before testing the hypothesized model, a confirmatory factor analysis (CFA) is used to assess the convergent and discriminatory validity of the independent variables. In order to determine the level of model fit, the χ^2 of the measurement model and the Root Mean Square Error of Approximation (RMSEA) are being used. The RMSEA is considered as the most reliable fit index when examining confirmatory factor models (Rigdon 1996). In line with Parker *et al.* (2003) a RMSEA value of .08 is considered to be a liberal measure of model fit and .05 an indication for very good model fit.

The original CFA provides a mixed picture. The χ^2 test suggests that the model does not fit the data very well, while the RMSEA suggests good model fit ($\chi^2 = 208.161(125)$, $p = < .001$, RMSEA .062). A closer examination of the measurement model revealed, however, that all items of the bureaucracy dimension vertical participation display, significant cross loadings on multiple factors (trust, horizontal participation and formalization). In order to improve the measurement model, vertical participation is removed, since it lacks discriminatory validity and cannot be considered as an independent variable within our structural model. The new CFA yields, given that the χ^2 test is sensitive to the number of variables that are included in the analysis, an improved model fit ($\chi^2 = 90.607(59)$, $p = < .01$, RMSEA .055) and all items load

significantly ($p = < .001$) on their hypothesized latent constructs. The latter can be considered as an indication for convergent validity (Byrne 2010).

The reliability of the different scales is estimated by a Cronbach's alpha test. A Cronbach's alpha above .70 is generally preferred, while a value above .80 is an indication for strong internal consistency (De Vaus 2002). Most scales in our study display reasonable levels to very good levels of reliability, ranging from .72 (level of formalization) to .90 (trust in supervisor and resource availability). The Cronbach's alpha of the horizontal participation scale (.67) and risk taking (.68) is slightly below .70. A value between .60 and .70 is, however, still acceptable for exploratory purposes (Hair *et al.* 2007). As removing items from these measurement scales has hardly any effect on the Cronbach's alpha, no items have been deleted.

5.5.2 Statistical checks

As the data for the present study has been collected at one point in time, the reported relationships can be the result of variance attributable to the measurement instrument instead of the relationships under study (also known as common method variance or method variance) (Podsakoff and Organ 1986; Podsakoff *et al.* 2003). A Harman's single factor test is used to test for the existence of common method variance. Common method variance is considered a major problem and threat to the validity of the results if one factor explains more than 50% of the variance in the dataset (Podsakoff and Organ 1986). All items from all constructs under study were included in the analysis. The result of the Harman's single factor test shows that common method variance is not a concern; the single factor explained only 20.83% of the total variance.

5.6 Results

5.6.1 Bivariate analysis and descriptive statistics

Pearson correlations were used for an initial examination of the hypothesized relationships. All Pearson correlations and descriptive statistics for all variables under study are shown in Table 5.2.

Table 5.2 shows that, in line with our expectations, none of the antecedents directly affect any of the intrapreneurship measures ($p = > .10$). This provides initial support for our two-step model of intrapreneurship. Of the three dimensions of Employee EO, innovative workplace behavior ($r = .29, p = < .01$) and personal initiative ($r = .33, p = < .01$) are positively related to probability of participating in an intrapreneurship project. Risk taking is negatively associated with intrapreneurship, although this effect is not significant ($p = > .10$). Risk taking does affect the financial performance of intrapreneurial projects positively ($r = .16, p = < .10$). Respondents that report higher levels of innovative workplace behavior participate in both financially ($r = .28, p = < .01$) and strategically ($r = .35, p = < .01$) more important projects. Personal initiative is only positively related to strategically more important intrapreneurial projects ($r = .29, p = < .01$).

Table 5.2
Means, S.D., correlations and reliability for quantitative variables

Variable	N	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Male	176	0.40	0.49	(-)														
2. Age	170	42.51	11.96	-.07	(-)													
3. Team leader	175	0.14	0.35	.23**	.13	(-)												
4. SME	176	0.37	0.48	-.14	.14	-.06	(-)											
5. Non-profit	176	0.69	0.46	-.13	.16*	-.05	-.87**	(-)										
6. Trust in manager	163	5.37	1.31	.10	-.12	.20**	.14	-.11	(.90)									
7. Horizontal Participation	173	4.72	1.00	-.02	-.12	.21**	.14	-.13	.00	(.67)								
8. Formalization	174	4.27	1.26	.03	.23**	.02	-.22**	.25**	.00	.00	(.72)							
9. Resource availability	170	4.57	1.38	.08	-.04	-.05	.27**	-	.00	.00	.00	(.90)						
10. Innovative workplace behavior	160	4.90	0.87	.12	.02	.21**	-.18*	.20*	.18*	.25**	.16†	.13	(.88)					
11. Personal Initiative	162	5.16	0.84	-.05	-.10	.12	-.08	.04	.25**	.19*	.12	.12	.67**	(.84)				
12. Risk taking	165	2.94	1.15	.18*	-.11	.13	-.02	-.06	-.08	.10	-.03	.07	.08	.16*	(.68)			
13. Intrapreneurship	152	0.54	0.50	.07	.01	.14	-.24**	.17*	.11	.13	-.06	-.11	.29**	.33**	-.11	(-)		
14. Financial importance	122	2.89	1.11	.24**	.10	.24**	.13	-.06	.02	.05	-.13	.00	.28**	.15	.16†	.01	(-)	
15. Strategic importance	123	3.40	1.01	.11	.03	.24**	.03	-.03	.15	.02	-.07	-.02	.35**	.29**	.13	.09	.59**	(-)

Notes: In the diagonal axis the reliabilities (Cronbach's alpha) are shown. For one-item measures Cronbach's alphas cannot be computed, these are labeled (-).
†, *, **: denote, levels of statistical significance at P = < .10, .05, .01, respectively.

Trust in the direct manager and horizontal participation are important predictors of both innovative workplace behaviors ($r = .18, p = < .05$ and $r = .25, p = < .01$, respectively) and personal initiative at the workplace ($r = .25, p = < .01$ and $r = .19, p = < .05$, respectively). The level of formalization, in contrast to our expectations, is positively associated with innovative behavior at the workplace ($r = .12, p = < .10$), as well as personal initiative. The level of resources available to respondents does not affect innovative workplace behavior or personal initiative. None of the antecedents are associated with risk taking behavior ($p = > .10$).

5.6.2 Multivariate analysis

The notion that the formal and informal work context does not directly affect the level of intrapreneurship within the firm, but only through Employee EO, can be challenged by a direct model in which work context affects both Employee EO and intrapreneurship simultaneously. We therefore start with an assessment of the accuracy of our hypothesized two-step model. Using SEM (AMOS 18), we compare the model fit of our two-step model against a model in which both types of intrapreneurship are directly affected by the formal work context and trust in the direct supervisor. Next, we include the different control variables in the two-step model and focus on the structural relationships. Since SEM is unable to estimate the β of a dependent dummy variable, we estimate the β of the relationship between the dimensions of Employee EO and intrapreneurship by running a Bayesian analysis. In contrast to a maximum-likelihood estimation, a Bayesian estimation considers any unknown quantity as a random variable and therefore seeks to specify its probability distribution (Byrne 2010). The prior distribution (theoretical distribution of the parameters) is therefore combined with the empirically observed distribution by a process of random sampling to form the posterior distribution (Arbuckle 2007). The mean of this posterior distribution is commonly reported as the parameter estimate, while the standard deviation can be considered as the standard error. In AMOS, this process of random sampling is accomplished through the Markov Chain Monte Carlo algorithm (MCMC). For each analysis we simulated approximately 180,000 samples and report the 95% confidence interval of the β . The likelihood of the MCMC is assessed by comparing the parameter distribution of the first and last thirds of accumulated samples. If the distributions are close to identical, AMOS has successfully identified important features of the structural relationship (Byrne 2010). The difference between respondents that report low levels of trust in their manager and respondents that report high levels of trust in their manager are being analyzed by splitting the sample into two groups (low trust in manager, high trust in manager). The significance of interaction effects is being tested by constraining the regression parameter to be equal in both groups and analyzing the increase in χ^2 in the measurement model.

Table 5.3 shows that the fit of the two-step model of intrapreneurship is, on average, significantly better than the direct model. Because of the absence of any significant correlations between the variables under study and risk taking, specifications for a model with risk taking do not result in a better fit. On the basis of the results of the innovative behavior and personal initiative model, we therefore conclude that our two-step model is the more accurate empirical model.

Table 5.3
Validation of the two step model of intrapreneurship

	Different models		
	Innovative workplace behaviors	Personal initiative	Risk taking behaviors
Comparison χ^2			
Two step model	6.561(4), $p = > .05$	6.995(4), $p = > .05$	6.879(4), $p = > .05$
Direct model	13.050(1), $p = < .001$	16.797(1), $p = < .001$	1.701(1), $p = > .05$
Comparison RMSEA			
Two step model	.060	.065	.064
Direct model	.262	.300	.063

As shown in Figures 5.2, 5.3 and 5.4, AMOS was successful in identifying the important elements of the structural relationship and the reported β 's in Table 5.4 can therefore be regarded as reliable. It is important to note that the size of the firm (large or SME) affects the chances that an employee is involved in an intrapreneurial project (see Table 4). The financial impact of intrapreneurial projects is, however, stronger in SMEs ($\beta = .31, p = < .10$). Working in a not-for-profit organization, reduces the chances of being involved in an intrapreneurial project (see Table 5.4). Employees that display innovative workplace behavior and personal initiative are more likely to be intrapreneurs and are involved in more strategic and financial projects (see Table 5.4). Risk taking employees are, however, not more likely to be involved in intrapreneurial projects (the β is very close to 0 and even slightly negative), and are only active in more financially important projects. H6 and H7 are therefore only partially supported.

As shown in Table 5.4, horizontal participation and trust in the manager both affect innovative workplace behavior positively ($\beta = .27, p = < .01$; $\beta = .16, p = < .05$, respectively). This also applies to the level of personal initiative ($\beta = .19, p = < .05$; $\beta = .24, p = < .01$, respectively). This provides partial support for H1 and H4, as no significant relationship with risk taking behavior has been found. The level of formalization within a company does not affect any of the entrepreneurial behaviors, leading to the rejection of H2. The level of resources available positively affects the amount of innovative workplace behavior and personal initiative ($\beta = .21, p = < .01$; $\beta = .16, p = < .05$, respectively), but does not affect the level of risk taking behavior. This provides partial support for H3. We also find noticeable differences in employee risk taking between SMEs and large firms ($\beta = -.29, p = < .10$) and between non-profit and for-profit firms ($\beta = -.25, p = < .10$). Both SMEs and non-profit firms seem to allow less room for risk taking behaviors by their employees.

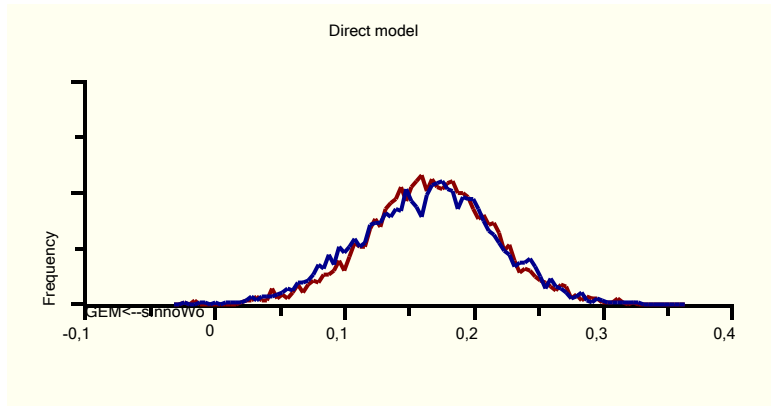


Figure 5.2

MCMC comparison first and last thirds of accumulated samples innovative workplace behaviors – intrapreneurship

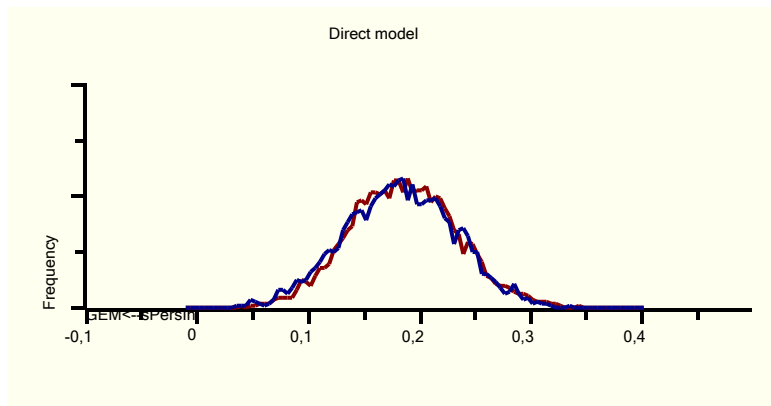


Figure 5.3

MCMC comparison first and last thirds of accumulated samples personal initiative - intrapreneurship

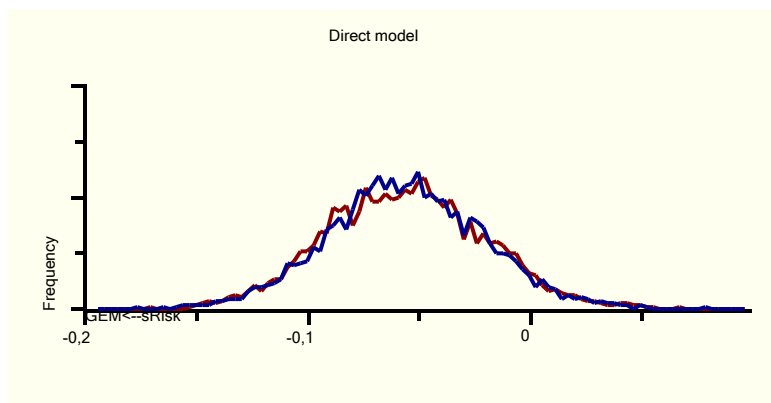


Figure 5.4

MCMC comparison first and last thirds of accumulated samples risk taking behaviors – intrapreneurship

Table 5.4
Structural relationships within the model

Variable	Respective dimension of Employee EO		
	Innovative workplace behaviors	Personal initiative	Risk taking behaviors
	β	β	β
Male	.10	-.08	.18*
Age	.01	-.08	-.14†
Team leader	.14†	.09	.13
SME	-.15	-.22	-.29†
Non-profit	.17	-.10	-.25†
Trust	.16*	.24**	-.12
Horizontal participation	.27**	.19*	.07
Formalization	.08	.11	-.01
Resource availability	.21**	.16*	.07

Variable	Effects on intrapreneurship		
	Intrapreneurship	Financial importance of intrapreneurial project	Strategic importance of intrapreneurial project
	95% confidence interval β	β	β
SME	-.34 to -.32	.31†	.06
Non-profit	-.18 to -.16	.15	-.04
Innovative workplace behaviors	.16 to .17	.36*	.42**
Personal initiative	.18 to .19	.20*	.35**
Risk taking behaviors	-.06 to -.05	.17†	.13

Notes: 1) In order to reduce model complexity, only the control variables that are significantly related to intrapreneurship have been included in step two of the model. 2) Model fit for innovative workplace behaviors model, personal initiative model and risk taking model, respectively: $\chi^2 = 8.579(7)$, $p = > .05$, RMSEA .036; $\chi^2 = 10.935(7)$, $p = > .05$, RMSEA .057; $\chi^2 = 14.666(7)$, $p = < .05$, RMSEA .079.

†, *, **: denote, levels of statistical significance at $p = < .10$, .05, .01, respectively.

Table 5.5 reports the differences of the structural parameters between respondents that report low levels of trust in their manager versus respondents that report high levels of trust in their manager. Noticeable differences are found in the way formalization affects both innovative workplace behaviors and personal initiative. Formalization in the organization has a negative effect (although this effect is not significant) on innovative workplace behavior and personal initiative within the group with low trust in their manager. Formalization, however, positively affects innovative workplace behavior when employees trust their manager ($\beta = .25$, $p = < .01$). This also applies to personal initiative ($\beta = .23$, $p = < .10$). The difference of the structural parameter was found to be significant in the model with innovativeness ($\Delta \chi^2 = 5.133(1)$, $p = < .05$) but not in the personal initiative model, H5 is therefore partially supported.

Table 5.5
Differences between high and low trust in manager

Variable	Respective dimension of Employee EO					
	Innovative workplace behaviors		Personal initiative		Risk taking behaviors	
	β low trust	β high trust	β low trust	β high trust	β low trust	β high trust
Male	.00	.34**	-.06	-.01	.11	.23†
Age	.07	-.06	-.11	-.03	-.16	.05
Team leader	.20†	.09	.13	-.01	.34**	.01
SME	-.08	-.45*	-.17	-.35	-.42	-.22
Non-profit	.14	.07	-.06	-.18	-.22	-.36
Trust	.05	.25	.04	.20†	-.02	-.12
Horizontal participation	.26*	.33**	.24*	.18	.12	-.01
Formalization	-.12	.25**	-.04	.23†	-.06	.01
Resource availability	.36*	.21*	.27*	.12	.17	-.08

Notes: Model fit for innovative workplace behaviors model, personal initiative model and risk taking model, respectively: $\chi^2 = 9.769(14)$, $p = > .05$, RMSEA .000; $\chi^2 = 13.776(14)$, $p = > .05$, RMSEA .000; $\chi^2 = 17.168(14)$, $p = > .05$, RMSEA .038.

†, *, **: denote, levels of statistical significance at $p = < .10, .05, .01$, respectively.

5.7 Discussion

The four main findings of this study are: (1) Intrapreneurship within organizations is not affected directly by the work context, but indirectly through innovative workplace behavior and personal initiative by employees. (2) Formal organizational work context characteristics such as horizontal participation and the number of resources affect the level of innovative behaviors and personal initiative within an organization, but not risk taking. (3) Trust in the direct manager plays an important role in the stimulation of innovative behaviors and personal initiative amongst employees. (4) Risk taking behavior by employees is not related to the involvement in an intrapreneurial project.

Against the backdrop of large discrepancies between operational definitions of intrapreneurship, our two-step model of intrapreneurship offers a combination of approaches, by integrating concepts that only regard participation in important innovative projects as intrapreneurship with the broader concept of Employee EO that represents a broader definition of employee entrepreneurial behavior. In doing so, we offer a more detailed model of the intrapreneurial process that also highlights the complexity of facilitating intrapreneurship within an organization. Although the predictive validity of innovative behavior and personal initiative for intrapreneurship is confirmed in this study, our results also suggest that work context affects intrapreneurship only indirectly. Thus, there seems to be a difference between the number of employees that exhibit entrepreneurial behavior and the number of intrapreneurial projects. This also implies that policies aimed at improving the level of intrapreneurship within organizations through a change in formal and informal work context only have a limited impact, while they may be more successful in stimulating Employee EO.

In line with previous research on CE (e.g., Hornsby *et al.* 2002; Morris *et al.* 2008), our results highlight that Employee EO within an organization requires a formal work context that poses little constraints on employees (allows for horizontal participation) and provides support for the development innovative projects (resource availability). This result is also in line with intrapreneurship research by Zampetakis *et al.* (2009), who show that perceived organizational support affects the level of Employee EO by employees. Like the formal work context, the informal work context plays an important role in stimulating Employee EO amongst employees. Research by, e.g., Wakkee *et al.* (2010) provides evidence that coaching by the direct manager affects Employee EO. Our conceptualization of social exchange processes as trust between the manager and employee builds on these results and shows that the nature of the interpersonal relationship can enhance Employee EO. This holds regardless of the learning effects that are associated with coaching and also when controlling for the formal work context in which an employee operates. The absence of a relationship between the different indicators for organizational work context and risk taking implies that employee risk taking is difficult to stimulate with company policies or management interaction.

In contrast to our expectations, no significant negative relationship between formalization and Employee EO has been found. A closer examination of the relationship between employees that have low and high trust in their manager highlights, however, the complexity of the different relationships. Employees that do not trust their manager display lower levels of innovative workplace behavior when working in highly formalized organizations. Employees that trust their manager are, on the other hand, not obstructed by high levels of formalization and show even more innovative workplace behavior. This surprising finding can be explained by the nature of formalization. Rules and formal procedures can be obstructive, but also serve a certain purpose within organizations as they can offer guidance to employees when dealing with uncertain situations. When dealing with a high number of formal procedures, trust in the exchange relationship can be crucial if intrapreneurial actions motivate employees to abandon formal procedures and organizational rules. In these situations employees must be able to trust their direct supervisor that (s)he provides support in case things go wrong. Our research therefore provides initial support for the proposition of Dess *et al.* (2003) that social exchanges between managers and employees play an important role in the intrapreneurial process and, in a more general sense, reaffirms the key role of managers within CE as suggested by, e.g., Hornsby *et al.* (2002).

Although the value of risk taking at firm level has been well established (Rauch *et al.* 2009), our results raise questions on the value of risk taking for intrapreneurship. Previous studies have not examined the relationship between entrepreneurial behavior and intrapreneurship and typically used a composite measure of intrapreneurship (e.g., Zampetakis *et al.* 2009; Wakkee *et al.* 2010; Moriano *et al.* 2011). Given the current state of empirical research in this area, our analysis of the individual dimensions of intrapreneurship provides insight into the value of each individual dimension. Although risk taking behavior may positively co-vary with other dimensions of Employee EO, this does not automatically imply predictive validity for actual intrapreneurship. Given that employee initiated projects can be rejected at many different stages, the successful

implementation of intrapreneurial projects may require innovative behaviors and personal initiative but not necessarily high levels of employee risk taking. Indeed, as our results suggest, the relationship between employee risk taking and intrapreneurship is slightly negative. Risk taking by employees may therefore be a less relevant dimension for intrapreneurship than previously assumed. This also relates to CE studies, which do not always find a relationship between risk taking and company performance (e.g., Kraus *et al.* 2012).

5.7.1 Limitations and future research

Of course, this study is subject to certain limitations. First, the study relies on self-reported data. The use of self-reported data is very common in intrapreneurship studies (Axtell *et al.* 2000; Monsen and Boss 2009; Zampetakis *et al.* 2009; Wakkee *et al.* 2010; Moriano *et al.* 2011; Bosma *et al.* 2012) and in CE research in general (Rauch *et al.* 2009). Within the present research, we took several steps to reduce the effect of common method variance and test for the existence of common method variance *post-hoc*. We, however, readily acknowledge that self-reported measures are inferior to objective measures of Employee EO and intrapreneurship.

The verification of the two-step model in this study is limited by the use of cross sectional data. The two-step model of intrapreneurship suggests that employees first display Employee EO before they initiate an intrapreneurial project. In future research, this sequence should ideally be tested with longitudinal data coupled with qualitative studies to get enhanced insights into the type of projects that entrepreneurial employees execute. The absence of any significant correlations between risk taking and all other variables makes it difficult to compare the model fits of the two-step and the direct model. Although this study indicates that the value of risk taking behavior for intrapreneurship is, at the very least, questionable, a comparison across all three behavioral dimensions would have added more robustness. The verification of the two-step model is further limited by the removal of the variable for vertical participation due to a lack of discriminatory validity. An interesting avenue for future intrapreneurship studies could therefore be to include more relevant dimensions of an organizational structure in their empirical models. Such research should also address the effect of external factors on Employee EO and intrapreneurship. Research by, e.g., Antoncic and Hisrich (2001) has shown that the level of intrapreneurship within a firm is influenced by external factors such as dynamism, rivalry and industry growth. The inclusion of such external factors will provide more advanced insights into the driving forces behind Employee EO that go beyond the formal and informal work context of a firm.

The operationalization of the different constructs is another important limitation in this study. Our proxy for intrapreneurship, for instance, does not specify the type of intrapreneurial project that is being realized (product, service, process, etc.), while this could provide important insights in the results of intrapreneurial projects within organizations. Unfortunately, well validated intrapreneurship measurement instruments are scarce. Future studies should therefore focus on the development of measurement scales for both Employee EO as well as intrapreneurship. Another interesting stream of research could focus on the difference between intrapreneurial conditions within SMEs and large firms and profit and not-for-profit organizations. Although one would expect

that the absence of more complex formal organizational structures and procedures in SMEs would enhance Employee EO and intrapreneurship, our analysis suggest the opposite. Not-for-profit organizations seem to have less intrapreneurial projects, but the project that are executed seem to have a stronger financial importance on the organization as a whole. More research is therefore needed to describe the specific frame conditions under which intrapreneurship can flourish in organizations of different sizes and with different profit orientations.

The use of social exchange theory is a very promising approach within intrapreneurship research. The operationalization of trust in our study is, however, limited to trust in the manager and does not, for instance, distinguishes between trust in different relevant persons, *e.g.*, managers or colleagues. More research is needed to shed light on the different dimensions of employee behavior, the skills and the attitudes that are relevant for the intrapreneurial process. Even though we have found only partial support for the mediating role of trust in the direct supervisor, our relative small sample size, in combination with a complex empirical model, results in modest statistical power and therefore an increased chance for type II errors (Lindsay 1993). Moreover, an overall evaluation of the differences between employees that have low and high levels of trust in the direct supervisor was not possible due to the relative small sample size. The results of the moderation analysis, therefore, should be interpreted with care and call for further research. Finally, we assumed that employee initiated projects contribute to innovation within the organization and, thereby, enhance both employee and organizational performance. Although theoretical work (Pinchot 1986; Kanter 1988) argues in favor of innovative projects, the specific contribution of employee initiated innovative projects to overall firm performance and to employee performance needs more empirical research.

6. Discussion

6.1 Main conclusions and results

This dissertation was motivated by a desire to further investigate and test the boundary conditions of EO theory on organizational performance. It also sought out to understand how EO contributes to organizational performance and manifests itself at different hierarchical levels of the organization. The results indicate that the EO-performance relationship not only depends upon a fit between EO and the operating environment but also, partially, upon the structural parameters of the industry in which an organization operates. We, furthermore, found indications that the internal formal and informal work context affects the level of entrepreneurial behavior in organizations which, in turn, improves employee workplace performance and intrapreneurship. Especially the results of chapter four and five create a more nuanced view upon EO. In this view, EO is not purely dominated by strategic orientations at top-management level but rather an interplay between strategic management, organizational design and the collective body of human resources that is available within the organization. The different studies have been conducted make four important contributions to the existing bod of literature on EO:

1. By focusing on EO in times of severe market turbulence, the boundary conditions of EO are being tested. The seminal work of Covin and Slevin (1989) suggests that the level of EO within an organization should match with the level of environmental uncertainty in the operating environment. Although this 'classical' assumption is still being used in most studies, our results, based upon a multi-dimensional model of EO, suggest that risk taking is not a viable strategy when organizations are faced with severe market turbulence while innovativeness does contribute to organizational performance under such market conditions. These results, therefore, offer more detailed insights into the relative value of the different EO dimensions when the managerial skills associated with EO are theoretically and empirically called upon.

2. Researchers who investigate the relationship between EO and organizational performance generally concentrate on a difference between turbulent versus stable environments (*e.g.*, Wiklund and Shepherd 2005) or high-tech versus low-tech industries (see Rauch *et al.* 2009), while little attention is paid to cross industry comparisons to confirm the overall generalizability and applicability of the relationships. In chapter two an attempt was made to further expand this classical line of EO research, while in chapter three a shift towards more systematic comparisons between industries has been made. Our results confirm the robustness of the EO-growth relationship in the service sector, as compared to the manufacturing industry. However, the results also highlight there are more fine grained differences at the level of the individual dimensions of EO when it comes to organizational growth, necessitating more studies that focus on cross industry comparisons in order to deepen our understanding of EO.

3. Much of the current EO research is still performed at organizational level, while few (empirical) studies are devoted to the value of entrepreneurial behaviors by employees. Through an examination of the value of EO at employee level and in situations where the employee behaviors associated with EO can be considered as extra role behaviors, the present dissertation highlights the relative importance of such behaviors for employee and work team performance. At the same time, it helps to view EO not only as a product of decisions made on behalf of the entire organization but also as a result of the efforts of non-managerial employees and work teams.

4. Empirical studies that investigate bottom-up entrepreneurial behaviors by employees are still scarce. Chapter five of this dissertation contributes to this growing body of literature by highlighting the complex interrelations between the formal work context, informal work context, the employee and intrapreneurship, while also providing more detailed insight into the process of intrapreneurship within organizations.

However, there are still a large number of questions that remain unanswered. Based upon the studies that are executed within the present dissertation, a number of areas where future research is deemed essential for the development, validation and verification of EO research are discussed below, along with the most important limitations of the present dissertation. The dissertation will conclude with an overall evaluation of the research strategy within the field of EO and recommendations on how the theoretical foundations and practical relevance of EO research can be strengthened/improved.

6.2 A one-dimensional or multidimensional approach?

The scales which have been used in order to assess the level of EO in organizations form an important basis for the research paradigm itself. Consequently, a lot of attention has been paid to the operationalization and measurement of EO. Most scholars agree that EO consists of three dimensions: innovativeness, proactiveness and risk taking (see Rauch *et al.* 2009). Although additional dimensions, for example, competitive aggressiveness and autonomy have been proposed by influential scholars in the field like Venkatraman (1989) and Lumpkin and Dess (1996), the majority of empirical studies still use the original three dimensions as proposed by Miller (1983) and Covin and Slevin (1989). Regardless of what constitutes EO, i.e. which dimensions make up the EO of an organization, the dimensionality of the concept is an important debate in the literature. This debate is fuelled by two separate research streams in EO literature. Where one research stream progresses along the path set by Covin and Slevin (1989) and typically uses the composite score on all three EO dimensions as an indication for the level of EO in an organization, other scholars tend to follow the multi-dimensional approach as initiated by Lumpkin and Dess (1996) and test whether the individual dimensions of EO improve organizational performance. The difference between these so called uni-dimensional (composite) and multi-dimensional approaches is the underlying assumption that in the uni-dimensional approach an organization must possess all characteristics simultaneously in order to be characterized as an entrepreneurial organization, while the organization can be characterized as entrepreneurial, according to the multi-dimensional approach, when it possesses only one or two relevant dimensions.

Under a realist philosophy of science, any construct exists apart of its measurement (Wilcox *et al.* 2008). The question to what type of measurement model should be used to operationalize EO, is thus primarily a theoretical and conceptual matter. From a theoretical view-point the uni-dimensional model seems to be the better approach. An organization that is innovative but is, at the same time, risk averse and makes very little attempts to actively introduce its innovations at the market-place, is innovative and not per se entrepreneurial. Labeling this organization as entrepreneurial on the basis of it being innovative, would mean that entrepreneurship, in this particular case, would be studied analogous to innovation. Therefore, this approach creates overlaps between two research fields that are, although there are significant overlaps, supposed to be conceptually distinct from one another (also see Bruyat and Julien 2001). Although Lumpkin and Dess (1996) posit that an organization must possess a combination of the five dimensions of EO that are included in their measurement model in order to be entrepreneurial, this position is often violated in empirical research and researchers often regard one relevant dimension sufficient for the definition of EO in specific contexts (*e.g.*, Hughes and Morgan 2007); especially when using the Covin and Slevin (1989) measurement scale in combination with a multi-dimensional model. Even if one would stay true to the proposition of Lumpkin and Dess (1996) that EO always involves a combination of two or more EO dimensions, one could wonder if a combination of competitive aggressiveness and proactiveness constitutes as EO since innovation and risk taking are generally positioned at the core of the entrepreneurial process (*e.g.*, Schumpeter 1934; Stevenson and Jarillo 1990).

Conceptualizations of EO may, however, vary, and depending on the specific research question at hand, different conceptualizations of the concept may be useful to enhance our understanding of EO and to address different types of research questions (George and Marino 2011). With these different conceptualizations, different statistical approaches to measure the concept under study have to be applied. Given the dominant way to operationalize EO⁹, EO can be measured through the use of a first and second order reflective measurement model (the so called uni-dimensional approach¹⁰) or as a first order reflective and second order formative measurement model. EO, as a multi-dimensional construct, therefore consists of two levels: the individual dimension of EO (first order dimensions) and the more abstract second order construct of EO itself. In reflective measurement models the different indicators form an unobserved construct in which the relationships between the construct and its indicators are specified *a priori* (see Coltman *et al.* 2008). Given these specifications, reflective measurement models are generally seen as more suitable for theory testing as the researcher is primarily interested in the hypothesized relationship between the second order construct (in this case EO) and the dependent variable. In formative measurement models the indicators are, on the other hand, identified as causing a certain construct. So in the Covin and Slevin (1989) model the dimensions are being used to measure the construct under study, while in the Lumpkin and Dess (1996)

⁹ There are, of course, alternative options to both operationalize and measure EO. The two options discussed here, relate to the two dominant research streams in EO research.

¹⁰ The term 'uni-dimensional approach' that is most commonly used to describe the Miller (1983) and Covin and Slevin (1989) approach to the study of EO is incorrect. Since EO consists of multiple conceptually different dimensions, it can be considered as a multi-dimensional concept by definition.

model a combination of the dimensions is causing entrepreneurial behavior to occur within an organization. As the relationships between these dimensions and the unobserved construct of EO are not specified in advance (any combination of 2 or more dimensions is said to lead to EO) formative measurement models are less suitable for theory testing than reflective measurement models and more exploratory in nature (Wilcox *et al.* 2008). Researchers who want to test if EO leads to improved organizational performance, or that want to test the relative value of EO in different situations, should therefore typically use reflective measurement models. The method itself is, however, limited by its focus on the abstract concept of EO, while research may benefit from a focus on the individual dimensions (Covin and Wales 2012). The question by which mechanisms EO creates superior organizational performance, should therefore generally be assessed by a formative measurement model due to the focus on the underlying dimensions of EO.

Within the present dissertation a first order reflective and second order formative (chapter two) as well as a first and second order reflective (chapter three) measurement model are being used in order to gauge the level of entrepreneurship within an organization. The question to how EO can help Dutch SMEs to deal with extreme uncertainty in the operating environment refers to the mechanisms by which EO leads to improved performance. Even though expectations are formulated *a priori* on the basis of theory and previous research, this research question remains rather exploratory as it is difficult to predict which EO dimension will be most important in creating superior performance under specific circumstances. In this case, a focus on the individual dimensions of EO is thus appropriate and can deliver more advanced insights into the causal mechanisms of EO in specific contexts¹¹. In order to examine the relative value of EO in different industries (chapter three), a first and second order reflective measurement model is more appropriate, as the research question directly relates to the value of EO in particular contexts at a more abstract level. Although EO, in general and as explained above, favors reflective measurement models, researchers should always carefully examine which type of measurement is appropriate for the research question at hand. The measurement model developed in chapter three, offers new opportunities to combine both approaches while still using a reflective model. Although there are a number of downsides to the use of such hybrid structural models in EO research, like the inability to include a large number of control variables, the necessity to use larger datasets and the inability to include multiple moderators in one model (which is a very common practice in EO research), there are also important advantages to this type of statistical technique. These advantages include the use of a measurement model that corresponds with theoretical assumptions and more accurate calculations of factor scores on both the first and second order constructs. Future research should therefore not only take the type of measurement model into account, but also the type of statistical technique that is needed to address their research questions.

¹¹ Causal mechanisms does not refer here to a test of the causal relationship between EO and organizational performance, but to the mechanisms (*e.g.*, proactive, risk taking and innovative behaviors) by which EO creates superior organizational performance.

Another interesting approach to the measurement of EO is the use of a multiplicative model as suggested by Slevin and Terjesen (2011). In a multiplicative model of EO composite score is calculated as $EO_{composite} = I \times R \times P$, instead of $EO_{composite} = (I + R + P)/3$ which is common practice in most studies that make use of a uni-dimensional model. The multiplicative model thus emphasizes even more that the successful pursuit of an EO strategy involves a simultaneous focus on innovation, risk taking and proactiveness and the use of such a model is in line with prevalent theoretical assumption on EO. Slevin and Terjesen (2011) also provide some preliminary evidence that the multiplicative model of EO shows better fit with organizational performance than the uni-dimensional model. This makes the multiplicative model an interesting statistical model to operationalize EO, also given the fact that it stays true to the original conceptualization of EO as used in previous research.

6.3 The value of risk taking in EO

One of the most surprising findings of this dissertation is the non-significant relationship between organizational level risk taking and organizational performance (chapter two), between employee risk taking and workplace performance (chapter four) and between employee risk taking and intrapreneurship (chapter five). The absence of a relationship between one of the individual dimensions of the EO construct and expected outcome variables should not be interpreted as evidence that this dimension is not an integrative part of the EO concept as the inclusion of dimensions in a construct is not an empirical matter but a conceptual one. Traditionally, risk taking is seen as inherent to entrepreneurial activity (see *e.g.*, Knight 1921) and the meta-analysis of Rauch *et al.* (2009) confirms the relationship between EO risk taking and organizational performance. Nevertheless, questions about the effect of risk taking on organizational performance remain, as the concept of risk taking entails uncertainty and can result in costly losses when projects or new ventures fail. Indeed, most of the studies that are included in the 2009 meta-analysis by Rauch *et al.* are unable to definitely confirm whether risk taking leads to increased business performance, as they make use of cross-sectional research designs. Organizations that had to exit due to risk taking behaviors are, therefore, excluded from the sample which only consist of organizations that have been, on average, relatively successful risk takers or organizations that take little risks. In order to overcome this survival bias, the use of longitudinal research designs is essential. Scholars can also use datasets that include organizations that exited and make use of historical or archival data in order to assess the level of EO in a representative population of successful *and* unsuccessful firms. Next to advances in data collection methods, prevalent measurement models may be unable to adequately capture the complexity of entrepreneurial risk taking. Risk taking, although being carefully calculated risk, may have, on average, little result on organizational performance when applied singularly.

At employee level the same type of reasoning can be applied, while the survival bias, may be less important. In a country with strong employment protection laws, such as The Netherlands, employees are unlikely to be directly fired due to risk taking behaviors unless such behaviors have been reckless, directly contradicted company policies, directly contradicted instructions by supervisors, or when the employee in question was employed on a temporary basis. However, unlike organizational level EO, the concept of

Employee and Team EO is still relatively underdeveloped. One can therefore question if the organizational level EO dimensions can directly be transferred to employee level. Indeed, especially in the context of larger more bureaucratic organizations, organizations often make use of procedures and rules to minimize risk taking behaviors by employees and Hayton (2005b) points out that employees, in comparison to managers, have less opportunities to diversify risks. Moreover, when employee initiated projects fail, not only the employee itself is affected but also the organization. The dynamics and consequences of employee risk taking are therefore different than with organizational level risk taking and scholars first have to study the nature of intrapreneurship and Employee EO, before developing new Employee EO measurement scales. Little is, for example, known about the effects of failed entrepreneurial projects on employee motivation and employability on the long term, except that entrepreneurially inclined employees are more likely to leave the organization (see, e.g., Monsen and Boss 2009). Failed project could, however, effect the organization directly, as a result of inefficient resource allocation, as well as on the long run due to demotivation or employees that that leave the organization. Case studies of intrapreneurial projects could be used to successfully determine what type of employee behaviors are essential to the intrapreneurial process and to better understand the long term consequences of intrapreneurship. Given the complexity of intrapreneurial projects within institutional settings, behavioral elements as, e.g., cooperation or employee retention could be more important than assumed in previous research.

6.4 EO, organizational behavior or an attitude?

EO research has, so far, not given an exclusive answer to the question whether EO should be understood as a set of organizational behaviors, an attitude held by the owner or executives of the organization, or a combination of both. The traditional way of measuring the level of EO is to ask the founder, owner, CEO or CFO of an organization to rate the organization on a series of opposing statements that reflect the organizations level of innovative, proactive and risk taking behaviors and the attitude towards these behaviors held by the management of the organization (Miller 2011).

Through its type of measurement, traditional EO studies are based upon a number of assumptions: 1) The attitudes held by company management determine the actions of the organizations as a whole, 2) the owner, the CEO or CFO has the capacity to accurately evaluate the organizations tendency towards entrepreneurial actions, and 3) the attitudes of the owner, CEO or CFO reflect the attitudes of the management team as a whole. Each of these assumptions are, however, problematic. An individual is unlikely to have, through the existence of bounded rationality (March 1978), a correct overview of all relevant previous actions of the organization. This, in turn, creates a biased picture of the true nature of an organization to respond to challenges in an entrepreneurial manner. The attitudes towards entrepreneurial actions are also likely to differ within a managerial team and the top-managers are not the only relevant decision makers within an organization (Mintzberg and McHugh 1985; Christopher and Ghoshal 1993); which makes the assessment of only top-managerial attitudes biased in itself. Although some researchers, like Miller (2011), suggest to resolve these issues through the use of multiple respondents, secondary data sources and/or by gathering

data at different hierarchical organizational levels, this does not resolve the more fundamental question of what constitutes as EO.

In line with Covin *et al.* (1991), Covin and Lumpkin (2011) suggest to conceptualize EO as a pattern of entrepreneurial organizational level behaviors that is persistent over time and see persistent behavior as the strongest indication for entrepreneurship. This conceptualization is preferred over the view of EO as an attitude, as an attitude does not always result in actual behavior. It also sets EO apart from related concepts like organizational culture or strategic processes, as these concepts represent a non-behavioral aspect of an organization. A focus on behavior also allows researchers to assess the EO of different hierarchical organizational levels and strategic business units (SBUs) through an assessment irrelative to the attitudes held by the top-management of the organization. For research that focusses on EO in large organizations, the behavioral approach to the study of EO thus seems beneficial. In small and medium sized enterprises (SMEs), and especially micro enterprises, the influence of the top-management is, however, likely to be much stronger and more persistent. Researchers who investigate how EO manifests itself in large organizations should therefore typically focus on EO as a pattern of organizational behaviors that is persistent over time, while in SMEs an emphasis on a combination of top-management attitude and organizational level behavior seems more appropriate.

Researchers should, however, be cautious when applying EO conceptualizations at different hierarchical levels of the organization. Also at employee level, the entrepreneurial behaviors of an employee can be considered the strongest indicator for Employee EO. Accordingly, our operationalization of entrepreneurship at employee level in chapter four and five focuses at entrepreneurial behavior instead of attitudes towards entrepreneurship. Organizational behavior (OB) literature and (social) psychology have, on the other hand, a rich background of using the (behavioral) attitudes of individual workers as indication for actual behaviors of those employees at the workplace. Attitudes are generally seen as one of the strongest indications of the actual behavior of an individual and tend to account for a larger percentage of variance in a set of behaviors than personality or trait based instruments (Ajzen 1991). Attitudes are, in addition, seen as less stable over time and therefore allow interactive processes with the environment (Chaiken and Stangor 1987). By purely focusing on employee behaviors at the workplace, one would neglect that employees enter the organization with a set of more fundamental values and beliefs towards/about entrepreneurship and that the organization, through its structure, policies and rewards, may either stimulate or discourage entrepreneurial behavior amongst its personnel. By looking at the perceived feasibility of entrepreneurial behaviors within the organizational context, EO research can draw from well validated frameworks such as: the theory of planned behavior (Ajzen 1991), equity theory (Adams 1965) or expectancy theory (Vroom 1964). This could provide a more thorough understanding of the decision making processes when it comes to the entrepreneurial activities of employees and the interactions between relevant organizational characteristics which influence these processes. Such insights are much needed for our understanding of why some organizations succeed in making EO an integrative part of their organization and strategy, while others fail to do so.

6.5 The generalizability of the EO- performance relationship

The statistical meta-analysis of Rauch *et al.* (2009) demonstrates the robustness of the EO-performance relationship for organizations of different sizes and in different cultural contexts. Researchers are, however, quite opportunistic in their sample selection and typically make use of convenience sampling instead of stratified sampling; which leads to highly diversified samples and an inability to deliver more detailed contextual findings (Miller 2011). The term 'context', in this specific case, can refer to two things: 1) the environment in which an organization has to operate (*e.g.*, economic climate, industry or the legal context), and 2) the context in which entrepreneurship takes place (*e.g.*, the organizational structure, the organizational culture or the resources that are available for innovation). By its strong focus on the market conditions or the technology (high tech versus low tech) that is being used, research has, so far, failed to recognize that the underlying structural characteristics of industries (*e.g.*, the nature of competition within an industry, entry barriers, or the extent to which strategic partnerships are being used) co-determine the extent to which an EO strategy will be successful¹². In chapter three, such differences between service firms and manufacturing firms have been studied and a statistical model is developed which future studies can use to make detailed comparisons of the EO-performance relationship in different industries. This research therefore offers a first step towards more systematic comparisons of the generalizability of the EO-performance relationships between industries. The study is, however, limited through its very broad definition of both the service sector and the manufacturing sector, necessitating new studies that provide comparisons between specific industries and/or sectors. Our study presented in chapter two is also based on a very broad sample, although this is less of a problem than in chapter three. The results of the study should, however, still be interpreted with caution, as a comparison of EO in times of relative stable and turbulent market conditions is missing and it is questionable to what extent these results can be generalized to organizations that operate in very different and specific industries.

The internal context of the organization and its influence on EO has gained relative little attention. The original work of Miller (1983) has already showed that the level of EO fluctuates between organizations that have different organizational structures by using the Mintzberg (1979) typology of organizational configurations. Different organizational structures, leadership practices, the prevalent organizational culture, HRM systems and/or configuration of available resources may therefore influence both the level of EO within an organization, as well as the strength of the EO performance relationship. Although some researchers (*e.g.*, Lee and Peterson 2000; Lee *et al.* 2011) acknowledge that, for instance, culture has an effect on EO, they do not include this in their empirical analysis. In a review of the relevant literature on the intersection between HRM and corporate entrepreneurship (CE), Hayton (2005b) concludes that empirical evidence is still missing and that most studies lack theoretical underpinning. The more recent prevalent notion that EO pervades hierarchical levels and SBUs differently (Wales *et al.* 2011), adds to the importance of the organizational context in EO research. Our study

¹² The study of Wiklund *et al.* (2009) is an exception to this rule and takes both industry as well as number of structural indicators into account. These variables are, however, rather used as control variables instead of possible moderators of the EO - performance relationship.

as presented in chapter five highlights the importance of organizational design and interpersonal relationships when it comes to stimulating entrepreneurial behaviors among employees. One of the surprising findings of this study is the lower levels of intrapreneurship in SMEs than in large organizations, while one would expect, through their more flexible and organic organizational structure, more intrapreneurship when controlling for resource availability and the interactions with the supervisor. More research is therefore needed to describe the organizational conditions under which entrepreneurial behavior can prevail at different organizational levels, within different types of organizations and in different types of cultural contexts. A reintroduction of the configuration approach in EO research as suggested by Miller (2011) and the use of more homogeneous samples through stratified sampling, are important ways to advance the level of research in this respect.

6.6 Current research designs and causality within EO research

EO research is criticized for (i) its lack of theoretical underpinning, (ii) the subjective measurement techniques that are used, (iii) the lack of insight on how EO can be developed within an organization, and (iv) the lack of longitudinal research designs. Although some of these critiques are a direct result of the conceptualization of EO or the way EO is being measured, it is important for future studies to address the limitations and continue to improve the present research designs as well as the theoretical foundations of EO.

(i) Since EO reflects the consistent pattern of entrepreneurial behavior of an organization, entrepreneurship literature is the main theoretical basis of EO. Although EO theory shows significant overlaps with concepts like dominant logic (Prahalad and Bettis 1986), dynamic capabilities (Teece *et al.* 1997), and the resource based view (Wernerfelt 1984; Barney 1991), EO is usually studied as a singular research paradigm and the links with other research fields such as institutional theory (DiMaggio and Powell 1983), resource dependence theory (Pfeffer and Salancik 2003) or population ecology (Hannan and Freeman 1977) are rarely explicitly stated. The strength of EO, however, lies in the ability to deliver one type of measurement technique that can be applied to measure the level of entrepreneurship across different types of organizations, in different contexts, and that apply different types of CE strategies (internal corporate venturing, external corporate venturing, corporate acquisition of start-ups, *etc.*). As such, EO scales have been successful in delivering an indication for the overall level of entrepreneurial activity in an organization on a continuous scale. It is, however, important for EO research to continue to clarify the links between EO research and other fields as, *e.g.*, Dickson and Weaver (2008) have done when it comes to the link between EO and institutional theory. At employee level, EO research could make use of frameworks like the theory of planned behavior (Ajzen 1991) which could explain in more detail why some entrepreneurially inclined employees choose to implement an intrapreneurial project, while others fail to do so. The incorporation of additional theories would connect EO research with other relevant research domains and would provide stronger theoretical basis for the study of EO.

(ii) Given the limitations of subjective EO measures, future studies should consider to assess the level of EO in an organization in different ways. The consistent pattern of

entrepreneurial behavior can also be assessed by an analysis of the historical company records or interviews with the current and former owners, CEOs and CFOs of the organization. The computer aided text analysis of company records by Short *et al.* (2010) is a good example of a more objective way of operationalizing the level of EO within an organization. As long as new operationalisations accurately reflect the concept of EO, such studies can deliver new and important insights into either the development or the value of EO.

(iii) Currently, the role of employees in creating an organizational level EO is unclear. By investigating the relative value of Employee EO and how this can be stimulated within an organization, this dissertation contributes to this line of research by looking at the process and value of intrapreneurship. As many other multi-level studies, our research design does not allow us to test whether individual or team performance ultimately improves organizations performance. Future studies should therefore test such assumptions' and more multilevel studies in general are needed in order to get more detailed insights into the importance of entrepreneurial behavior at different horizontal and vertical levels. Such research should, ideally, attempted to combine a bottom-up approach with a top-down approach, as the sheer bottom-up view on entrepreneurial behaviors in organizations is limited and neglects that bottom-up initiatives are rarely successful when they are not actively supported by the company management (Day 1994).

(iv) One of the reasons EO research has become so popular could be the user friendliness of the measurement scales, as large databases that provide detailed insight into the CE activities of organizations are very rare. The low response rate to (online) questionnaires in combination with a general unwillingness to disclose detailed financial information has, however, led to many cross sectional research designs and the use of subjective performance indicators. Although the 2009 meta-analysis of Rauch *et al.* has shown that there is no significant difference between studies which use subjective and objective performance indicators, the research field would benefit from more studies which use archival performance indicators (organization level) or supervisor performance rankings (employee level). Also, the use of longitudinal research designs is, in this respect, essential, as there is only preliminary evidence on causality in EO research (Yamada *et al.* 2008). It is, therefore, hard to tell whether successful organizations have the available resources to act entrepreneurially, or if EO increases the financial performance of an organization. This, in combination with a survival bias (*i.e.*, organizations that went bankrupt or seized to exist), poses a serious threat to the validity of EO research. Unfortunately, the present dissertation is no exception to this general rule within the field of EO.

6.7 Towards the development of a multilevel EO paradigm

In the introduction of this dissertation it has been argued that the field of EO can best be seen as a distinct stream of literature, within the broader field of CE, which discusses how existing and large organizations should deal with high levels of uncertainty and turbulence in the operating environment. So far, EO research has paid a lot of attention to the correct operationalization of the construct (*e.g.*, Lumpkin and Dess 1996; Lyon *et al.* 2000), its measurement (*e.g.*, George and Marino 2011; Runyan *et al.* 2012; Covin

and Wales 2012), and an assessment under which conditions an EO strategy is most effective in enhancing organizational performance (e.g., Covin and Slevin 1989; Wiklund and Shepherd 2005; Lee and Lim 2009; Wiklund *et al.* 2009). Given the robustness of the EO–performance relationships in different cultural context, industries, and for organizations of different sizes (see Rauch *et al.* 2009), EO could become an important managerial paradigm that discusses how organizations should design their organizational processes to promote business venturing, flexibility, new entry and organizational growth. Currently, EO fails to deliver such insights as there is still a lot of debate about EO, its drivers, its manifestations and its connections with organizational performance (Miller 2011, p 6). Miller (2011) therefore offers a large number of suggestions in order to improve the quality of future EO studies. These suggestions include: improving the quality of quantitative research, more qualitative studies, more explicit links between EO and other organizational theories of organization, the use of more specific samples, the use of alternative operationalisations of EO, and a stronger focus on the individual first order dimensions of the EO construct. Many of the other articles in the 2011 special issue of *Entrepreneurship Theory and Practice* on EO theory and research (Covin and Lumpkin 2011; Dess *et al.* 2011; George and Marino 2011; Slevin and Terjesen 2011) provide similar recommendations. Below, I argue, much more in line with Wales *et al.* (2011), for a different type of research approach, which is more likely to deepen our understanding of EO as a managerial strategy and to contribute to the development of a collective body of knowledge on EO than the current and prevalent research strategy.

In his seminal article, Miller (1983) argues that the pursuit of entrepreneurial opportunities within a decentralized organization is likely to go beyond the action of an individual manager. Within a decentralized organization there is, therefore, not a critical actor but rather a process of entrepreneurship and a number of organizational factors which impede or foster it within an organization. Consequently, the organizational level, and not the behavior of individuals, is the proper level of analysis within decentralized organizations. Even though the theoretical foundations of Miller’s (1983) organizational entrepreneurship scale can be traced back to individual level entrepreneurship studies of, e.g., Schumpeter (1934) and Shapero (1975), this central proposition has shaped EO research; even when small or micro sized organizations are the object of study. Given the focus on the relationship between organizational level entrepreneurship and the subsequent performance of organizations in EO research, the research question that most EO studies attempt to answer, at the most rudimental level, can be conceptualized as presented in Figure 6.1.



Figure 6.1

The fundamental question in EO research

6.7.1 Limitations of current EO studies

The approach, as outlined in Figure 6.1, is subject to two important limitations: 1) The variation of organizations, and consequently the variation in entrepreneurial processes in those organizations, is unlikely to be adequately captured by an EO scale. This variation in organizational processes, structures, cultures, *etc.*, goes beyond what can be meaningfully captured through the inclusion of control variables in statistical models or the inclusion of additional EO dimensions. Instead, it represents a large number alternative hypotheses or possible moderators which may influence the EO – performance relationship. 2) The environment in which an organization operates provides a second series of alternative hypotheses. Organizations operate in different markets, industries, countries, geographical regions, cultural context, law systems, *etc.*, which could all effect EO as well as the relationship between EO and performance. Filtering out all of these differences through systematic research is not likely to lead to satisfactory results as organizations differ in the entrepreneurial behavior that has to be explained as well as the characteristics that cause this behavior to occur within the organization.

The problem identified above relates to a larger problem within social science, when the functioning of a social system (in this case an organization) is the object of study. Coleman (1990), in this respect, states that there are two different modes of explanation in the social sciences. The first depends on observation of the behavior of the system as a whole, while the second mode involves the explanation of the processes internal to that system (*e.g.*, its component parts or units below the level of the system itself). EO research has, so far, predominantly relied on the observation of the organization as a whole. This type of research designs typically suffer from an inability to effectively isolate the causal mechanisms that cause EO to occur, as well the process by which EO leads to enhanced performance. The advantage of an explanation based on internal system behavior in terms of actions and orientations of lower level units, on the other hand, is that his analysis is likely to be more stable and general than an explanation which remains at system level, as the actions of individuals produce systematic behavior (Coleman 1990). By focusing at the behavior of individuals or units below the level of the system, it is possible to more carefully isolate the different processes, management styles and mechanisms by which entrepreneurial organizations create superior performance. The internal analysis can therefore be regarded as more fundamental, constituting more nearly a theory of system behavior, than an explanation which remains at system level (Coleman 1990, p 4). Through its focus on the organizational level, EO research fails to adequately specify how organizations can create an EO, how EO leads to improved performance, and which strategies/processes are needed to maximize the potential of EO. This is also reflected by the fact that most researchers outside the field of EO criticize EO theory and emphasize that the theoretical foundations of the concept are rather weak (Wales *et al.* 2011).

If the field of EO wants to become a mature research field, a careful examination of its micro foundations is, thus, essential. Such an examination involves the translation of organizational policies (also known as system level or macro level) to individual or group level (micro level) and the successive aggregation of those micro level effects again to macro level. Especially the aggregation of individual or group level outcomes to

macro level is deemed problematic as it is often questionable to what extent behaviors at micro level truly have consequences at macro level. According to Coleman (1990), aggregation is, however, appropriate under six conditions: 1) an actors' individual actions impose externalities (positive or negative) on others and thus change the structure of incentives, 2) bilateral exchange, 3) the extension of bilateral exchange to a competitive market, 4) collective decisions or social choice (e.g., voting), 5) the structure of independent actions that constitute a formal organization, and 6) the establishment of a collective right to exercise social control over others. Below, I provide a basic outline of the macro to micro and micro to macro propositions within EO theory, along with basic theoretical considerations and why the aggregation of micro level behavior and processes would be appropriate within EO.

6.7.2 A multilevel view of EO and development of propositions

In chapter 6.2, two different conceptualizations of EO (behavior and attitude) have been discussed and it has been argued that both conceptualizations have their advantages and disadvantages when applied within different settings. Using an EO scale to operationalize the level of entrepreneurship within an organization is, however, a very different approach to the study of EO than an examination of the theoretical micro foundations of a construct. Operationalizing involves the transition from a theoretical construct to indicators, while the latter implies a formal definition of a constructs conceptual domain in order to examine its potential antecedents and consequences. For the purpose of examining the theoretical micro foundations of EO, EO is formally defined as: *an institutionalized set of entrepreneurial practices, processes and routines*. This definition of EO is very similar to the definition of EO by Lumpkin and Dess (1996), which is most commonly used in the literature, in that it emphasize, in line with Miller (1983), that organizations could make use of various formalized procedures (e.g., specific venturing funds) and structures (e.g., high level of autonomy) that are specifically designed to facilitate or promote entrepreneurial behavior. The definition also differs on a number of accounts. 1) In line with recommendations by Covin and Lumpkin (2011), the institutionalized aspect in the definition refers to a pattern of entrepreneurial behavior that is consistent over time. 2) Unlike Lumpkin and Dess (1996) who primary link EO to new entry, the practices, processes and routines are here used to define an organization as entrepreneurial. By focusing on the nature of the processes, one takes into account that such procedures may result in various entrepreneurial outcomes (e.g., product or service innovation, flexibility, internal corporate venturing, etc.) and not only new entry. 3) Where Lumpkin and Dess (1996) explicitly link EO to the intentions of key players functioning in a dynamic generative process aimed at new venture creation (p 136 – 137). I primarily define EO, similar to the original definition by Miller (1983), as an organization level construct. Purely putting the organization at the focal point of the analysis does not contradict the view that certain individuals pay a key role within the EO process. It rather emphasizes that *all* organizational members operate in and are influenced by organizational systems, processes and routines and that any organizational member can play a vital role in the entrepreneurial process.

The first step of an examination of the micro foundations of EO involves a description of the influence of the organization on the organizational members. Simon (1976, in Jaffee

2008) puts forth that organizational policies, systems and routines, change the behaviors of people working in that organization through value premises (desired ends) and factual premises (the appropriate means for achieving desired ends). Under this notion, EO influences the behavior of organizational members in two ways: a) The organizational context imposes values premises which guide the goals of organizational members, and b) it offers support to the attainment of those goals (also see Jaffee 2008). The effect of the establishment of, e.g., a formalized business venturing team for new product ideas is therefore twofold: 1) it promotes business venturing through the actions of specific individuals which are appointed to this task (this element is mainly emphasized by Lumpkin and Dess [1996]), and 2) the establishment of such a team creates the existence of a set of accepted givens that organizational members take for granted. Having a formalized business venturing team therefore not only creates entrepreneurial behavior amongst the members of that team, but can also foster a certain mind-set amongst organizational members that entrepreneurial behavior is appropriate and supports the attainment of entrepreneurial goals for all organizational members. This has also been described as the 'organizational pervasiveness of EO' (Wales *et al.* 2011). The hypothesized influence of EO on the behavior of organizational members, leads to the first proposition:

Proposition I: An EO - institutionalized in organizational practices and policies - promotes entrepreneurial behavior amongst organizational members.

Proposition I represents the transition from the macro level to micro level. This effect is not limited to certain hierarchical levels, departments or functions, but is likely to occur, to some extent, at any level within the organization (see Kanter 1988). By including the micro level in EO research, EO can more easily be compared to entrepreneurial management; in which the pursuit of entrepreneurial opportunities by organizational members' is a central proposition (Stevenson and Jarillo 1990). The literature on the pursuit of entrepreneurial opportunities in organizations can be split into two separate trends. One trend of literature mainly conceptualizes this process as being top-down. Managers identify the opportunities and delegate the actual pursuit of those opportunities to employee lower in the hierarchy. The works of Hornsby and colleagues (Hornsby *et al.* 1999; Hornsby *et al.* 2002; Hornsby *et al.* 2009) clearly makes use of such a conceptualization and mainly examines the role of middle managers within this process. Another trend of literature mainly looks at ideas that are developed bottom-up in the organization and focusses more on the autonomous development of entrepreneurial projects (intrapreneurship) and how these projects are actually being realized (Kanter 1985, 1988; Pinchot 1986; Antoncic and Hisrich 2001). Regardless of the ways one conceptualizes the entrepreneurial process within an organization, the efforts, skills and inputs of a (group of) organizational member(s) are deemed essential in the realization of entrepreneurial projects. This leads to the second proposition:

Proposition II: Organizational members initiate and/or execute entrepreneurial projects within the organization.

The last step, as previously explained, involves the aggregation of micro level actions to macro level. When such micro level actions are taken by the top-management of the organization and involve the establishment of, *e.g.*, new products lines, the impact on the subsequent performance of an organization (positive or negative) is obvious and, given the historical focus on top-management or key players in EO research, has been the traditional way to link EO to organizational performance. The impact of entrepreneurial actions by non-managerial employees on performance is, however, much more open to debate. Day (1994) even stresses that autonomous entrepreneurial actions by employees (intrapreneurship) are unlikely to have a real impact on organizational performance and that there are only a few examples that prove otherwise. I, on the other hand, argue that there are three conditions under which the actions of a (group of) organizational member(s) (similar to the actions of managers) contribute to organizational performance. The first condition is when those actions result in the establishment of a formal structure. This would be the case when employee initiatives result in changes in organizational procedures or a change in the organizational structure. The establishment of a formal team that investigates renewal with an organization (*e.g.*, improving customer service), the introduction of a new product, or the establishment of a new venture within the organizational domain can be the result of actions by employees who display opportunity seeking behavior who meet this criteria. The second condition is when the actions of a (group of) employee(s) change the incentive structure within an organization. This is the case when the success of employees, due to entrepreneurial actions, serve as an example for others and motivates' others to display more entrepreneurial behavior as well. The third condition under which the aggregation of non-managerial entrepreneurial actions is appropriate, is when such actions create a collective right to exercise control over others. This can be the case when the actions of a (group of) employee(s) create an entrepreneurial culture which provides the basis to correct other organizational members who display non-entrepreneurial (*e.g.*, bureaucratic) behavior. Although (top) managers may display entrepreneurial behaviors on a more regular basis (*e.g.*, Hayton 2005b) suggests that it is more difficult for employees to behave entrepreneurially due to an inability to diversify risks) and that the entrepreneurial actions of (top) managers are more likely to meet one of the three criteria which are described above, any organizational member can potentially contribute to such changes. It is also important to note that the conditions as described above, go far beyond mere product innovations; which is the focus point in Day's (1994) analysis. The impact of (groups of) non-managerial employee(s) is thus likely to be much bigger than most EO studies suggest. A proper examination of the micro foundations of EO therefore includes the influence of the entrepreneurial actions of all organizational members and is not limited to certain actors or hierarchical levels. This leads to the third proposition, which represents the aggregation of actions at micro level of the macro level outcome variable:

Proposition III: The entrepreneurial actions of (groups of) organizational members which constitute a formal organization, a right to exercise social control or a change in incentive structure, contribute to organizational performance.

These three propositions can be combined into one conceptual model (see Figure 6.2). In this model, the upper level signifies the organizational (macro) level and the lower level the micro level (top-management, middle management, employee level, teams, departments, *etc.*). Proposition I denotes the transition from macro to micro level, while proposition III specifies the conditions under which actions at micro level results in macro level consequences. This model should, however, not be seen as a process model of EO that specifies the exact interrelations between the different components, levels, manifestations and outcomes of EO. It rather epitomizes an abstract overview of the theoretical micro foundations of EO theory and can be used as a guideline for future research. Such research can typically follow two different approaches. The first approach involves a careful examination of the individual proposition at a specific level. An example of such a study would be a causal test of proposition I for a specific group of organizational members. Do the opportunity structures in which people function (the institutionalized practices, routines and processes) shape the entrepreneurial behaviors of middle managers, or is it the other way around? A second type of research can focus more on the process of EO as a whole and can make use of multi-level designs to analyze the interrelations between different hierarchical levels, groups, departments and individuals. By using both types of research designs, our understanding of the EO process can be significantly improved. This, in turn, would allow for a much more detailed advice towards practitioners on how to implement EO, how to promote it throughout the organization and what type of manifestation of EO actually improves organizational performance. Given the amount of evidence which proves that the implementation of EO is beneficial for organizations and given the dangers of implementing an EO strategy, such insights can be seen as essential for manager, owners and other practitioners but for further theoretical development in the field of EO as well.

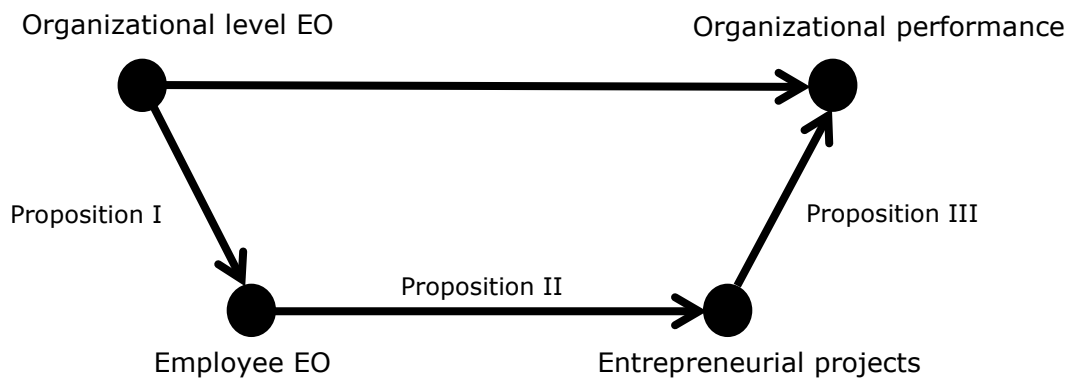


Figure 6.2

The micro level foundations of EO

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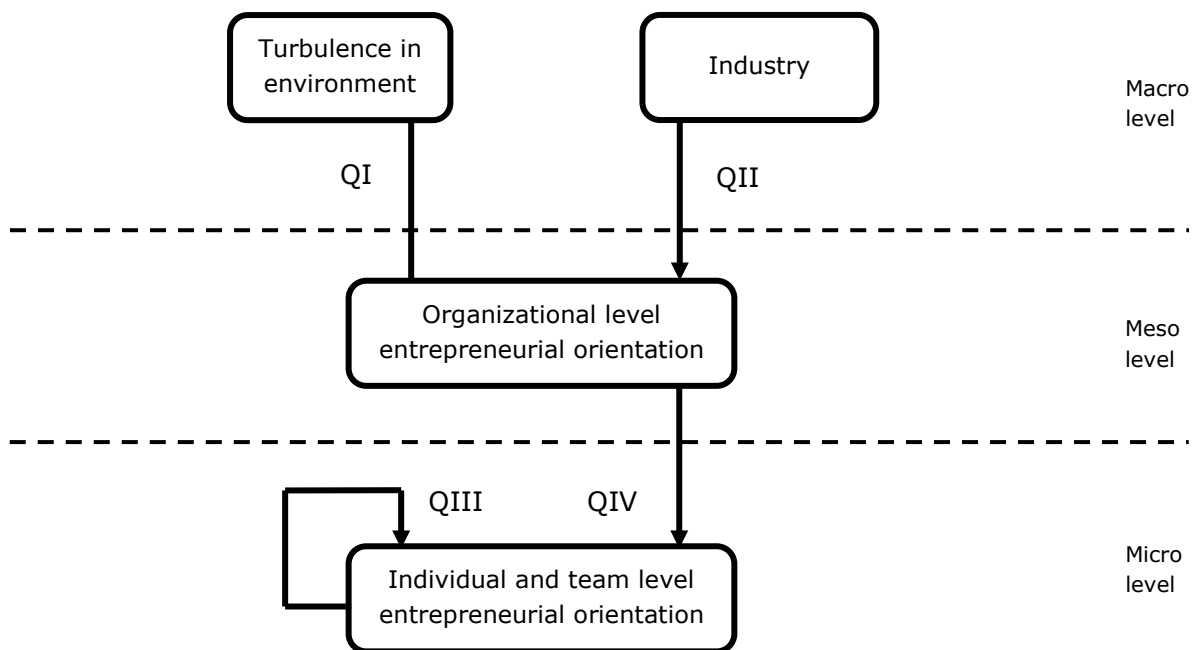
Summary

Entrepreneurial orientation (EO) has become one of the most important foci within the domain of entrepreneurship research (Covin and Lumpkin 2011; Wiklund *et al.* 2011). EO is distinguished from entrepreneurship, which is generally studied in relation to new entry, by its focus on the processes, practices, and decision-making activities that define an organization as entrepreneurial (Lumpkin and Dess 1996). Through entrepreneurial processes and a systematic search for new opportunities, EO infuses established organizations with the flexibility and innovativeness that is commonly associated with small (entrepreneurial) organizations. EO emerges from a strategic-choice perspective (Child 1972) and the study of EO is strongly related to that of entrepreneurial management (Stevenson and Jarillo 1990; Hitt *et al.* 2002). EO research is, however, also criticized, as practitioners often experience severe difficulties while implementing EO in organizations (Burgelman 1983; Busenitz 1999) and since empirical studies sometimes fail to establish a clear relationship between EO and organizational performance (Wiklund and Shepherd 2005).

When it comes to differences in the EO–organizational performance relationship, Miller (2011) emphasizes that the effectiveness of EO is likely to depend upon the context of the operating environment. While EO research has often taken contextual factors like environmental hostility and dynamism into account as independent or moderating variables, it has ignored to what extent the relevance of EO is bounded to certain contexts (Covin and Lumpkin 2011; Dess *et al.* 2011). The practical relevance of EO research, on the other hand, is limited through a focus on the organizational level construct of EO and its relation to organizational performance (*e.g.*, Covin and Slevin 1989; Wiklund *et al.* 2009), a focus on the measurement of EO (*e.g.*, George and Marino 2011; Covin and Wales 2012), and a focus on the correct operationalization of the construct (*e.g.*, Lumpkin and Dess 1996; Lyon *et al.* 2000). Even though there has been a sharp increase in the number of organizational-level EO studies, few studies address how an EO is created within an organization or investigate the value of EO at different hierarchical levels within an organization and, therefore, offer a more detailed perspective on the process of EO (Wales *et al.* 2011).

The main objective of the present dissertation is to further our understanding of the EO concept by examining the value of EO within different contexts, by examining the value of EO at different organizational levels and examining what factors influence the development of EO amongst individual employees. Given this objective, four research questions are formulated. Two of these research questions address the value of EO at organizational level in different contexts (Q I and II), one addresses the value of EO at employee level (Q III) and one addresses how organizations can stimulate entrepreneurial behaviors amongst their employees (Q IV). Together, the four research questions can be combined into one multilevel research model (see Figure 8.1). In model, the organization seeks to establish a fit between, on the one hand, the level of EO and the level of turbulence in the operating environment and, on the other and, the level of EO and the type of industry in which the organization operates. Next to these organizational level research questions, the individual level research questions in the model specify that the organization is influenced by the entrepreneurial behaviors of

employees and that the organization is able to influence the degree of entrepreneurial behavior displayed by its individual members. The operating environment of an organization is, within this multilevel model, defined as the macro level, while the organization and the individuals/teams that work within the organization are defined as, respectively, the meso and micro level. Including the team and individual level allows for a more detailed analysis of the underlying processes and foundations of organizational success.



- I How does EO contribute to the financial performance of SMEs in turbulent and hostile operating environments?*
- II To what extent is EO of equal importance for organizational performance in service firms and manufacturing firms?*
- III To what extent does EO at employee and team level contribute to workplace performance?*
- IV To what extent does the formal and informal work context influence the level of employee EO and intrapreneurship within organizations?*

Figure 8.1: Multilevel research model and research questions

Main findings

The results of the different studies are presented in chapters two to five. All studies rely on quantitative research. Chapter two examines the value of EO in turbulent and hostile operating environments. Even though EO has been traditionally mentioned as a antecedent of growth and superior performance in turbulent operating environments (e.g., Covin and Slevin 1989) an important question that remains unanswered is what effect EO might have during periods of economic crisis, and the severe turbulence that accompany such crises. In this chapter, a multidimensional model of EO is used to test a series of hypotheses pertaining to its performance effects during the current global

economic crisis. Based upon survey data gathered from 164 Dutch small and medium sized enterprises (SMEs), evidence is found that EO risk taking is not a viable strategy when organizations are faced with severe market turbulence while EO innovativeness does contribute to organizational performance under such market conditions. These results offer more detailed insights into the relative value of the different EO dimensions when the managerial skills associated with EO are theoretically and empirically called upon.

Chapter three builds upon the recently increasingly mentioned notion that entrepreneurship in the service sector is a worthwhile, but relative under researched topic (Kraus 2013). Using a sample of 1,612 SMEs from four German-speaking countries Germany, Austria, Switzerland and Liechtenstein, a comparison of the EO – organizational growth relationship between service firm and manufacturing firms is made. While service innovation processes are, typically, described as less structured (Sundbo 1998), less resource demanding (Preissl 2000), and less risky (Cooper and Kleinschmidt 1987), no significant differences in the EO–organizational growth relationship have been found. Service firms do, however, display higher levels of EO. This could point towards the generally lower capital requirements and the less tangible nature of services compared to products. Incremental innovations in service firms will therefore be, generally, less costly and can be executed with relatively low risk. In general, these findings reaffirm the overall robustness of the EO–performance relationship in both the service and manufacturing industry. However, the results of the structural equation model also show that there are more fine grained differences at the level of the individual EO dimension, necessitating more studies that focus on cross industry comparisons in order to deepen our understanding of EO.

While EO has traditionally been defined and operationalized as a organizational level construct, the EO of employees (Employee EO) and teams (Team EO) is the subject of study in chapter four. Research based on two surveys using a sample of 1,104 employees (survey 1; individual level) and, respectively, 628 employees working in 65 team (survey 2; team level) working in a large service-sector company in The Netherlands, revealed that innovativeness and proactiveness are positively associated with workplace performance at the individual employee and team levels, and that these relationships are further strengthened in the presence of commitment to company goals. Through its focus on employees and the work team in which they function, this study gives primacy to different hierarchical levels than other EO studies and helps to address an important gap in EO research which, while recognizing the important role of individuals in substantiating and enacting an organizational EO strategy, has failed to evaluate how the EO endeavors of individuals and work teams affect work place performance as part of the causal chain between EO and organizational performance.

After examining the value of Employee EO in chapter four, an intrapreneurial perspective is used in chapter five to examine how Employee EO can be stimulated amongst the workforce. A two-step model where formal and informal work context affects Employee EO, which then provides the basis for bottom-up initiated intrapreneurial projects, is tested with structural equation modeling. The results indicate that formal organizational factors (horizontal participation, resource availability) affect

employee entrepreneurial behavior, but also highlight the importance of informal factors such as trust in the direct manager. Innovativeness and personal initiative, but not risk taking, play a role in the effective translation of employees' behavior into intrapreneurial projects.

Main conclusions

The studies in this dissertation confirm the overall value of EO, at organizational level as well as employee/team level. However, at organizational level, it also shows the need for refined EO management when organizations are faced with severe market turbulence as only the innovativeness dimension of EO is significantly related to organizational performance while risk taking leads to lower organizational performance. The industry in which an organization operates, on the other hand, seems to be less important and here the results mainly highlight the robustness of the EO-growth relationship.

At the individual level, the proactive and innovative behaviors associated with Employee EO are found to be important for workplace performance at employee and team level. Employees who display such behaviors, are also more likely to initiate and execute entrepreneurial projects. This supports the view that entrepreneurial endeavors can be commissioned on behalf of the organization, but can also spontaneously emerge button-up. Besides the importance of designing a formal organization that is supportive of Employee EO, the results highlight the role of informal exchange processes in form of trust between the supervisor and the employee. Especially the results of chapter four and five create a more nuanced view upon EO. In this view, EO is not purely dominated by strategic orientations at top-management level but is rather an interplay between strategic management, organizational design and the collective body of human resources that is available within an organization.

Theoretical and practical implication

This study confirms the main proposition of EO research that proactive, innovative and risk taking behaviors are required to optimize organizational performance on the long run. However, the study also creates a more complex view as not all dimensions of EO contribute to organizational performance under specific circumstances. Given the difficulties of using empirical studies to systematically filter out all differences in the EO-performance relationship, linking EO to theoretical paradigms, such as the resource based view (RBV) or institutional theory, is of the essence. An institutional perspective can, *e.g.*, be used to explain why organizations who operate in the service industry display higher levels of EO, while a RBV perspective can be used to explain the development of EO at the level of individual organizations. By linking EO to other paradigms, the theoretical foundations of EO research can be strengthened and scholars would be better able to specify *a priori* under which conditions EO increases organizational performance.

Recently, EO researchers have acknowledged that employees play an important role within the EO process (*e.g.*, Wales *et al.* 2011). The results of the present study support this notion and contributes to this discussion by providing empirical support for

the predictive validity of Employee and Team EO when it comes to workplace performance and intrapreneurship. Currently, EO is usually studied in relation to external factors, such as: hostility, dynamism, or the level of technological developments, while paying little attention to the internal characteristics of organizations or human capital. By including lower hierarchical levels, EO researchers can connect EO theory to fields such as human resources management and organizational behavior. This, in turn, can enhance our understanding of EO by an investigation of the different internal organizational tensions that occur while executing an EO strategy. Given the results of the present study, the efforts of non-managerial employees and the work teams in which they function may be much more important than currently assumed in EO literature.

This study has practical implications for managers working in both profit and non-profit organizations. When it comes to strategy at top level, the results show that managers should be careful while implementing EO. Overall, organizations seem to benefit from EO. However, the results presented in chapter two also show that organization that are faced with severe market turbulence do not benefit from proactiveness and experience downsides from the risk taking that is associated with EO. Managers, therefore, constantly have to rethink and adapt their EO strategy and intensity as market circumstances change.

When it comes to the implementation of EO, managers are encouraged provide employees with autonomy and the resources that are necessary for entrepreneurial projects. However, providing a working environment that is supportive of Employee EO is only the first step as our results indicate that exchange processes, and trust in the direct supervisor in particular, play an important role. In practice, trusting your employees means that managers and, ultimately, organizations have to make themselves vulnerable as employee initiatives do create uncertainty. Despite the fact that some entrepreneurial endeavors by employees might fail, this study suggests that organizations can expect better workplace performance on the short run and worker initiated workplace improvements, innovations and new venture projects on the long run, when they actively support entrepreneurial behavior by employees.

Main recommendations for future research

The first recommendation concerns the type of measurement technique that is used in EO research. The dominant practice within EO research is to use a composite score on all three EO dimensions (the so called one-dimensional EO model). Recently, George and Marino (2011) and Covin and Wales (2012) have argued that EO research may benefit from using different conceptualizations of EO and stress the importance of using corresponding measurement techniques (*e.g.*, multi-dimensional models of EO). The use of structural equation modeling in EO research could provide a solution as this allows for researchers to simultaneously look at EO, as well as the individual dimensions of EO. Another problem, directly related to the measurement of EO, is whether EO should be understood as a set of organizational behaviors, an attitude held by the owner(s) or executives of the organization, or a combination of the two. At organizational level, Covin and Lumpkin (2011) suggest to conceptualize EO as a pattern of entrepreneurial behaviors that is persistent over time and see persistent

behavior as the strongest indication for entrepreneurship. At the individual level, researchers should be cautious to apply the same conceptualization. Even though behavior can still be considered as the strongest indication for actual entrepreneurship at employee level, the use of an attitude approach could be beneficial. Conceptualizing Employee EO as an attitude, would allow EO research to draw from well validated frameworks such as: the theory of planned behavior (Ajzen 1991), or expectancy theory (Vroom 1964). This could provide a more thorough understanding of the decision making processes that lead to employee entrepreneurial activities.

The last recommendation for future scientific inquiry is to improve our understanding of EO by multi-level research. So far, EO research has predominantly relied on the observation of the organization as a whole. This type of research designs typically suffer from an inability to effectively isolate the causal mechanisms that cause EO to occur, as well as the process by which EO leads to enhanced performance. However, by including the individual level scholars can more effectively isolate the processes, routines and practices that are, next to the strategic orientation of the owner or CEO, essential for the successful execution of an EO strategy. One of the questions that remains unanswered within this dissertation, is to which extent the entrepreneurial initiatives of employees and the teams in which they function contribute to organizational performance. In order to answer this question, the entrepreneurial endeavors of individual employees need to be investigated not only in relation to their own workplace performance, but also in relation to the organization as a whole. EO researchers are therefore encouraged to include multiple hierarchical organizational levels in research designs in order to provide a more complete view of the EO process and the different factors that may hinder or enhance EO strategy execution.

Nederlandse samenvatting

Binnen het veld van ondernemerschapsonderzoek is *entrepreneurial orientation* (EO) één van de belangrijkste onderzoeksthema's geworden (Covin en Lumpkin 2011; Wiklund *et al.* 2011). In tegenstelling tot ondernemerschap, dat vaak bestudeerd wordt in relatie tot individuen die nieuwe organisaties oprichten, staat in EO onderzoek ondernemen binnen bestaande organisaties centraal. Deze focus komt voort uit de gedachte dat niet alleen ondernemers kansen zien en benutten, maar dat ook organisaties, in meer of mindere mate, ondernemend gedrag vertonen.

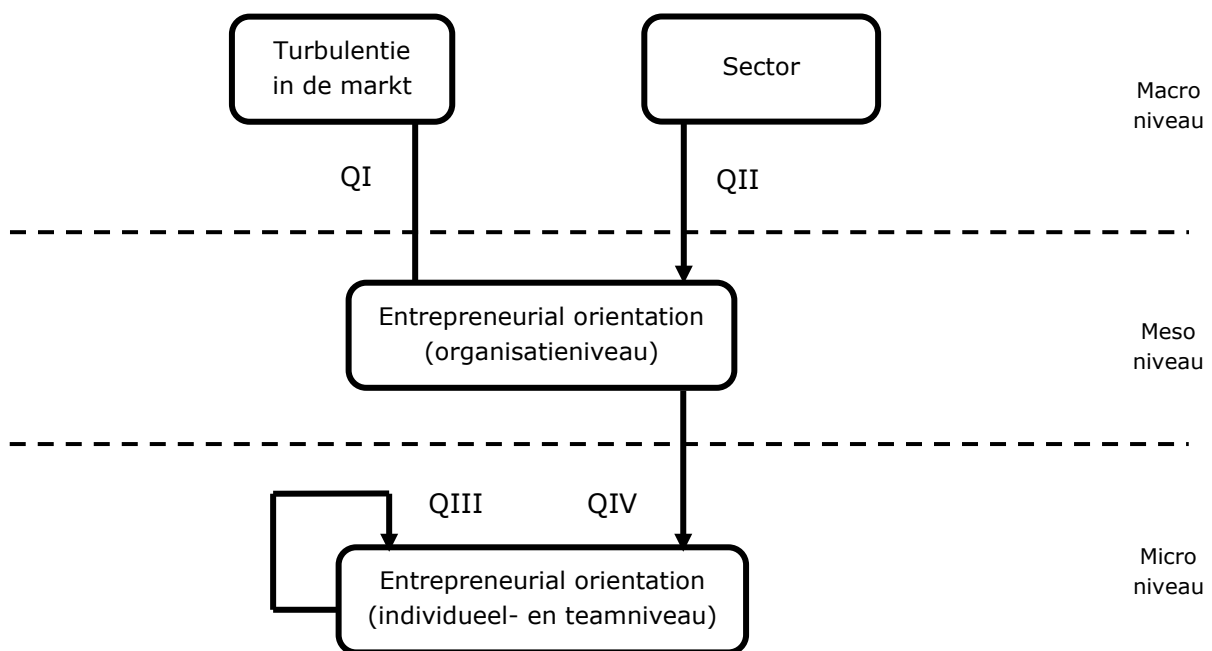
EO is niet alleen een groeiend wetenschappelijk onderzoeksveld. Organisaties worden in toenemende mate geconfronteerd met snelle technologische ontwikkelingen, concurrentie, globalisering en snelle verschuivingen in de voorkeuren van consumenten. Om deze veranderende marktomstandigheden het hoofd te bieden, zijn innovatie en het inspelen op kansen die ontstaan gedurende het proces essentieel. EO komt voort uit een *strategic-choice* perspectief (Child 1972) en gaat in op de mate waarin bedrijven bewust investeren in innovatie, proactief zoeken naar kansen in de markt en zich openstellen voor risico's. Door het identificeren en benutten van kansen deel te laten maken van de interne bedrijfsprocessen, kunnen bestaande organisaties beter inspelen op veranderingen in de markt (Ireland *et al.* 2003). De combinatie van innovatief gedrag, proactief gedrag en de bereidwilligheid tot het nemen van bedrijfsrisico's, kenmerkt daarbij de mate waarin een organisatie een EO strategie volgt (Covin en Slevin 1989).

Academisch onderzoek naar EO wordt, echter, ook bekritiseerd en studies rapporteren soms wisselende resultaten (Wiklund en Shepherd 2005). Het hanteren van een EO strategie lijkt daarmee niet in alle gevallen te leiden tot betere prestaties en groei van de organisatie. In een recent artikel waar de vorderingen op het gebied van EO onderzoek worden besproken, benadrukt Miller (2011) dat de effectiviteit van EO afhankelijk is van de context waarbinnen een organisatie opereert. Hoewel veel EO onderzoek ingaat op de relatie tussen markturbulentie, EO en financiële prestaties, wordt er zelden onderzocht in hoeverre de relatie tussen EO en financiële prestaties is gelimiteerd tot specifieke contexten. Het verder onderzoeken van deze context gebondenheid van EO, is het eerste hoofddoel van deze dissertatie.

Naast de bovenstaande problemen met de validatie van de relatie tussen EO en financiële resultaten, richten critici zich op de beperkte praktische relevantie van EO. Het implementeren van een EO strategie brengt in de praktijk vaak problemen met zich mee omdat EO bedrijfs- en beslissingsprocessen vereist die toegespitst zijn op flexibiliteit, handelingsnelheid en het omgaan met onzekerheid. Vooral binnen grotere en/of oudere, meer bureaucratische, organisaties is het implementeren van dergelijke processen vaak problematisch (Burgelman 1983b; Busenitz 1999). Daarnaast dienen medewerkers binnen de organisatie zich te committeren de aan strategie en zich in te zetten om deze tot uitvoering te brengen. Voor werknemers betekent dit in de praktijk vaak dat zij extra taken dienen te vervullen naast hun reguliere werkzaamheden om innovatieve projecten op te starten en tot een succes te maken. EO onderzoekers richten zich daarentegen hoofdzakelijk op de relatie tussen EO, op een meer abstract niveau, en financiële prestaties (*e.g.*, Covin en Slevin 1989; Wiklund *et al.* 2009), het

meten van EO op organisatieniveau (e.g., George and Marino 2011; Covin en Wales 2012) of richten zich op de operationalisatie van EO (e.g., Lumpkin en Dess 1996; Lyon *et al.* 2000). Het tweede hoofddoel van de onderhavige dissertatie is daarom om te onderzoeken in hoeverre een EO op werknemersniveau bijdraagt aan innovatie en de prestaties op de werkvloer en hoe bedrijven EO op werknemersniveau kunnen stimuleren.

Gezien de twee geformuleerde hoofddoelen, wordt er gebruik gemaakt van een multi-level onderzoeksontwerp. Hierbij staan drie verschillende niveaus centraal: a) de context waarbinnen een organisatie opereert (het macro niveau), b) de organisatie (meso niveau) en c) de individuen die werken binnen de organisatie en de teams waarbinnen zij opereren (micro niveau). In Figuur 9.1 wordt het onderzoeksontwerp schematisch weergegeven met daarin de vier onderzoeksvragen die zijn geformuleerd. Twee van deze vragen (QI en QII) gaan in op de relatie tussen EO op organisatieniveau en de context waarbinnen de organisatie opereert. Onderzoeksvragen QIII en QIV gaan in op de relatie tussen de organisatie en de EO van werknemers en teams. Door, in tegenstelling tot regulier EO onderzoek, het individuele niveau op te nemen in het onderzoeksontwerp, biedt dit onderzoek een meer gedetailleerde analyse van de onderliggende succesfactoren en het EO proces.



- QI Op welke wijze draagt EO bij aan de financiële prestaties van MKB bedrijven die opereren in turbulente markten?*
- QII In hoeverre is EO van belang voor organisationele prestaties in de productie en service sector?*
- QIII In hoeverre draagt EO op werknemer- en teamniveau bij aan prestaties op de werkvloer?*
- QIV In hoeverre beïnvloeden formele en informele organisatie karakteristieken intrapreneurship en EO op individueel niveau?*

Figuur 9.1: Multi-level onderzoeksontwerp en onderzoeksvragen

Belangrijkste resultaten

In hoofdstuk twee wordt EO benaderd als een strategische oriëntatie op managementniveau en staat de rol van EO binnen periodes van ernstige onzekerheid en turbulentie centraal. Traditioneel wordt EO gezien als een strategische oriëntatie die organisaties in staat stelt om zich aan te passen aan veranderende (markt) omstandigheden. Ten tijde van economische crisis, zouden organisaties met een sterke EO strategie dan ook in staat moeten zijn om snel in te spelen op teruglopende bestedingen, het uitstellen van investeringen en andere veranderingen die het direct gevolg zijn van een economische recessie. Een multi-dimensionaal model is gebruikt om te testen hoe EO bijdraagt aan de prestaties van midden- en kleinbedrijven (MKB) ten tijde van de financiële crisis. De data analyse toont aan dat bedrijven die opereren in zeer turbulente markten profiteren van innovatie, ondanks de investeringen die hiervoor nodig zijn. Managers dienen echter wel terughoudend te zijn met het nemen van grote risico's, aangezien risico-nemend gedrag een negatief effect heeft op de bedrijfsprestaties. De resultaten in dit hoofdstuk geven inzicht in de waarde van de individuele EO dimensies (te weten: innovatief, proactief en risiconemend gedrag) wanneer organisaties geconfronteerd worden met krimpende markten en toenemende concurrentie.

Waar onzekerheid en turbulentie binnen markten een traditioneel thema is, heeft EO onderzoek veel minder aandacht besteedt aan verschillen tussen de sectoren waarbinnen organisaties opereren. In hoofdstuk drie is een vergelijking gemaakt tussen de wijze waarop EO groei in organisaties stimuleert in de productie- en dienstensector. Tot op heden heeft EO onderzoek met name gebruik gemaakt van zeer specifieke steekproeven en dit is het eerste onderzoek dat ingaat op structurele verschillen tussen verschillende sectoren. Voor dit onderzoek is data verzameld van 1.612 MKB bedrijven uit Duitsland, Oostenrijk, Zwitserland en Liechtenstein. De resultaten tonen aan dat, ondanks de relatief lage kosten waartegen innovaties binnen de dienstensector gerealiseerd kunnen worden (Cooper en Kleinschmidt 1987), er geen significante verschillen zijn in de relatie tussen EO en bedrijfsgroei in de diensten- en productiesector. Wel vertonen bedrijven die opereren binnen de dienstensector gemiddeld meer EO. Dit is waarschijnlijk het gevolg van de relatief lagere investeringen die benodigd zijn voor innovaties binnen de dienstensector. Bedrijven zijn hierdoor makkelijker in staat om innovaties door te voeren en lopen minder risico. Echter, de resultaten van het *structural equation* model laten ook zien dat er, op het niveau van de individuele dimensies, verschillen zijn. Dit benadrukt het belang van meer studies die zich richten op verschillen tussen specifieke sectoren.

Hoewel EO traditioneel is gedefinieerd en geoperationaliseerd als een strategie op organisatieniveau, staat de EO van werknemers en teams centraal binnen hoofdstuk vier. Onderzoek op basis van twee onafhankelijke vragenlijsten en een database van 1.104 werknemers die werkzaam zijn in 65 teams van een toonaangevend Nederlands verzekeringsbedrijf, toont aan dat innovatief en proactief gedrag bijdraagt aan prestaties op de werkvloer op individueel en team niveau. De relatie tussen proactief gedrag en prestaties op de werkvloer wordt daarbij versterkt indien de werknemers zich committeren aan organisationele doelen. De resultaten in dit hoofdstuk laten zien dat organisaties niet alleen baat hebben bij ondernemend gedrag van managers, maar dat

een ondernemende houding bij werknemers tevens belangrijk is. Hoewel de rol van werknemers binnen EO onderzoek wordt benadrukt (b.v., Covin en Slevin 1991), is nooit geëvalueerd hoe ondernemend gedrag van werknemers bijdraagt aan de prestaties van organisaties. De resultaten van het onderzoek in hoofdstuk vier tonen echter aan dat verder onderzoek in deze richting noodzakelijk is, gezien het belang van dergelijke gedragingen voor prestaties van individuen en teams.

Nadat het belang van ondernemend gedrag op werknemersniveau is onderzocht in hoofdstuk vier, wordt in hoofdstuk vijf onderzocht hoe organisaties dergelijke gedragingen kunnen stimuleren. Hiertoe wordt er een *intrapreneurship* perspectief gebruikt waarbij er een onderscheid wordt gemaakt tussen ondernemend gedrag en werknemers die zelf projecten initiëren en daadwerkelijk uitvoeren (*intrapreneurship*). Op basis van data verzameld binnen zes verschillende organisaties in Nederland kan geconcludeerd worden dat formele organisationele kenmerken (b.v., de organisatiestructuur en beschikbare middelen voor innovatie) invloed uitoefenen op het ondernemende gedrag van werknemers. De relatie tussen de direct leidinggevende en werknemers, is tevens van belang. Werknemers die vertrouwen hebben in hun leidinggevende vertonen meer ondernemend gedrag op de werkvloer. Deze ondernemende gedragingen spelen een belangrijke rol bij het initiëren, ontwikkelen en daadwerkelijk uitvoeren van innovatieve projecten.

Belangrijkste conclusies

De verschillende studies in deze dissertatie bevestigen de waarde van EO op zowel organisatie, team als individueel niveau. Op organisatieniveau laten de resultaten echter zien dat EO zorgvuldig strategisch management vereist wanneer organisaties geconfronteerd worden met extreme turbulentie in de markt. De sector waarbinnen een organisatie opereert is daarentegen van minder belang. Dit onderstreept de robuustheid van de relatie tussen EO en (financiële) prestaties op organisatieniveau voor organisaties die opereren in verschillende sectoren.

Op individueel niveau zijn innovatieve en proactieve gedragingen op de werkplek belangrijk voor de prestaties van werknemers en teams. Werknemers die dergelijke gedragingen vertonen, initiëren en voeren ook vaker innovatieve projecten uit. Dit ondersteunt de notie dat ondernemende projecten *top-down* geïmplementeerd kunnen worden door het topmanagement, maar ook *bottom-up* geïnitieerd kunnen worden door medewerkers. Naast het belang van het creëren van een organisatie die ondernemend gedrag ondersteunt, spelen *social exchange* processen, in de vorm van vertrouwen in de direct leidinggevende, een belangrijke rol. De resultaten in hoofdstuk vier en vijf bieden daarmee een meer genuanceerd beeld van het EO proces. Hierbij wordt het EO proces niet gedomineerd door het topmanagement, maar is het eerder een samenspel tussen strategisch management, organisatie structuur en de collectieve *human resources* die een organisatie tot haar beschikking heeft.

Theoretische en praktische implicaties

De resultaten van de studies in hoofdstukken twee en drie tonen aan dat innovatief, risiconemend en proactief gedrag belangrijk is om (financiële) prestaties van

organisaties op de lange termijn te verbeteren. Afhankelijk van de context waarbinnen bedrijven opereren, dient een EO strategie, echter, aangepast te worden. Tot op heden zijn deze contextuele verschillen vooral onderzocht door gebruik te maken van steekproeven binnen specifieke sectoren. Een dergelijke onderzoeksstrategie is, echter, zeer tijdrovend en het is beter om EO onderzoek te verrijken door het te combineren met andere theoretische stromingen binnen de management literatuur. De hogere niveaus van EO binnen de dienstensector zouden, bijvoorbeeld, verklaard kunnen worden door een institutioneel perspectief te hanteren, terwijl de *resource based view* gebruikt kan worden om de ontwikkeling van EO binnen organisaties nader te bestuderen. Door EO onderzoek te combineren met andere theoretische perspectieven kunnen onderzoekers beter *a priori* specificeren wanneer en op welke wijze EO bijdraagt aan de (financiële) prestaties van organisaties.

De rol van medewerkers binnen het EO proces heeft recentelijk meer aandacht gekregen binnen EO onderzoek (b.v., Wales *et al.* 2011). De resultaten van de studies op individueel niveau (hoofdstukken vier en vijf), tonen aan dat de EO van werknemers bijdraagt aan prestaties op de werkvloer en het niveau van *intrapreneurship* binnen zowel *profit* als *non-profit* organisaties. Door EO hoofdzakelijk op organisatieniveau te definiëren staat de strategische koers en de rol van de eigenaar / directeur centraal. Minder aandacht wordt er besteed aan het proces van strategieformulering en hoe een strategie gerealiseerd kan worden. Dit is opmerkelijk te noemen, aangezien belangrijke onderzoekers binnen het veld van strategisch management nadrukkelijk aandacht besteden aan de rol van medewerkers binnen het strategie proces (b.v., Mintzberg en Waters 1985). Door het belang van verschillende hiërarchische niveaus in het EO proces te erkennen, kan EO onderzoek bouwen op inzichten vanuit, bijvoorbeeld, *human resource management* en *organizational behavior theory* en deze integreren in het theoretisch kader. Gezien de resultaten van de studies in deze dissertatie, zijn de ondernemende activiteiten van werknemers en de teams waarbinnen zij functioneren wellicht belangrijker dan tot op heden werd aangenomen. De tijd lijkt dan ook rijp om lagere organisatieniveaus expliciet op te nemen in EO onderzoek en om de spanningen die ontstaan op werknemersniveau wanneer bedrijven een sterke EO strategie voeren nader te onderzoeken.

Deze dissertatie heeft praktische implicaties voor managers die werken in zowel *profit* als *non-profit* organisaties. Op het gebied van strategische planning laat het onderzoek zien dat managers voorzichtig dienen te zijn wanneer zij een EO strategie willen implementeren, aangezien een sterke focus op alle drie EO dimensies niet in alle situaties leidt tot betere financiële resultaten en groei. Managers dienen daarom hun EO strategie en de intensiteit daarvan continu bij te stellen wanneer marktomstandigheden veranderen.

Om een EO strategie succesvol te implementeren dienen managers werknemers autonomie te geven en middelen ter beschikking te stellen voor innovatieve projecten. Echter, alleen het doorvoeren van wijzigingen in de organisatiestructuur en het ondersteunen van door werknemers geïnitieerde projecten is niet voldoende, aangezien de resultaten (zie hoofdstuk vijf) laten zien dat een vertrouwensrelatie tussen de werknemer en leidinggevende essentieel is. Het opbouwen van een vertrouwensrelatie

betekent, in de praktijk, dat managers – en uiteindelijk organisaties – zich kwetsbaar dienen op te stellen. Ondanks het feit dat sommige door werknemers geïnitieerde projecten wellicht falen, suggereren de resultaten van de onderhavige dissertatie dat managers op de korte termijn betere prestaties mogen verwachten en meer door werknemers geïnitieerde innovaties op de lange termijn indien zij persoonlijk en actief ondernemende werknemers ondersteunen.

Belangrijkste aanbevelingen voor toekomstig onderzoek

De eerste aanbeveling voor toekomstig onderzoek betreft het type meetinstrument dat wordt gebruikt. Over het algemeen gebruiken onderzoekers de gemiddelde score op de drie EO dimensies (te weten: innovatief, proactief en risiconemend gedrag) om het niveau van EO te berekenen. Meer recentelijk hebben, onder andere, George en Marino (2011) beargumenteerd dat, bij specifieke onderzoeksvragen, een focus op de individuele dimensies voordelen en interessante resultaten kan opleveren. Het statistische model dat ontwikkeld is in hoofdstuk drie met behulp van *structural equation modeling*, kan hierbij een nieuwe invalshoek bieden. Dit model stelt onderzoekers namelijk in staat om de relaties tussen EO en een afhankelijke variabele te analyseren, terwijl tegelijkertijd de relatie tussen de individuele dimensies van EO en de afhankelijke variabele geanalyseerd kan worden. Een dergelijke analyse is in lijn met aanbevelingen van Miller (2011), die stelt dat onderzoekers zowel dienen te kijken naar de individuele dimensies als naar EO als construct.

Een vraagstuk dat gerelateerd is aan het meten van EO, is of EO geconceptualiseerd dient te worden als gedrag, attitudes of een combinatie van beide. Op organisatieniveau stellen Covin en Lumpkin (2011) dat EO het beste geconceptualiseerd kan worden als een systematisch gedragspatroon. Op individueel niveau dienen onderzoekers deze aanbeveling, echter, kritisch te benaderen. Hoewel, ook op individueel niveau, gedrag gezien kan worden als de sterkste indicatie voor ondernemerschap, biedt een attitude benadering meer ruimte om de beslissingsprocessen te analyseren die leiden tot ondernemend gedrag. Hierdoor kan er gemakkelijk een onderscheid gemaakt worden tussen ondernemende attitudes van werknemers en het daadwerkelijke gedrag dat zij vertonen. Tevens kan er, op theoretisch niveau, een koppeling worden gemaakt tussen, bijvoorbeeld, de EO van werknemers en *expectancy theory* (Vroom 1964) en de EO van werknemers en *the theory of planned behavior* (Ajzen 1991). Door een dergelijke koppeling zou men nauwkeuriger kunnen voorspellen onder welke omstandigheden werknemers bereidwillig zijn om de risico's te nemen die geassocieerd worden met ondernemend gedrag in bestaande organisaties.

De laatste aanbeveling voor toekomstig wetenschappelijk onderzoek is om gebruik te maken van een multi-level onderzoeksontwerp. Tot op heden heeft onderzoek zich vooral gericht op de organisatie als geheel en minder op de interne processen. Dit type onderzoeksontwerp is minder goed in staat om op effectieve wijze causale mechanismen te identificeren. Door het micro (individueel) niveau expliciet op te nemen in het onderzoeksdesign, kunnen onderzoekers de processen, routines en handelingswijzen isoleren welke, naast de strategische oriëntatie van de directeur of eigenaar, bijdragen aan het succes van het EO proces. Een belangrijke vraag die in deze dissertatie onbeantwoord is gebleven, is de mate waarin de inspanningen van

werknemers op het gebied van ondernemerschap bijdragen aan prestaties op organisatieniveau. Om deze vraag te beantwoorden dienen de ondernemende gedragingen van werknemers niet alleen in relatie tot hun prestaties op de werkplek geanalyseerd te worden, maar met name in relatie tot de organisatie als geheel. EO onderzoekers worden daarom aangemoedigd om verschillende hiërarchische niveaus op te nemen in hun onderzoeksontwerp om zo een meer compleet beeld te krijgen van het EO proces en de verschillende factoren die bijdragen aan de (financiële) prestaties van organisaties of die deze juist schaden.

Appendices

Appendix A.

Scale items questionnaire I

Scale	Item	Type of measurement
Commitment	I really feel attached to the company' overall direction.	5 point Likert-type scale, ranging from totally disagree tot totally agree
Commitment	I really feel attached to the objectives of my department.	5 point Likert-type scale, ranging from totally disagree tot totally agree
Commitment	I really feel attached to the objectives of my team.	5 point Likert-type scale, ranging from totally disagree tot totally agree
Team performance	Within our team, we achieve our team goals.	5 point Likert-type scale, ranging from totally disagree tot totally agree
Team performance	Within our team, we actively improve the performance / standard of our work.	5 point Likert-type scale, ranging from totally disagree tot totally agree
Team performance	Our team responds well to the wishes of our customers / internal stakeholders.	5 point Likert-type scale, ranging from totally disagree tot totally agree

Appendix B.

Scale items questionnaire II

Scale	Item	Type of measurement
Innovation	I have very little problems with renewal and change.*	7 point Likert-type scale, ranging from totally disagree tot totally agree
Innovation	I quickly master new routines, procedures and new ways of working.	7 point Likert-type scale, ranging from totally disagree tot totally agree
Innovation	When it comes to problem solving, I always search for creative solutions instead of familiar ones.	7 point Likert-type scale, ranging from totally disagree tot totally agree
Proactiveness	I always try to find if internal clients have wishes or desires that they are not consciously aware of.	7 point Likert-type scale, ranging from totally disagree tot totally agree
Proactiveness	I always actively help internal clients, and not only when I am asked or approached to do so.	7 point Likert-type scale, ranging from totally disagree tot totally agree
Proactiveness	I am constantly looking for new ways to improve my performance at the job.*	7 point Likert-type scale, ranging from totally disagree tot totally agree
Risk taking	I value new plans and ideas, even if I feel that they could fail in practice.*	7 point Likert-type scale, ranging from totally disagree tot totally agree
Risk taking	I sometimes provide assistance to internal clients without first discussing this with my supervisor.	7 point Likert-type scale, ranging from totally disagree tot totally agree
Risk taking	In order to be more productive, I sometimes act without the permission of my supervisor.	7 point Likert-type scale, ranging from totally disagree tot totally agree
Individual performance I	In your work you are being evaluated on a regular basis. What grade do you expect to get next time?	Ten point scale, ranging from 1 to 10.
Individual performance II	How important is your own contribution to the level of customer satisfaction within your team?	7 point Likert-type scale, ranging from not important at all, to very important.

* Item dropped after factor analysis

Curriculum Vitae

Coen Rigtering (1982) was born in Naarden, the Netherlands. He obtained a Bachelor degree in Management, Economics and Law at Hogeschool Inholland (Diemen) in 2005 and a Master degree (cum laude) in Policy, Communication and Organization at the Vrije Universiteit (Amsterdam) in 2008. From 2009 onwards, he worked as a junior lecturer at the Utrecht University School of Economics (USE) where he also completed his dissertation. He has been a guest lecturer at the Nelson Mandela Metropolitan University (South Africa) in 2009 and Stellenbosch University (South Africa) in 2010 and 2012. In 2012 he was named the USE Ph.D. student of the year. His work is published in several academic journals such as: Review of Managerial Science, International Entrepreneurship and Management Journal, and The Service Industries Journal. Currently, he works as an assistant professor at USE and as senior researcher at the Windesheim University of Applied Sciences. His primary research interests are in the field of corporate entrepreneurship, intrapreneurship, and strategic management in family businesses.

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