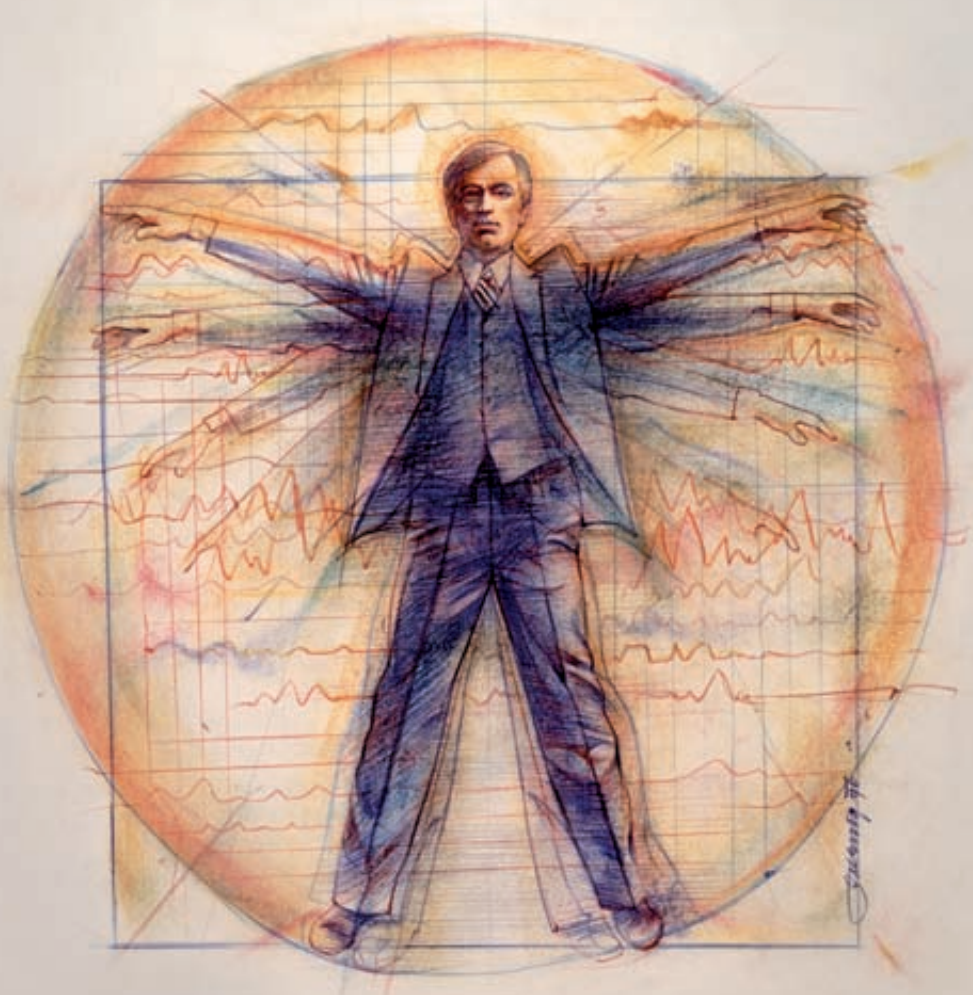
IGNACIO VACCARO

Management Innovation

Studies on the Role of Internal Change Agents



MANAGEMENT INNOVATION: STUDIES ON THE ROLE OF INTERNAL CHANGE AGENTS

Management Innovation: Studies on the Role of Internal Change Agents

Management innovatie: Studies over de rol van interne veranderingsagenten

Thesis

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by
Ignacio Gabriel Vaccaro
born in Buenos Aires, Argentina

Doctoral Committee

Promoters:	Prof. Dr. F.A.J. Van Den Bosch
	Prof. Dr. H.W. Volberda
	Prof. Dr. J.J.P. Jansen
Other members:	Dr. I. Oshri
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PREFACE

Much like the phenomenon I studied, the process of writing this dissertation was influenced by a host of key individuals who, in one way or another, made this study possible.

My promoters, Henk Volberda, Frans Van Den Bosch and Justin Jansen were instrumental in guiding me through the process of writing my dissertation. Crucially, they saw merit in my work when I most doubted it, giving me the confidence to carry on and eventually succeed. My colleagues at the department of strategic management, with whom I shared coursework, endless discussion, lunch, trips to conferences and the odd visit to the pub, created the right conditions for me to pursue my work.

During my research I was fortunate to work on a case study at DSM, where I was welcome and challenged in equal measure. My gratitude goes to all of those who made this case study possible and who gave up their time to discuss aspects of their work with me. This case study, however, would not have been possible without the assistance I received from Marjolein Kleiberg, Rick Hollen and Pim van Calsteren. I am grateful for their work.

Throughout the writing of this dissertation my parents, siblings, uncles and cousins have been an incredible source of support and encouragement. Even with an ocean between us, I feel you all are as close to me as you have ever been.

Finally, Nastya, who not only supported me through the ups and downs, the stress and the all-nighters, but also made life as easy and as good as possible so I could focus on my work. This book is dedicated to you. Я люблю тебя.

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CHAPTER 1.

INTRODUCTION

1.1. Introduction

One of the fundamental tenets in strategic management is that innovation can help organizations outperform their competitors. While innovation is unsurprisingly one of the most commonly addressed topics in managerial and academic publications alike, research has generally approached innovation as the development of new products, technology or services. Consequently, technological innovation has been predominant in innovation research, with related notions such as product development (Clark and Fujimoto, 1991), radical versus incremental innovation (Dewar and Dutton, 1986; Ettlie, Bridges, and O'Keefe, 1984), as well as diffusion and adoption (Kimberly and Evanisko, 1981; Teece, 1980) receiving a lot of attention. Nevertheless, as competition intensifies, firms may look for other areas in which to innovate as a means of gaining and maintaining a competitive edge. This would entail a search not only for new products and new technologies, but also for changes in the nature of management within the organization, in other words, i.e. management innovation.

Management innovation is defined as the "generation and implementation of a management practice, process, structure or technique that is new to the state of the art and is intended to further organizational goals" (Birkinshaw, Hamel, and Mol, 2008, p.829). This refers to what managers do and how they do it (Hamel, 2006), highlighting the actions of a central actor, namely the manager. While the systematic study of management innovation has only recently begun to emerge in the literature, instances of the phenomenon and its potential benefits to organizations abound in different literatures. One of the most prominent examples is the development and implementation of the multidivisional structure at General Motors in the 1920s (Chandler, 1962), which went on to become one of the largest companies in the world, while the multidivisional structure it pioneered became the predominant organizational structure for decades.

1.2. Management Innovation

Management innovation has been defined as the "generation and implementation of a management practice, process, structure or technique that is new to the state of the art and is intended to further organizational goals" (Birkinshaw et al., 2008: 829). It addresses changes in what managers do and how they do it (Hamel, 2006). Such changes have been argued to be very ambiguous and hard to replicate, hence more likely to lead to sustainable competitive advantage and increased competitiveness (Birkinshaw and Mol, 2006; Hamel, 2007; Teece, 2007). Management innovation, then, relates to changes in how managers set directions, make decisions, coordinate activities, and motivate people (Hamel, 2006). These changes become part of the organization as management innovation manifests itself through new management practices, processes or structures. In describing management innovation, Birkinshaw et al. (2008) identify four different perspectives on management innovation: institutional, fashion, cultural, and rational perspective. In line with Birkinshaw et al. (2008), our treatment of management innovation throughout this dissertation remains close to the rational perspective. This perspective assumes that new practices, processes or structures are deliberately introduced by key individuals within organizations in order to improve the organization's performance.

Birkinshaw et al. (2008) consider there to be "two equally valid points of view" (p. 828) regarding the novelty of management innovation, namely "new to the state of the art" and "new to the organization". While the level of analysis of

"new to the state of the art" or new to the world, is management as a whole, or indeed the world, as this definition implies no known precedents, the level of analysis of "new to the organization" is the firm. Focusing on this level of analysis enables us to empirically test a series of hypotheses at the firm level of analysis and draw on a potentially much more sizable sample of management innovations. The development of management innovation that is new to the world obviously involves a large degree of uncertainty, but the introduction of management innovation that is 'merely' new to the firm is not without uncertainty either. Firms may be able to draw on the practices that have previously been implemented elsewhere, but the success of any new practice may partly depend on the way it is being adapted to the idiosyncratic context that is formed by the organization in which it is introduced (Ansari, Fiss, and Zajac, 2010).

While a requirement for innovation, change in itself does not constitute management innovation (West and Farr, 1990). For instance, downsizing may bring about change to an organization, but is not related to management innovation if it represents an unchanged continuation of managerial work. For management innovation to occur, the implemented change should include novelty in the way the organization is managed by means of new practices, processes, or structures, including their associated techniques.

An example of management innovation is self-managing teams, which we further study in Chapter 4. Self-managing teams involve the introduction of teams responsible for their own internal functioning, setting of priorities, and decision making within an organization (Bunderson and Boumgarden, 2010). The implementation of self-managed teams at Procter & Gamble (Lawler, 1990; Waterman, 1994) exemplifies change in three facets of management innovation, i.e. practices, processes, and structures. *Management practices* refer to what managers do as part of their job on a day-to-day basis and include setting objectives and associated procedures, arranging tasks and functions, developing talent, and meeting various demands from stakeholders (Birkinshaw et al., 2008; Mol and Birkinshaw, 2009). The introduction of self-managed teams at Procter & Gamble changed the work of managers in that employees became in charge of setting their own goals and deciding when and how tasks were going to be performed. *Management processes* refer to the routines that govern the work of managers, drawing from abstract ideas and turning them into actionable tools, which typically include strategic planning, project management, and performance assessment (Birkinshaw et al., 2008; Hamel, 2006, 2007). Following the

introduction of self-managed teams at Procter & Gamble, the reward and promotion systems were overhauled. Pay was determined on the basis of skill levels, which in turn served as the basis for promotion, as evaluated by fellow team members. *Organizational structure*, which refers to how organizations arrange communication, align and harness effort from their members (Birkinshaw et al., 2008; Hamel, 2007), was also altered at Procter & Gamble as hierarchical layers were removed following the adoption of self-managed teams. Table 1.1 provides an illustration of the three facets of management innovation in relation to self-managing teams at P&G.

Table 1.1 Facets of management innovation in self-managing teams at P&G

Management innovation facet	**Illustration from *Self-managing teams* at P&G**
New management practice	Employees became in charge of setting their own goals and deciding when and how tasks were going to be performed
New management process	Overhaul of promotion and reward systems where pay and promotion were determined in relation to skill as evaluated by fellow team members
New management structure	Hierarchical layers were removed to allow team autonomy

Management innovation as a subject of study is preceded by several related, yet different subjects such as technical, process, administrative and organizational innovation. Table 1.2 presents the definitions and scope of the several related types of innovation. Management innovation differs from other types of innovation in three important ways (Birkinshaw et al., 2008) - management innovation's outputs are typically intangible and abstract in nature, their occurrence is not aided by well-established expertise and infrastructure (as is often the case with technical innovation which may originate in research facilities), and as a result the associated ambiguity and level of uncertainty may exceed that of other types of innovations.

Additionally, management innovation differs from other types of innovation in terms of scope. Technical, process, and administrative innovation refer to a narrower scope comprising new products and services, production

operations, and human resources respectively, while organizational innovation includes changes that cover both products and services, as well as changes in structures. Management innovation's scope, however, focuses on managerial work through changes in practices, processes and structures.

This makes it possible to differentiate management innovation from other notions such as technical innovation, which refers to the introduction of changes in technology that relate to an organization's main activity (Daft and Becker, 1978; Utterback and Abernathy, 1975), including new or improved products, components or materials. Process innovation relates to new production methods and manufacturing efficiency (Damanpour, 1991; Knight, 1967; Utterback, 1994; Utterback and Abernathy, 1975). This type of innovation is concerned with how existing products are produced (Meeus and Edquist, 2006), and is typically driven by a search for lower operational costs, shorter lead times, and increased production flexibility (Damanpour and Aravind, 2006).

Administrative and organizational innovation center on different instances of change. Administrative innovation is associated with narrower instances of innovation that complement technical advancement through new insights in, for instance, budgeting and cost reduction (Damanpour and Evan, 1984; Kanter, 1984b; Kimberly, 1981). Organizational innovation has been defined in broader terms as spanning technical and administrative cores (Daft, 1978; Slappendel, 1996), which includes both technological and administrative changes. In a recent review, Crossan and Apaydin (Crossan and Apaydin, 2010) define organizational innovation in very broad terms to include the pursuit of any innovative activity within the firm (see Table 1.2), which fails to capture the role of the manager as the central actor within organizations and changes to how the work of management is performed. Echoing these definitions, empirical studies of organizational innovation have included measures such as amounts of patents registered by an organization and R&D expenditure in their operationalization of organizational innovation (Hage, 1999; Jung, Wu, and Chow, 2008; Jung, Chow, and Wu, 2003; Kimberly and Evanisko, 1981) diverts attention from managerial work and into the realm of technical innovation.

Table 1.2 Related types of innovation: Administrative, organizational and

Study	Innovation type	Definition
Evan (1966)	Administrative	"…implementation of an idea for a new policy pertaining to the recruitment of personnel, the allocation of resources, the structuring of tasks, of authority, of rewards."
Kimberly (1981)	Managerial	"…any program, product or technique which represents a significant departure from the state of the art of management at the time it first appears and which affects the nature, location, quality, or quantity of information that is available in the decision-making process."
Damanpour & Evan (1984)	Administrative	"Administrative innovations are those that occur in the social system of the organization. … It also includes those rules, roles, procedures, and structures that are related to the communication and exchange among people and between the environment and people"
Abrahamson (1996)	Management	"…any program, product or technique which represents a significant departure from the state of the art of management at the time it first appears and which affects the nature, location, quality, or quantity of information that is available in the decision-making process."
Hamel (2006)	Management	"…a marked departure from traditional management principles, processes, and practices or a departure from customary organizational forms that significantly alters the way the work of management is performed."
Damanpour & Schneider (2006)	Management	"…the invention and implementation of a management practice, process, structure or technique that is new to the state of the art and is intended to further organizational goals."
Birkinshaw at al. (2008)	Management	"…the invention and implementation of a management practice, process, structure or technique that is new to the state of the art and is intended to further organizational goals."
Crossan & Apaydin (2010)	Organizational	"…production or adoption, assimilation, and exploitation of a value-added novelty in economic and social spheres; renewal and enlargement of products, services, and markets; development of new methods of production; and establishment of new management systems"

management innovation

New to:	Level of analysis	Main contributions
Firm	Firm	In order for companies to prosper, both technical and administrative innovations must be allowed to flow from top to bottom *and* from bottom to top.
World	Firm, industry, environment.	Success and failure of managerial innovation will depend on internal factors and configurations, as well as the influence of the external environment.
Firm	Firm, environment	High performing organizations adopt both technical and administrative innovation, addressing both the technical and social systems in the face of environmental change.
World	Firm, environment	Management fashions are relevant in that they shape, with different results, management practice. This takes place in an environment in which fashion setters and users interact.
World	Firm	As companies differ little across management practices, only those that engage in management innovation can achieve competitive advantage that will allow them to thrive.
Firm	Environment, firm	Organizational characteristics and managers' attitude toward innovation have a stronger influence on adoption of innovations than environmental and top managers' demographic characteristics.
World	Firm, environment	The development of management innovation is influenced by both internal and external agents as they interact from the inception of new management ideas to their codification and dissemination.
Firm	Firm	Systemic review of organizational innovation literature identifying three groups of determinants: leadership, managerial levers, and business process.

The concept of management innovation departs from other types as it refers to a more encompassing instance of change at firm level in practices, processes or structures within organizations, which affect how management work is done and how people work with one another, resulting in a more encompassing and complex type of innovation.

1.3. Management innovation matters at several levels of analysis – Illustrating the interaction between industry and firm

The development of management innovation is a complex process involving different actors who in turn are bound to be influenced by their environment. Birkinshaw at al. (2008) distinguish between two types of change agents involved in management innovation – internal and external. Internal change agents are employees of the firm in which management innovation is being introduced. They have a role in promoting, experimenting and validating new practices, processes and structures within the organization. They illustrate the role of human agency within the organization, underscoring the rational perspective on management innovation. External change agents are those who, from outside the organization, still exert influence in the adoption of management innovation. These may include academics, consultants and management gurus.

Birkinshaw et al. (2008) also argue that context will play a role in shaping management innovation by influencing both types of change agents. In particular, internal change agents will be influenced by their organizational context, which may condition their ability to influence other actors within the organization, while external change agents will be influenced by the environmental context, which encompasses the dynamics present in the social, political and technological environment. Studies of management innovation have focused primarily on the industry level, however, the firm level of analysis may hold the key management innovation initiatives that eventually surface at the industry level, suggesting an interaction between the two levels of analysis. This suggests that the development of management innovation is affected by multiple actors and associated dynamics – both internal and external – across different levels of analysis, i.e. firm, industry and macro environment. This interaction between firms, industry and macro environment points to a co-evolutionary process (Lewin and Volberda, 1999).

The development of the automobile industry provides an example of such co-evolutionary process underpinned by management innovation. While strongly associated with technological innovation, the most important milestones in the development of the automobile industry are, in fact, examples of management innovation. The most prominent of these include the introduction of the moving assembly line, the multidivisional organizational form, and lean manufacturing. These management innovations illustrate changes in management practices, processes and structures, marking a significant departure from the way in which managerial work was done. This is apparent first at the firms implementing innovations and subsequently in the industries, whether the same as that of the innovative firm or a different one, in which the innovation is disseminated.

A co-evolutionary framework of management innovation. A co-evolutionary analysis focuses on the mutual influences of different parts and different levels of a phenomenon (McKelvey, 1997; 2002). According to Lewin and Volberda (1999) change may be introduced by interacting organizations in a population by means of direct interaction or feedback from the rest of the system. This means that firms, the industry, and the environment will influence each other's evolutionary paths by not only responding to changes in their environment, but also by affecting it (Aldrich, 1999). This underscores Gupta et al. (2007) who argue that any adapting unit (country, industry, organization, etc.) will be influenced by changes in its environment, as adaptation never happens in a vacuum. As change at any level could trigger further change at other levels, several parts in a system could be simultaneously evolving, i.e. co-evolving. In other words, human agency regarding the introduction of a management innovation at the firm level will also be conditioned and affected by the environment in which the firm operates. Studies related to innovation have also described the adoption of innovation as being influenced by their environment (e.g. Rodrigues and Child, 2008) and the organizations in which they are implemented and the individuals that make up such organizations (e.g. Damanpour and Schneider, 2006; Wolfe, 1994).

This makes is possible to illustrate management innovation using a co-evolutionary framework as it will capture the actors and dynamics introduced by Birkinshaw et al. (2008), facilitating the use of a three-stage model of variation, selection, and retention (Aldrich, 1999; Baum and Rao, 2004; Campbell, 1969) to illustrate the different dynamics present at the various levels of analysis. Variation

represents any departure from routine or tradition, the introduction of new organizational forms (Aldrich, 1999) or modes of behavior (Aldrich and Pfeffer, 1976). This means that organizations that introduce new management practices, processes or structures and consequently introduce environmental variation are subject to the prevailing selection criteria at the time. This kind of deliberate firm-level managerial action in response to different stimuli can be associated with adaptation perspective theories (Volberda, Baden-Fuller, and Van den Bosch, 2001).

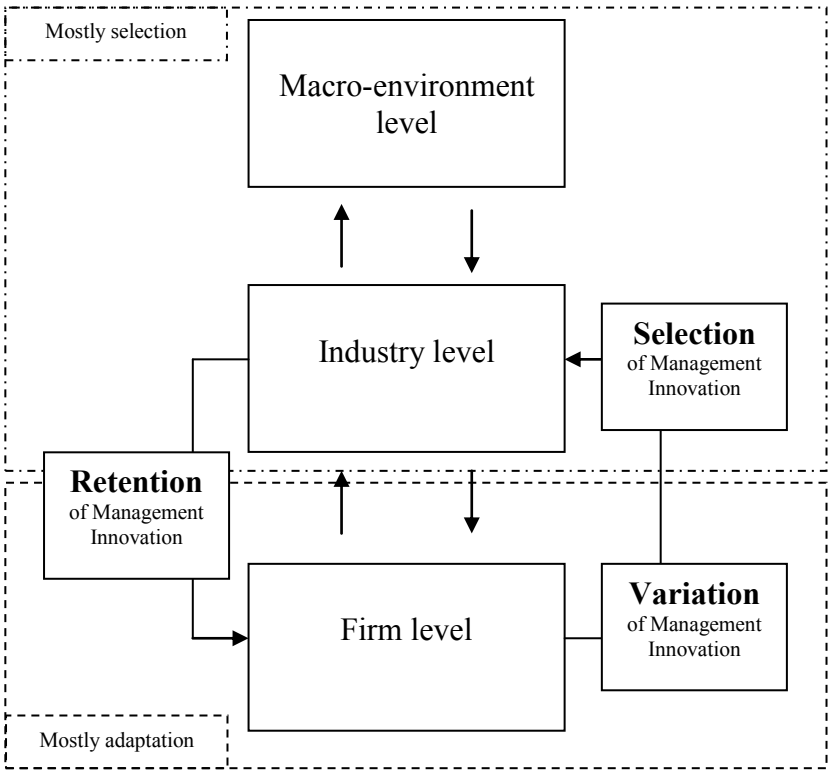
As a result of the selection process, certain forms of variation will be eliminated, while others will survive. The selection criteria are not only set in terms of profitability, but also include market forces, competitive pressures, and institutional norms (Alchian, 1950; Aldrich, 1999). This means that companies able to understand their industry's selection criteria will be able to exercise adaptation in order to (continue to) be selected. In the case of management innovation, this means pursuing new management practices, processes or structures that can make a firm fitter in terms of its ability to meet these criteria. The retention stage is achieved when there is stability in the interdependencies between organizations and the environment (Aldrich and Pfeffer, 1976) and successful variations are adopted throughout the industry- and macro environment-levels. This relative dependence on variables beyond managerial intentionality, such as industry norms and inertia, can be more closely related to a selection perspective theories (Volberda et al., 2001). Figure 1.1 illustrates the co-evolutionary dynamics of management innovation.

The automobile industry (1910-1970): three management innovations

The moving assembly line. The automobile industry really began its major development following the introduction of the moving assembly line at the Ford Motor Company in 1913. Since the beginning of Ford's operation a decade earlier, , production had been carried out – as in the rest of the industry – using stationary methods. This consisted of a group of operators moving from station to station and performing specific tasks on automobile chassis that remained static (Hounshell, 1984). Having studied together with some of his managers other assembly lines such as the Swift slaughterhouse in Chicago (Chandler, 1964; Hounshell, 1984), Henry Ford pursued a production model in which workers remained fixed, while

components moved along a conveyor belt. This allowed for work on Ford's only production car, the Model T, to be split into simple tasks that workers could

Figure 1.1 Co-evolutionary framework of management innovation: interacting levels of analysis



perform at an increasingly faster pace, significant decreasing production costs. The introduction of the moving assembly line also led to changes in how plant management worked as it faced new challenges such as staffing (few qualifications were needed), production planning (now more accurate and reliable) and logistics (components were delivered to the line so workers could remain in place) (Abernathy, Clark, and Kantrow, 1983).

The moving assembly line was quickly adopted by other car manufacturers and has since then become the predominant organizational structure for manufacturing. Despite various changes, such as automation, the fundamental premises remain the same (Mol and Birkinshaw, 2008).

The multidivisional form. At the start of the 1920s, the car industry was largely dominated by Ford and its Model T. General Motors, meanwhile, was still lagging in spite of having assembled – largely through exchange – a wide portfolio of automobile brands. This inability to market the different brands in a profitable way was mostly due to the centralized management style characterizing General Motors' organizational structure (Chandler, 1977). Having observed that General Motor's operations were too large and diverse to be centrally controlled, Alfred Sloan proposed a completely different approach, grouping those activities in independent divisions based on products and placing an executive in charge of each division which would serve a specific market segment (Chandler, 1977; Sloan, 1963). Implemented in 1921, the multidivisional form effectively took responsibility and accountability for strategy implementation from the chairman to the division managers. The changes introduced represented a clear and systemic departure from prior approaches to management work. In addition to the implementation of different divisions focusing on different products, Sloan also included the research staff and the general office. The former cut across the divisions and combined engineering, production, and sales, while the latter set the company policy, coordinated and evaluated the performance of the various divisions (Chandler, 1956). The new structure at General Motors also included a purchasing committee, which coordinated supplies for all divisions, and a technical committee whose members were in charge of controlling product integrity and the fulfillment of production requirements. In addition, the technical committee served as a link between the different divisions through which knowledge about production and production improvements could be exchanged (Sloan, 1963).

As a result of this management innovation, General Motors managed to target different price segments more efficiently, while Ford struggled with a highly centralized structure around its Model T, which only targeted the low end of the car market. In 1926, General Motors became the largest car manufacturer surpassing Ford (Abernathy, 1978). The multidivisional form would eventually be implemented at firms across industries.

Lean manufacturing. Following the end of World War II, Japan's domestic market was small and fragile. In this context, Toyota began searching for a way to develop beyond its low-volume production, based on methods associated with larger operations such as those run by its American competitors. Motivated by the opportunity to supply the US Army, Taiichi Ohno – then-production

manager at Toyota – began experimenting with production methods that would allow Toyota to produce low volumes of different vehicles in an efficient way (Liker, 2004). Toyota's departure from previous management practices, processes and structures began in 1948 when it was decided that materials and components at the assembly line would no longer be produced and "pushed" onto subsequent stations, but they would rather be retrieved along the different stages of the production process as they were needed, making it a "pull" system (Cusumano, 1985) and eliminating stock buffers throughout the production process (Ohno, 1988). This was accompanied by changes to the production layout, enabling workers to operate more than one process, utilizing space more effecitvely, and lowering inventories. Production was ultimately carried out in smaller batches and managed by the operators themselves, who were also responsible for the process quality.

To accomplish its goals, Toyota sought to extend its drive for efficiency to suppliers. Following the change from push to pull, Toyota organized its suppliers in different tiers and managed the relationship with each one so that supplies were delivered, when needed, to the production line (Ohno, 1988). Toyota would involve suppliers as early as possible, for instance, including first-tier suppliers in discussions regarding new products together with multidisciplinary development teams. This would later lead to a more efficient relationship as suppliers would already be familiar with the new products and with Toyota's demands (Womack, Jones, and Roos, 1990).

By the end of the 1960s, Toyota had developed a manufacturing system that represented a huge departure from the state of art (Karlsson and Åhlström, 1996) and, in so doing, modified the way in which the company interacted with suppliers, developed new products, controlled the quality of its processes, and organized production.

Although not immediately noticed by western companies, lean manufacturing became more prominent towards the late 1970s as companies began looking for new ways of increasing efficiency, particularly during periods of low demand during which Toyota's low inventories and carrying costs helped outperform competitors (Cusumano, 1985). Table 1.2 illustrates the interacting levels of analysis for the development of Lean Manufacturing at Toyota.

Figure 1.2 Lean Manufacturing at Toyota: key attributes and interacting levels of analysis

Facets of Management Innovation	
Practices	- Operators manage production process - Operators assess quality
Processes	- Parts delivered to the line when needed - Elimination of stock-buffers
Structures	- Suppliers brought into the organization for project development

Variation at the firm level: departure from production state-of-art – from push to pull

Interacting Levels of Analysis	
Industry	- Need for efficient low-volume production to address different market segments and increase production flexibility - Search for reduction of inventories and waste
Macro	- Fragile post-war Japanese domestic market - "Catch-up" with US producers

Selection and Retention at the Industry and macro-level: adoption of lean production and replication in car industry and others

Conclusion. These three illustrations of management innovation in the automobile industry show the critical role of management and provide insights into how the process of management innovation is influenced by different contextual and organizational variables, thus highlighting the interaction between firm- and industry-level. While the effects of management innovation pursued at the firm level may ultimately impact the industry level, it is within firms that change is initiated. This also illustrates the rational view on management innovation while showing how relevant the role of human agency was in the pursuit of each one of these management innovations. This underscores the relevance of this dissertation's focus on the analysis of management innovation at the firm level, as this is the level at which changes in practices, processes and structure are pursued.

1.4. Research Aim

Given its importance for organizational performance (Birkinshaw and Mol, 2006; Hamel, 2006), surprisingly little research has gone into explaining antecedents of management innovation. Management innovation entails an encompassing and complex kind of change to the way in which management work is performed. For instance, management innovations typically emerge without a dedicated infrastructure (such as research labs – which aid technical innovation), and are relatively abstract and intangible, which makes them potentially complex and ambiguous (Birkinshaw et al., 2008).

The aim of this dissertation is to analyze the role of internal change agents. This underscores the relevant role of individuals within the organization or – as Birkinshaw et al. (2008, p.826) put it – "the critical role of human agency".

The aim of this dissertation is to understand the role of internal change agents in the pursuit of management innovation at the firm level

In addressing this aim, this dissertation presents three different studies in which different internal change agents are analyzed.

Study 1. First, we draw on internal change agents at different hierarchical levels in order to gain a more comprehensive understanding of the role of human agency in management innovation. We start by considering CEO leadership. Given their prominent role in an organization, CEOs affect the organizational conditions under which management innovation may be generated and implemented (Hambrick and Mason, 1984). To address how specific leadership behaviors affects the pursuit of new management practices, processes, or structures, we focus on transformational and transactional leadership. Drawing on the work of Burns (1978) and Bass (1985) on leadership behaviors, transformational and transactional leadership have featured in various studies in order to determine the extent to which leaders engage subordinates by instilling in them the organization's goals or clarifying the rewards that will follow from the attainment of such goals (Rubin, Munz, and Bommer, 2005; Yammarino, Dubinsky, Comer, and Jolson, 1997; Yammarino, Spangler, and Dubinsky, 1998). Building on this and other literature on the topic (Atwater and Bass, 1994; Bass, 1990; Howell and Avolio, 1993; Podsakoff, Bommer, Podsakoff, and Mackenzie,

2006), we develop hypotheses about how transformational and transactional leadership influence management innovation. In addition, we investigate the moderating role of organizational size, which has been deemed to encompass the scope of operations differentiation and increased bureaucratic complexity (Pawar and Eastman, 1997).

Study 2. Secondly, we consider TMT demographic diversity and processes as key antecedents of management innovation. Prior studies have proposed that characteristics of top managers can be used to understand organizational outcomes as they reflect its members' values and cognition (Hambrick and Mason, 1984). TMT demographic diversity entails heterogeneity between its members along characteristics such as age and gender, but also functional background and experience (Pelled, Eisenhardt, and Xin, 1999), while TMT processes refers to behaviors within a team such as communication, which aid the dissemination of information within the TMT and reduces information asymmetries which may be detrimental to TMT effectiveness (Edmondson, Roberto, and Watkins, 2003). In this study we draw on TMT diversity and TMT internal advice seeking as demography and processes within the TMT and uncover how they affect the pursuit of management innovation in organizations. We also explore the moderating roles of two variables, TMT social integration and environmental dynamism. TMT social integration reflects the cohesion in their pursuit of goals and collaboration among TMT members (Ling, Simsek, Lubatkin, and Veiga, 2008; Magni, Proserpio, Hoegl, and Provera, 2009; O'Reilly, Caldwell, and Barnett, 1989), which is associated with higher levels of team moral, satisfaction, and more efficient coordination (Smith et al., 1994). Meanwhile, environmental dynamism has been suggested as an important moderator for the relationship between TMTs and several outcomes. Studies have argued that as environmental conditions change, so does the effectiveness of different types of innovation (Jansen, Van Den Bosch, and Volberda, 2006) and team structure (Keck, 1997). For instance, it has been argued that TMTs may also need to adapt their composition (Haleblian and Finkelstein, 1993; Homburg, Krohmer, and Workman, 1999), as well as their managerial mental models (Reger and Palmer, 1996) as they cope with changes in the environment.

Study 3. Lastly, we focus on teams and the relationship within teams, between teams and with other constituencies inside the organization. For this, we consider the case of self-managing teams, which were implemented in 2001 at a purpose-built production facility of Royal DSM, a Dutch life sciences and material

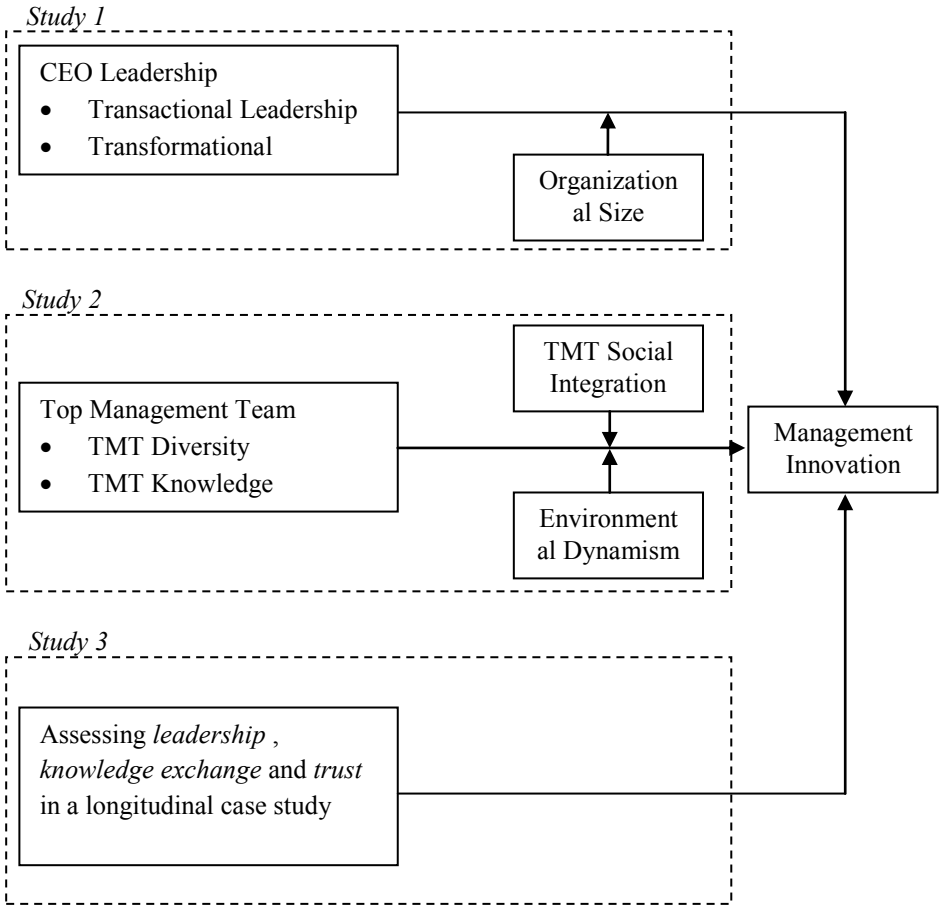
sciences company. Self-managing teams are an example of management innovation, as they represent a change in the way management work is performed (Hamel, 2006). In this study we consider the implementation process of self-managing teams through a longitudinal case study (2001-2010). In particular, we focus on three key issues related to internal change agents, which are particularly relevant for self-managing teams: leadership, knowledge exchange and trust. Building on insights from Study 1, the role of leadership behavior, both transactional and transformational, is considered. Studies suggest that teams whose leaders display traits of transformational leadership will be more proactive (Belschak and Den Hartog, 2010) and will take a cooperative approach to resolving conflict, which in turn will improve team coordination and performance (Zhang, Cao, and Tjosvold, forthcoming). Meanwhile, transactional leadership may also promote accuracy and the achievement of goals (Miron, Erez, and Naveh, 2004). Building on Study 2, the role of knowledge exchange is investigated in the context of self-managing teams. The routing of exchange of knowledge may make teams more efficient as the retrieval of information becomes more accurate as team members are familiar with the knowledge available and its location (Hinsz, Tindale, and Vollrath, 1997). Besides exchanging knowledge within their own function, teams may seek to exchange knowledge with other constituencies relevant to their work, potentially improving the teams' ability to test ideas, obtain feedback and find solutions (Hinsz et al., 1997). Lastly, trust was analyzed as a potentially salient trait of self-managing teams who will be able to regulate their functioning and the way their work is performed. Trust may provide an environment in which task conflict can be openly discussed and where creativity and innovation are stimulated (De Dreu, 2006). Figure 1.3 shows the research framework we employ in this dissertation.

1.5. Contributions

In addressing these different internal change agents and associated issues, we make several contributions to the emergent dialogue on management innovation.

Leadership: Both transactional and transformational leadership behaviors are relevant in the pursuit of management innovation, though suitability depends on organizational size

Figure.1.3 Research framework for this dissertation



In this dissertation evidence is presented showing that both CEO transactional and transformational leadership behaviors are positively associated with management innovation, though these leadership behaviors may be best suited for different size organizations. While CEOs may not develop or implement management innovation themselves, their leadership will play a key role in developing an environment that is conducive to the pursuit of new practices, processes and structures. In addition to improvements in performance (Koene, Vogelaar, and Soeters, 2002), creativity (Mumford, Scott, Gaddis, and Strange, 2002), and technical innovation (Jung et al., 2003), transformational leadership behavior may contribute to clarifying an otherwise ambiguous innovation and inspire followers to challenge assumptions and new ways of carrying out the work

of management. Moreover, transactional leadership behavior may reduce the complexity around management innovation while rewarding the achievement of goals through new practices, processes, and structures. This underscores the role of transactional leadership as suggested by Vera and Crossan (2004) as opposed to being detrimental to the pursuit of new way working (Amabile, 1998; Lee, Smith, and Grimm, 2003; Lee, 2008). In addition, the presence of both leadership styles may contribute to a balance between risk-taking through implementing new practices, processes and structures, and accuracy in delivering work according to current management.

Top Management Teams: Influence of diversity and advice seeking

In line with previous research, this dissertation presents evidence that TMT demographic diversity and process are positively associated with management innovation. Building on previous studies that have shown TMT diversity to be positively associated with innovation (Bantel and Jackson, 1989), performance (Campion, Medsker, and Higgs, 1993), and problem solving (Keck, 1997), TMT diversity may contribute to management innovation through a potentially larger pool of expertise and backgrounds (Amabile, 1998), more so when social integration within the team was high. This association, however, was reversed when environmental dynamism was high, suggesting that in these conditions speed of decision-making may be crucial and very diverse teams may pose an obstacle to this. Internal advice seeking also relates positively to management innovation, even more so when TMTs show a high degree of social integration. This resonates with studies that have proposed that exchange of information may generate a climate of trust and openness (Inkpen and Choudhury, 1995) where top management signals a consultative decision-making process (Somech, 2006) that values making knowledge available to others (Ling et al., 2008; Magni et al., 2009).

Operationalization of management innovation as a new-to-the-firm construct

While studies have described management innovation as a phenomenon new-to-the world, we take an equally valid point of view and operationalize it as new-to-the-firm, which enables us to draw on a larger pool of potential instances and empirically test a set of hypotheses. For this we construct a scale that taps into

the three facets of management innovation: new management practices, processes and structures (Birkinshaw et al., 2008; Hamel, 2006) at the level of the firm.

Longitudinal case of self-managing teams (2001-2010)

This study shows how internal change agents play a fundamental role in the functioning of self-managing teams. Different internal change agents including top management, middle management and operators are examined in this study. In particular we delve into the role of leadership, knowledge exchange and trust. Building on the insights from Study 2, in this study it is shown that both transformational and transactional leadership play a relevant role in implementing and organizing self-managing teams, however these leadership behaviors seem to be associated with different hierarchical levels. These two leadership behaviors help strike a balance between creativity and risk-taking (Parker, Bindl, and Strauss, 2010) –typically encouraged by transformational leadership, and risk-aversion and accuracy –typically associated with transactional leadership (Kark and Van Dijk, 2007), implying that employees may be able to attend to both creativity and accuracy (Miron et al., 2004). This study also shows that, due to the autonomy and ownership that operators had over their work, knowledge was exchanged within and between teams, and with own and between different constituencies. This may have made teams more efficient through a better ability to retrieve relevant information (Hinsz et al., 1997). Lastly, the study also suggests a key role of trust in enabling an environment in which task conflict can be openly discussed and in this way stimulate creativity and innovation both at the individual (De Dreu, 2006) and the group (Serva, Fuller, and Mayer, 2005) level. Table 1.3 summarizes the different contributions of this thesis.

Table 1.3 Contributions of this thesis

Contribution	Description	Study	Relation to prior research
Understanding the role of leadership in management innovation	Evidence is presented showing that both transactional and transformational leadership are positively associated with management innovation, though these leadership styles may be best suited for different size organizations. The presence of both leadership styles may contribute to a balance between risk-taking through implementing management innovation, and accuracy in delivering work according to current management.	1 & 3	Lee et al. (2003), Amabile (1998), Lee (2008), Vera & Crossan (2004), Benshank & Den Hartog (2010), Kark & Van Dijk (2007), Elenkov & Manev (2005)
Investigating the influence of TMT' diversity and knowledge on management innovation	This dissertation presents evidence that TMT diversity is positively associated with management innovation, however this relationship reverses in highly dynamic environments. Internal advice seeking relates positively to management innovation, even more so when TMTs show a high degree of social integration.	2	Pelled et al. (1999), Bantel & Jackson (1989), Somech (2006), Ling et al. (2008), Magni et al. (2009)
Operationalization of management innovation as new-to-the-firm	Management innovation is employ and operationalize management innovation as new-to-the-firm, which enables us to draw on a larger pool of potential instances and empirically test a set of hypotheses.	1, 2, & 3	Birkinshaw et al. (2008), Mol & Birkinshaw (2007, 2009)
Process of management innovation – longitudinal case study	This longitudinal case study (2001-2010) shows how internal change agents play a fundamental role in the functioning of self-managing teams. In particular we delve into the role of leadership, knowledge exchange and trust.	3	Stewart & Manz (1995), Yulk & Yulk (2002), Parker et al. (2010), Miron et al. (2004)

1.6. Overview of empirical studies

This dissertation is built on three empirical studies, each one of them relates to a particular set of internal change agents and investigates relevant antecedents. Each study intends to make a contribution towards this dissertation's research aim. Therefore, each study reports on insights and contributions that relate to the focal change agents. In the interest of clarity, each study will be reported as a separate article.

Each study draws on different sets of data collected through surveys and interviews. Surveys were administered in the Netherlands in the years 2006, 2007, and 2008. Meanwhile, the interviews employed for our case study were all conducted during the second half of 2009. Table 1.4 shows an overview of the different sets of data used.

Table 1.4 Overview of data used in this dissertation

Study	Data Collection[1]	Analysis Methods	Data
1	Cross-sectional survey (2006)	Hierarchical regression Structural equation modeling	151 firms 15.1% response rate
2	Cross sectional survey Independent variables (2007) Dependent Variable (2008)	Hierarchical regression Structural equation modeling	257 firms 12.24% (2007) and 23.32% (2008) response rate
3	Semi-structured interviews (2009-2010) Archival data	Analysis of interview transcripts Analysis of archival data	15 interviews 864 minutes recorded Interviewees from both management and operations Annual reports 2001-2009 Press articles

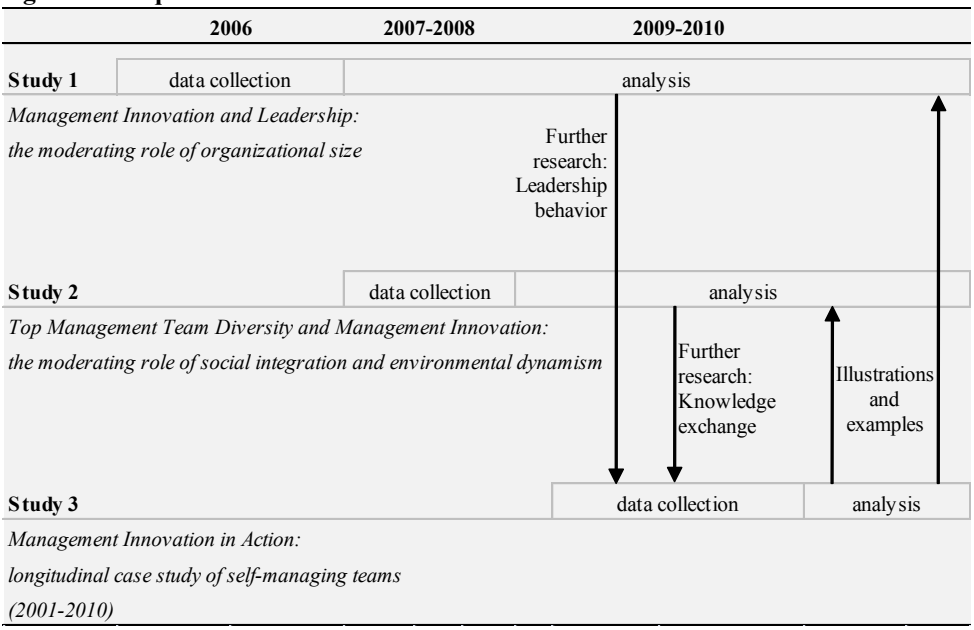
Sequence of studies

The data employed in the different studies, the results of which are reported on in this dissertation, were collected during four different periods, 2006 (study 1), 2007 and 2008 (study 2), and 2009-2010 (study 3). While the data were collected in different periods, the analysis of all studies was carried out in parallel,

[1] Years between brackets indicate the year in which the data were collected

which allowed for some influence to be exerted between them. For instance, while survey-based study 1 and study 2 provided some issues for further research that contributed to the motivation to carry out the case study (study 3), the analysis of the interview data for study 3 also provided examples and illustrations for the remaining studies. Figure 1.3 illustrates the influences between the different studies.

Figure 1.4 Sequence of studies and influence



Study 1 – Management Innovation and Leadership: the moderating role of organizational size.

This study focuses on management innovation at the organization level and investigates the role of leadership behavior as a key antecedent. Due to its prominent role within organizations, top management has the ability to greatly influence management innovation. In particular, the focus is placed on leadership behavior and examine transformational and transactional leadership. Additionally, as contextual variables like organizational size may influence the impact of leadership, we investigate its moderating role. Findings show that both leadership behaviors contribute to management innovation. Interestingly, our study indicates that smaller, less complex, organizations benefit more from transactional leadership in realizing management innovation, while larger organizations need to

draw on transformational leaders to compensate for their complexity and allow management innovation to flourish.

Study 2 – Top Management Team Diversity and Management Innovation: The moderating role of social integration and environmental dynamism

This focuses on the top management team (TMT) as a group of key internal change agents who, due to the nature of their position, are capable of fostering or discouraging management innovation. In particular the manner in which TMT diversity and TMT internal advice seeking relate to management innovation is also addressed. The moderating roles of TMT social integration and environmental conditions are also considered. Results show that both TMT diversity and TMT internal advice seeking are conducive to management innovation, however, these relationships are affected by both moderating variables.

Study 3 – Management Innovation in Action: Longitudinal case of self-managing teams (2001-2010)

This study more closely examines how internal change agents shape management innovation by focusing on the functioning of self-managing teams. The discussion of this point is based on the case of self-managing teams at the Zor-f plant of Royal DSM. This study suggests that both transformational and transactional leadership are present, though these leadership behaviors are each more strongly associated with different levels of hierarchy. It also shows that exchanging knowledge is crucial in the pursuit of this management innovation. Similarly, trust was found to be key in unlocking the teams' autonomy.

Table 1.5 presents an overview of the different studies, showing which change agents were more predominant in each study. This table also summarizes the data use in each of them along with the most salient findings in each one.

Table 1.5 Overview of studies in this dissertation

Study	Level of Analysis	Focus	Data & Methods	Focal Internal Change Agents	Main Findings
1	Firm	• CEO leadership • Organizational Size	• Survey • Hierarchical regression	• CEO	• Both transactional and transformational leadership positively associated with management innovation. • In larger firms transformational leadership is more prominent, while in smaller firms transactional leadership is.
2	Firm	• TMT • Environmental dynamism	• Survey • Hierarchical regression	• Top Management Teams	• TMTs whose members are diverse and exchange knowledge are positively associated with management innovation. Both these relationships are strengthened by the team's social integration. • In highly dynamic environments, however, more homogeneous TMTs were associated with management innovation
3	Team	• Leadership • Knowledge exchange • Trust	• Longitudinal case study (2001-2010) • Semi-structured interviews • Interview analysis	• Plant leaders • Team members	• Both transactional and transformational leadership are conducive to self-managing teams, though these are found at different hierarchical levels. • Knowledge exchange within teams and across functions facilitates the autonomy required for successful self-managing teams • Trust allows teams to discuss problems and be creative in searching for solutions.

1.7. Structure of the dissertation

Following this introductory chapter, the three empirical studies are presented. This is followed by a concluding chapter in which the main findings are summarized and implications are outlined together with avenues for further research. Table 1.6 presents the different sections of this dissertation.

Table 1.6 Contents of this dissertation

Chapter	Title
Chapter 1	Introduction
Chapter 2	Study 1. Management innovation and leadership: the moderating role of organizational size
Chapter 3	Study 2. Top Management Team Diversity and Management Innovation: The moderating role of social integration and environmental dynamism
Chapter 4	Study 3. Management Innovation in action: the case of self-managing teams
Chapter 5	Conclusion

CHAPTER 2.

STUDY 1: MANAGEMENT INNOVATION AND LEADERSHIP: THE MODERATING ROLE OF ORGANIZATIONAL SIZE[2]

2.1. Introduction

In line with the rational view on management innovation and with the aim to understand the role of human agency, this chapter reports a study on management innovation and CEO leadership. First, we investigate management innovation at the organizational level of analysis by focusing on the pursuit of management innovation that is new to the firm, and investigate CEO leadership behavior as a key antecedent of management innovation. This resonates with the rational perspective on management innovation (Birkinshaw et al., 2008) which sees the actions of key individuals, such as leaders, as a crucial factor driving the pursuit of management innovation. Scholars have proposed that leadership can effectively stimulate innovative thinking (Zhou and George, 2003), and have shown that it significantly impacts organizational choice (Finkelstein, 1992). Because

[2] A version of this chapter will be published in a forthcoming issue of the *Journal of Management Studies* as Vaccaro, IG, Jansen, JJP, Van den Bosch, FAJ, and Volberda, HW. (2010) 'Management Innovation and Leadership: the moderating role of organizational size'. *Journal of Management Studies*.

management innovation represents a rather encompassing change in the way management work is performed, we see leadership as a preeminent issue in understanding how organizations introduce such (potentially) complex type of innovation. In this study we draw on the distinction between transformational and transactional leadership (Bass, 1985) and uncover how each type of leadership behavior affects the pursuit of management innovation in organizations. Hence, this study deepens our understanding of the role of human agency by studying how different leadership styles influence the pursuit of management innovation within organizations.

Second, we investigate whether the role of human agency is related to organizational complexity. For this, we consider the moderating role of organizational size. Prior studies such as Nahavandi and Malekzadeh (1993) and Koene, Volgelaar, and Soeters (2002) have suggested that the impact of leadership behavior may decrease as organizational size increases. Leaders in larger organizations may encounter more difficulty in initiating change in the way management work is performed due to more complex organizational contexts and increased spatial separation. In addition, increased bureaucratic formalization within larger organizations may have a neutralizing effect on the impact of direct leadership behavior (Koene et al., 2002). Building on previous studies which asserted that the impact of leadership behavior is dependent on organizational size, we study different types of leadership behavior in relation to both larger, more complex organizations as well as smaller, arguably simpler, ones.

We organized this chapter as follows. In the next section we present a review of the relevant literature and develop our hypotheses. Subsequently, we present the findings obtained from the empirical analysis carried out using a sample of organizations spanning different industries. We conclude with a discussion of our findings, implications, limitations, and issues for further research.

2.2. Literature Review and Hypotheses

Leadership and management innovation. Following Birkinshaw et al.'s (2008) focus on the role of human agency in management innovation, we center on the specific actions from individuals inside the organization by focusing on leaders and associated behaviors. Due to their prominent role within organizations, leaders affect organizational conditions under which management innovation may be generated and implemented (Hambrick & Mason, 1984). Management

innovation may not necessarily be developed by the CEO or other executives within the top management team, however their role may be instrumental in creating an organizational context conducive to experimentation with and introduction of new processes, practices or structures. For instance, leaders have been shown to impact organizational outcomes such as performance (Haleblian and Finkelstein, 1993) and choice (Finkelstein, 1992). Various studies have considered leadership as one of the organizational attributes underlying change and innovation (cf. Chandler, 1962; Kanter, 1984a; Peters and Waterman, 1984). Elenkov, Judge, and Wright (2005) described alternative ways in which leaders can influence innovation within the organization by means of their prominent position. Similarly, leaders may also impact management innovation by reducing uncertainty and complexity associated with its pursuit (Birkinshaw et al., 2008) by communicating a shared vision, supporting change, and developing a certain type of organizational culture. For instance, Marion and Uhl-Bien (2001) suggest that leaders may have a significant role in simplifying complex dynamics within organizations. That is, leaders may be able to help subordinates make sense of the changes, provide guidance and support when changes may seem ambiguous.

Birkinshaw et al. (2008) point to "internal change agents" as key individuals driving management innovation which underscores the critical role of human agency in the deliberate pursuit of management innovation. These key individuals within organizations are instrumental in identifying new trends in the environment and needs within the organization for which management innovation may be desirable. They would as well be particularly important in supporting initiatives related to changing practices, processes, or structures. By virtue of their position CEOs, and their associated type of leadership behavior, relate to this type of key individual. This has not gone unnoticed by either academic or managerial authors, who have presented CEOs as key change agents within the organizations they lead. An example of this is Lars Kolind who led the introduction of the "spaghetti" organization at Oticon, a Danish hearing aid manufacturer (Foss, 2003; Larsen, 2002). This management innovation involved organizing around project teams as opposed to departments, which led to a very flat organization which consisted of only two layers: the CEO and ten other managers were the management team, while all other employees were organized into projects. Kolind's leadership was in many ways crucial in the pursuit of this management innovation. He understood where the company was and what the environment demanded and articulated a compelling vision of where Oticon should go. Moreover, he committed to personal development, responsibility and freedom among employees in order to foster

intrinsic motivation. This resulted in a very dynamic environment within Oticon in which employees were part of different projects, and projects competed for resources in a market-like environment within the organization (Foss, 2003).

The role of leadership has also been found to be relevant in employee willingness to voice ideas aimed at improving the organization and the way in which it functions (Detert and Burris, 2007). To address how specific leadership behaviors affect the pursuit of new management practices, processes, or structures, we focus on transformational and transactional leadership. Drawing on Burns' (1978) and Bass' (1985) work on leadership behaviors, transformational and transactional leadership have featured in various studies in order to capture the extent to which leaders engage their subordinates by instilling in them the organization's goals, or clarifying the rewards that will follow from the attainment of such goals (Rubin et al., 2005; Yammarino et al., 1997; Yammarino et al., 1998). Building on this and other literatures on the topic (Atwater and Bass, 1994; Bass, 1990; Howell and Avolio, 1993; Podsakoff et al., 2006), we develop hypotheses about how transformational and transactional leadership influence management innovation.

Transformational Leadership. Transformational leadership is aimed at the followers' identification with its purpose and common goals. It stimulates employees to attain to organizational goals by appealing to high-level needs for self-actualization (Bass, 1985; Burns, 1978). Transformational leadership consists of four dimensions: (1) idealized influence, (2) inspirational motivation, (3) intellectual stimulation, and (4) individual consideration (Avolio, Bass, and Jung, 1999). Idealized influence represents the degree to which leaders are admired, respected, and trusted. This dimension includes charismatic behavior that causes followers to identify with the leader and fosters a sense of intrinsic motivation to achieve goals. Inspirational motivation provides meaning and challenge to their followers, fostering team spirit and encouraging them to envision attractive future states. Intellectual stimulation prompts followers to question assumptions and be creative. Transformational leaders ensure that creativity and innovation is part of problem solving processes. Individualized consideration includes the extent to which followers' potential is developed by attending to their individual needs, as well as creating learning opportunities and a supportive environment for growth (Bass, Jung, Avolio, and Berson, 2003).

Through idealized influence, transformational leaders may stimulate management innovation by sharing the risk of innovative actions with followers

(Bass et al., 2003), thereby enabling and empowering followers to challenge existing management processes, practices, or structures (Bass, 1994). Such leaders may also contribute to reducing complexity by getting others to rally around them in the pursuit of management innovation (Marion and Uhl-Bien, 2001), underscoring their credentials as change agents. Through inspirational motivation, transformational leaders emphasize the relevance of looking for new ways of doing things and encouraging synergies by working together (Sosik, 1997), also giving the task a meaning and followers the challenge to thrive (Bass et al., 2003). Inspirational motivation contributes towards followers' intrinsic motivation, a powerful drive to search for creative ways of addressing changes in managerial processes, practices, or structures (Amabile, 1996, 1998).

Through intellectual stimulation, transformational leaders encourage followers to question the effectiveness of the organization's current management practices (Sosik, 1997). Transformational leaders show high expectations and confidence in followers' ability to deliver progressive solutions rather than merely appropriate ones (Bass, 1994; Jung et al., 2003), strengthening the stimuli for innovative thinking in the way work is approached or structures set up. In this sense, intellectual stimulation challenges current work practices and encourages followers to consider different angles as they perform their jobs (Hunt, 1991). In so doing, it also serves the purpose of challenging followers by, for instance, assigning them to the tasks they are best suited for according to their skills and encourages followers to look for creative solutions (Amabile, 1998). By means of individualized consideration, transformational leaders are expected to display appreciation for each of the followers and their ideas (Sosik, 1997). Individualized consideration also fosters attention and distributed participation in changing management practices and processes (Bass, 1994) by letting followers know that their work matters and is valued by organizational leaders (Amabile, 1998). Hence, we argue that transformational leadership contributes to the advancement of novel managerial processes, practices, or organizational structures.

Transformational leadership behavior can affect all three facets of management innovation, i.e. management practices, processes and structures. Interviews carried out at Royal DSM, a Dutch life sciences and material sciences company, provide anecdotal evidence concerning the link between transformational leadership behavior and the management practices, processes and structures. During the adoption of self-managed teams at Royal DSM, transformational leadership behavior from top management stimulated changes in

practices by giving teams of operators the freedom to take on roles other than those included in their job descriptions. By removing the position of team supervisor, senior management reinforced the teams' ability to make their own decisions. This intellectual challenge resulted in teams orchestrating their work differently. Similarly, processes associated with the management of projects saw changes in the way they were organized as teams were now expected to decide how projects were to be carried out. Meanwhile, the organizational structure of the plant was altered by the removal of the team supervisor layer, yet teams could draw on a clear vision from senior management to align their efforts with the company's objectives.

Hypothesis 1: Transformational leadership will be positively related to management innovation within an organization.

Transactional Leadership. Transactional leaders engage in a transaction in order to satisfy their respective wants (Burns, 1978), and provide extrinsic motivation to their subordinates. Transactional leaders are primarily concerned with gaining compliance from subordinates –which they will do by targeting their self interest– by agreeing upon the conditions and rewards that will follow the fulfillment of certain requirements (Bass, 1990; Bass and Avolio, 1993; Yammarino and Bass, 1990).

The role of transactional leaders has also been argued to be closely related to the reinforcement and refinement of institutionalized learning (Vera and Crossan, 2004), which suggests that this type of leadership behavior may be conducive to the pursuit of management innovation as it may contribute to reducing organizational complexity (Damanpour, 1996) and ambiguity through setting clear goals and rewards that underpin underlying changes in processes, practices, or structures.

Transactional leadership consists of two dimensions: contingent reward and active management by exception (Den Hartog, Van Muijen, and Koopman, 1997). Contingent reward entails the clarification and specification of what is expected of organizational members and the assessment of goals and subsequent reward for its accomplishment. Through contingent reward, leaders build commitment to the fulfillment of 'contracts' with followers (Avolio et al., 1999; Bass and Avolio, 1993). While the establishment of such contracts has been argued to hamper

creativity and result in less initiatives to address new ways of facing work (Amabile, 1996, 1998), we maintain that the impact of contingent reward on management innovation can be positive (Elenkov and Manev, 2005). This may be the case through, for instance, an increased sense of fairness and justice in the workplace in which unmet standards and objectives do not go unnoticed, while success is dutifully rewarded (Podsakoff et al., 2006; Walumbwa, Wu, and Orwa, 2008). Furthermore, active management by exception, on the other hand, involves the leader's active involvement and intervention to monitor and rectify any divergence from an agreed standard in the follower's work. Such involvement underscores the way in which change agents, i.e. leaders, can drive the process of management innovation within the organization.

The introduction of self-managed teams at Royal DSM also illustrates how transactional leadership affects management practices, processes and structures. New management practices, such as the loose definition of tasks and functions for individual team members, were assessed against clear key performance indicators established by senior management. Processes associated with the management of projects were run by self-managed teams, with senior management stepping in to intervene when key performance indicators seemed compromised. Some of these key performance indicators were set at the team level, which ultimately affected the compensation structure of team members. Placing reward and accountability at the team level, and changes in the organizational structure such as organizing the plant round self-managed teams, prompt teams to seek for better decision-making in order to meet their goals. In doing so, teams began establishing new communication lines with other teams, as well as with different internal stakeholders such as technical and maintenance staff so as to look for new ways of improving efficiency.

Hypothesis 2: Transactional leadership will be positively related to management innovation within an organization.

Leadership and Management Innovation: the Moderating Role of Organizational Size

Prior studies have argued that the effectiveness of leadership behavior depends on contextual conditions, such as the stage of organizational growth, top management team homogeneity (Nahavandi and Malekzadeh, 1993),

organizational climate (Shalley and Gilson, 2004), and mode of governance (Egri and Herman, 2000; Pawar and Eastman, 1997). We focus on organizational size as contextual variable, as size has been considered to capture the scope of operations differentiation and increased bureaucratic complexity (Pawar and Eastman, 1997). Previous studies have offered conflicting evidence regarding larger, more complex, organizations and innovation. Some have suggested that larger organizations may be better suited to pursue innovation (e.g. Baldridge and Burnham, 1975), yet evidence of the opposite has also been put forward (e.g. Blau and McKinley, 1979). We argue that organizational size is a key contextual variable in the study of management innovation as it relates to the underlying added complexity of pursuing management innovation in organizations of different sizes.

The effectiveness of leadership has long been argued to be dependent on organizational size (Hambrick, 1989; Hambrick and Mason, 1984; Mintzberg, 1973). Nahavandi and Malekzadeh (1993) propose that the impact of leaders decreases in larger organizations. Similarly, Koene et al. (2002) find that in smaller organizations, leadership has a stronger impact than in larger ones. While direct and regular contact between leaders and followers may suffice to set goals and effectively influence members' behavior while organizations are small, as organizational size increases leaders may find it increasingly hard to achieve the desired level of commitment (Atwater and Bass, 1994). First of all, the complexity of communication increases in larger organizations and the difficulty of members' ability to express their opinions may diminish the effect of the leader's impact (Bantel and Jackson, 1989; Bass, 1994). In addition, scholars have studied the notion of receptivity, which refers to how receptive members of an organization are to processes of change (Hunt, 1991), and can vary according to the contextual factors such as organizational size (Koene et al., 2002; Pawar and Eastman, 1997). Pawar and Eastman (1997) argue that, while simple organizational structures will be more receptive to transformational leadership, larger, more specialized, and complex organizations will prove less receptive. Accordingly, we expect organizational size to influence the effectiveness of transformational and transactional leadership in the pursuit of management innovation.

Transformational leadership and organizational size. Previous studies have argued that organizational size plays an important role in how receptive members of an organization will be to transformational leadership behavior (Egri and Herman, 2000; Pawar and Eastman, 1997). For instance, Egri and Herman (2000,

p. 596) conclude that "… smaller […] organizations were more likely to have organizational structures […] that were highly receptive to transformational leadership". In smaller organizations transformational leaders are expected to reach and interact more frequently with followers and thereby increasing the level of commitment to management innovation even more (Atwater and Bass, 1994). With regard to inspirational motivation, we expect transformational leaders to be better able to convey their vision and arise individual and team spirit to generate management innovation in smaller organizations. Berson et al. (2001), for instance, reported that the content of the vision conveyed by the leader is affected by organizational size. In their study, the authors propose that inspiring followers in larger organizations may be particularly challenging for the efficiency of leaders, as "larger organizations are likely to be composed of a broader range of interests that a leader may need to take into consideration when formulating a vision" (Berson et al., 2001, p. 68). In this way, conveying an unambiguous message becomes more difficult in larger organizations. Similarly, we expect intellectual stimulation to be weaker in larger organizations where transformational leaders may encounter difficulties in encouraging followers to challenge the status quo and foster changes in management practices and processes (Hunt, 1991; Pawar and Eastman, 1997). Finally, we expect transformational leaders in larger organizations to be less able to provide followers with individual consideration, thus displaying less appreciation for their ideas and creativity (Jung et al., 2003; Sosik, 1997) than in smaller organizations.

Hypothesis 3: Organizational size moderates the relationship between transformational leadership and management innovation such that increased organizational size weakens the positive effect of transformational leadership upon management innovation.

Transactional leadership and organizational size. Similarly, we expect transactional leader's influence to be stronger in smaller organizations where transactions can be efficiently established, monitored, and assessed. As organizational size increases, the direct impact of transactional leadership and its receptivity may diffuse due to increased complexity and difficulties to reach all members of the organization (Atwater and Bass, 1994; Hunt, 1991). The proliferation of formal structures and procedures in large organizations change the

context in which leadership is exercised (Hunt, 1991). As mentioned earlier, this type of leadership centers upon the completion of 'contracts' between leaders and followers (Bass and Avolio, 1993). The larger organizations become the more 'contracts' (and associated control mechanisms) it would need in order to operate. This could give rise to several levels of bureaucracy in which divergence from known management processes, practices, structures, or techniques are discouraged. Hence, we expect transactional leaders in small organizations to be better able to efficiently monitor their followers' performance and be able to reward or reprimand such performance accordingly. Similarly, we expect management by exemption to be most efficient in small organizations where transactional leaders would be able to monitor and timely correct deviances from managerial processes, practices, structures, or techniques.

Hypothesis 4: Organizational size moderates the relationship between transactional leadership and management innovation such that increased organizational size weakens the positive effect of transactional leadership upon management innovation.

2.3. Methods

Research setting and data collection. We drew a random sample of 1,000 Dutch firms from the REACH database, which contains corporate information of all companies registered at the Chamber of Commerce in the Netherlands. The sample covered a broad range of industries and was restricted to privately held firms with at least 25 employees. In 2006, we administered a survey to one (non-CEO) respondent within the top management team (TMT) of each organization. We addressed members of the TMT based on the information available in our database. In line with upper echelons literature, due to the level at which they operate we expected respondents at this level to be well informed about changes in management practices, processes and structures. Members of the TMT were also well equipped to rate their CEO's leadership style since, as direct reports, their relationship and interaction with the CEO would be more regular. Targeting members of the TMT also relates to the role of human agency in management innovation, particularly internal change agents, as they will be key in driving, championing and pursuing changes in practices, processes, and structures

(Birkinshaw et al., 2008). Because of this, we believe these respondents were well suited to be part of our study and sufficiently knowledgeable to provide adequate responses. Respondents were ensured confidentiality and offered a summary of the results. Following the initial mailing of surveys, a second copy was sent after a month, and follow-up calls were made two months after the first mailing. Top management team members from 151 companies returned usable questionnaires, corresponding with a 15.1 % response rate in our measurement sample. The respondents had an average company tenure of 7.78 years (s.d. = 3.10) and the average size of the companies measured in full time employees was 103.46 (s.d. = 5.14). The firms were operating in a wide range of industries covering manufacturing 51.6%, construction 20.5%, services 8.6%, and others 19.3%. To test for non-response bias, we examined differences between respondents and non-respondents. T-tests showed no significant difference based on the number of full-time employees. Additionally, we compared early and late respondents in terms of demographic characteristics and model variables. These comparisons did not reveal any significant differences ($p < .05$). Aside from the risk of differences there may be between respondents and non-respondents in our dependent and independent variables, the data indicates no problems related to non-response bias.

Assessment of Common Method Bias. We took several steps to reduce the risk of this bias. These steps spanned the design and administration of the survey, as well as statistical controls after the questionnaires were returned. During the design and administration of the survey we explicitly assured respondent confidentiality, which serves the purpose of reducing common method bias by making respondents less likely to modify their answers due to social desirability or how they think others may expect them to answer. In addition, we improved the scale items by using them in interviews with industry representatives of a rank similar to that of respondents in this study (i.e. members of the TMT). This helped us to use clear grammar and keep the survey concise.

Having received the questionnaires we performed several statistical analyses. Firstly, we carried out Harman's one-factor test using the items included in our model. Should common method bias be present, we would expect a single factor to be extracted and account for most of the variance in the variables included in our study (Podsakoff and Organ, 1986). Following our analysis we did not obtain such single factor. Secondly, we controlled for the effect of a single unmeasured latent method factor (Podsakoff, MacKenzie, Jeong-Yeon, and Podsakoff, 2003), a test used in numerous studies which employ single

respondents. In this test, a confirmatory factor analysis model is constructed such that all items are allowed to load on their theoretical factors (theoretical model), and another in which they are also allowed to load on a latent common factor. A comparison between the models is used to assess the presence of common method bias. While a comparison between our theoretical model ($\chi 2 = 1208.09$, df = 492) and the model with the additional latent common factor ($\chi 2 = 1020$, df = 459) indicates a better fit in the latter, less parsimonious model ($\Delta\chi 2 = 187.75$, Δdf = 33, $p<.001$), the latent common factor accounted for a very small portion (4.0%) of the total variance compared with the theoretical model, which accounted for 36.6% of the variance explained. Taken together, the results of our tests suggest that common method bias is not a pervasive problem in this study.

Measures and Validation of Constructs. Dependent variable. As a scale of management innovation at the organizational level based on Birkinshaw et al., (2008) is not yet available, the following steps were taken to develop a new measure for this construct. First of all, we reviewed relevant literatures on management innovation (Birkinshaw and Mol, 2006; Hamel, 2006; Kimberly, 1981; Mol and Birkinshaw, 2006) and generated a pool of items to tap into the different facets of management innovation (i.e. management practices, processes, or structures). From this pool of items, unique items were selected to be included in the initial survey. During subsequent interviews, various industry representatives were invited to suggest improvements to the survey items. Finally, the phrasing of the items was further enhanced by the authors and peers, a process that resulted in a final version of the measurement.

The resulting six-item measure for management innovation ($\alpha = 0.76$) reflects the manifestation of management innovation in new practices, processes, and structures. Items 1("rules and procedures within our organization are regularly renewed") and 2 ("we regularly make changes in our employees' tasks and functions"), on management practices, tap into changes in what managers do as part of their job in the organization, which includes setting new rules and associated procedures. This may also result from the assignment of work to someone (i.e. task) and the duty to perform such piece of work (i.e. function). Items 3 ("our organization regularly implements new management systems") and 4 ("the policy with regard to compensation has been changed in the last three years"), on management processes, relate to how work is performed and include changes articulated in routines that govern the work of people as well as how compensation is set up. This may be illustrated by changes in management

systems or changes in what is expected of people, which outcomes and behavior are rewarded and which are not, which relate to the way people are compensated. Items 5 ("the intra- and inter-departmental communication structure within our organization is regularly restructured") and 6 ("we continuously alter certain elements of the organizational structure"), on structures, tap into the way in which organizations arrange communication, align and harness their members' efforts, which provides the context in which work is performed. These items relate to changes in communication structure as a sign of different ways of doing things, for instance, by allowing different constituencies to exchange information. Additionally, the formal structure of the organization could be changed to bring about changes in communication, autonomy, and discretion. Overall, our scale of management innovation reflects all three facets of management innovation, focusing on what managers do, how they do it, as well as the organizational context in which work is performed.

As opposed to measuring changes that belong to a particular example of management innovation, we purposely chose to focus on new practices, processes and structures for two reasons. First, to tap into a larger pool of management innovations which may have been labeled, e.g. a group of practices and processes developed at Toyota that has been labeled 'Lean Manufacturing', or not. Second, to avoid problems associated with different interpretations and delimitations of what constitutes a certain management innovation. Lean Manufacturing, for instance, is described by Mol & Birkinshaw (2008) as one of the top 50 management innovations since the industrial revolution and spanning production, supply chain, design and engineering (Karlsson and Åhlström, 1996; Womack et al., 1990). It also includes other innovative practices, processes and structures such as kanban (which is crucial for just-in-time systems), and the organization of suppliers into functional tiers, which may affect, for instance, product development and supply chain management.

In order to establish construct validity for our measure, we assessed the reliability and validity of our measure of management innovation using a separate sample collected through a survey administered in 2008. We obtained a random sample of 3,000 Dutch firms from the REACH database and mailed questionnaires to a TMT member (non-CEO) within each organization. From this sample, 863 surveys were returned, for a response rate of 28.86%. Exploratory factor analysis (EFA) among the items included in our scale of management innovation yielded a one-factor solution with an eigenvalue of 3.25 and item loadings above .65,

indicating evidence of convergent validity in our measure. In order to test the discriminant validity of our measure we included a four-item scale of innovativeness (adapted from Bell, 2005) which captured the extent to which companies actively seek to be ahead of their competitors in implementing new and innovative processes in their operation or releasing new products or services into their markets. This measure of innovativeness was positively associated ($r=.29$; $p<.01$) with our scale of management innovation. We first tested a Confirmatory Factor Analysis (CFA) model in which each measurement item was constrained to load on the scales they were associated with, i.e. management innovation and innovativeness. The overall results showed acceptable fit with a $\chi 2 = 315.72$ with 34 degrees of freedom, GFI = .93; CFI = .93; and RMSEA = .098. All items loaded significantly ($p<.01$) on their respective scales, providing evidence of convergent validity (Anderson and Gerbing, 1988). We also computed an alternative one-factor CFA model which showed poorer fit ($\chi 2 = 1644.67$ with 35 degrees of freedom, GFI = .64; CFI = .58; and RMSEA = .231), showing evidence of discriminant validity (Bagozzi and Phillips, 1982).

Independent and moderating variables Transformational leadership was assessed by a senior team member response to items of the Multifactor Leadership Questionnaire (MLQ-5X; Bass and Aviolo, 1995). Respondents rated the items on transformational leadership for his or her executive director on a 7-point scale with 1 = 'strongly disagree' and 7 = 'strongly agree'. The four dimensions of transformational leadership consist of five items for idealized influence, inspirational motivation, and intellectual stimulation, and four items for individualized consideration. Because the dimensions are highly correlated (average $r = .75$; $p<.01$) and past research showed that the dimensions of transformational leadership failed to exhibit discriminant validity in predicting outcomes, we averaged the items to create a single index for transformational leadership ($\alpha = .94$). Similar to previous studies (Bono and Judge, 2003; Jung et al., 2003), we conducted subsequent analyses using the composite index. Transactional leadership was measured with eight items from the Multifactor Leadership Questionnaire (Bass and Avolio, 1995). Following previous practice (e.g. Ensley, Hmieleski, and Pearce, 2006; Epitropaki and Martin, 2005; Lowe, Galen Kroeck, and Sivasubramaniam, 1996; Waldman, Ramirez, House, and Puranam, 2001) we used the four-item scale of contingent reward and the four-item scale for active management by exception to measure transactional leadership. We averaged the items to create a composite index for transactional leadership ($\alpha = .70$). To account for the moderating effect of organizational size,

we included the logarithm of the number of full-time employees (adapted from secondary sources) in our analysis.

Control Variables. In order to account for potential alternative explanations, we included several control variables. Following studies in which it is suggested that the age of senior managers within organizations affects the extent to which such organizations engage in change and innovation (Hambrick and Mason, 1984; Wiersema and Bantel, 1992), we included in our model the logarithm of the CEO age. Previous studies have also suggested CEO tenure to be negatively related to experimentation and change (Finkelstein and Hambrick, 1990). In view of this we included in our analysis the logarithm of the number of years the CEO had been active within the organization. Because top management team size can affect the diversity and variety of the TMT (Siegel and Hambrick, 2005), we included in our analysis the logarithm of the number of TMT members. Finally, to account for potential industry-specific effects, we included four dummy variables for companies active in manufacturing, construction, service, and other sectors.

2.4. Analysis and Results

Table 2.1 presents the descriptive statistics and correlations between the study variables. Table 2.2 shows the results of the regression analyses with management innovation as the dependent variable. Four models were specified in this analysis (see Table 2). The first one (model 1) includes only the control variables. Subsequently the two leadership constructs were introduced (models 2), then the moderating variable (model 3) and lastly the interaction terms were added (models 4). To reduce the potential for multicollinearity, we followed Aiken and West (1991), and mean-centered the individual variables before calculating the interaction terms. Finally, we computed variance inflation factors (VIF) to further assess whether multicollinearity was a concern in our sample. All values were well below the cut-off value of 10 (Netter, Wasserman, and Kutner, 1990), indicating no risk of multicollinearity.

The results show that our hypothesized positive relationship between transformational leadership and management innovation (hypothesis 1) was supported ($\beta = .30$; $p < .01$). Hypothesis 2, in which we proposed a positive relationship between transactional leadership and management innovation, was also supported ($\beta = .25$; $p < .05$). In addition to these direct effects, we also hypothesized that the relationship between leadership behaviors and management innovation would be less pronounced in larger organizations. Although we found

organizational size to have a moderating role upon the relationship between transformational leadership and management innovation, it did not support our hypothesized relationship (hypothesis 3). In fact, we found the effectiveness of transformational leadership increases with organizational size ($\beta = .28$; $p < .05$). To plot this interaction, transformational leadership and organizational size took the values of one standard deviation below (i.e. low level) and above (i.e. high level) their respected means. The plot of this interaction (Figure 2.1) shows a positive effect of transformational leadership on management innovation in large organizations. Moreover, it also reveals that transformational leadership hardly affects the pursuit of management innovation in small organizations. As shown in model 4 of Table 2, hypothesis 4, which posited that the relationship between transactional leadership and management innovation would be stronger in smaller organizations was supported in our analysis ($\beta = -.22$; $p < .05$). Consistently, the plot of this interaction in Figure 2.2 shows a positive relationship between transactional leadership and management innovation in small organizations.

2.5. Discussion and conclusion

While innovation in its broadest sense has received a great deal of attention from researchers, insights into management innovation have only recently begun to emerge. By applying management innovation to the organizational level of analysis, and focusing on transformational and transactional leadership behaviors, this study reflects top management's impact on management innovation (Birkinshaw et al., 2008; Birkinshaw and Mol, 2006). Our study contributes to new insights regarding the relative influence of transformational and transactional leadership behaviors on management innovation. Moreover, we show that the effectiveness of these leadership behaviors is dependent upon organizational size. In this sense, as proposed by Hambrick and Mason (1984) and Finkelstein (1992), we find that leaders are important internal actors within organizations, and the kind of internal change agent (Birkinshaw et al., 2008) who impact the implementation of new practices, processes and structures.

Table 2.1 Descriptive Statistics, Standard Deviations and Correlations[a]

	Mean	s.d.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1 Management Innovation	4.11	1.01	1								
2 CEO Tenure[b]	0.89	0.49	-0.10	1							
3 CEO Age[c]	1.65	0.08	-0.06	0.37 **	1						
4 TMT Size[d]	0.73	0.21	0.11	0.01	0.09	1					
5 Industry	0.52	0.50	-0.01	-0.11	0.07	-0.12	1				
6 Construction	0.21	0.41	-0.03	0.07	-0.08	0.02	-0.53 **	1			
7 Service	0.09	0.28	-0.07	0.11	-0.01	0.19 *	-0.32 **	-0.16	1		
8 Transactional Leadership	4.92	0.75	0.39 **	-0.08	0.19 *	0.00	0.06	0.00	-0.14	1	
9 Transformational Leadership	5.25	0.82	0.42 **	-0.05	0.15	0.07	0.06	0.01	-0.20 *	0.56 **	1
10 Organization Size[e]	2.01	0.71	0.12	0.07	0.20 *	0.36 **	-0.02	0.00	0.23 **	-0.12	-0.07

[a] *N=151*

[b] Logarithm of years in the organization

[c] Logarithm of age

[d] Logarithm of number of TMT members

[e] Logarithm of number of full time employees

† $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table 2.2 Effects of transformational and transactional leadership and their interaction with organizational size

	Management Innovation			
	Model 1	Model 2	Model 3	Model 4
Controls				
CEO Tenure	-.08	-.01	.00	.01
CEO Age	-.05	-.16 †	-.21 *	-.22 *
TMT Size	.13	.10	.02	-.01
Industry	-.09	-.08	-.11	-.14
Construction	-.10	-.09	-.12	-.16 †
service	-.12	-.03	-.07	-.08
Leadership				
Transformational Leadership		.30 **	.30 ***	.26 **
Transactional Leadership		.25 **	.28 **	.30 ***
Moderating variable				
Organizational Size			.22 **	.29 ***
Interaction effects				
Transformational Leadership*Org. Size				.28 *
Transactional Leadership*Org. Size				-.22 *
R^2	0.04	0.25	0.29	.32
ΔR^2	0.04	0.21	0.04	.03
F	0.89	5.96 ***	6.40 ***	5.90 ***

Standardized regression coefficients are reported

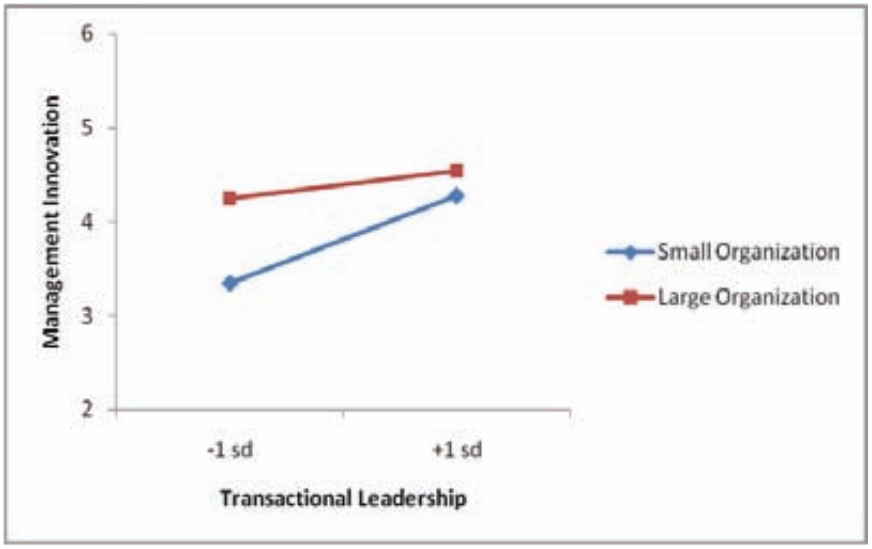
N=151

† p < 0.10; * p < 0.05; ** p < 0.01; *** p < 0.001

In addition to Elenkov and Manev (2005), who provided evidence showing that leadership explained top management's influence on both product and organizational innovation, we provide evidence of the direct association of transformational and transactional leadership on management innovation, including the moderating effect of organizational size. Our study also departs from others which, having centered on technical innovation, focus solely on the positive association with transformational leadership (Howell and Higgins, 1990), or find transactional leadership to be negatively related (Lee et al., 2003). Our findings reflect the role of human agency in the pursuit of management innovation as they relate to the actions of key individuals within the organization who may initiate and drive changes in practices, processes or structures (Birkinshaw et al., 2008).

Figure 2.1 Effect of Interaction between Transformational Leadership and Organizational Size on Management Innovation

Figure 2.2 Effect of Interaction between Transactional Leadership and Organizational Size on Management Innovation



Our research findings provide evidence that transformational leadership contributes to management innovation. Transformational leaders who inspire team success and develop trusting and respecting relationships based on common goals enable organizations to pursue changes in management practices, processes, or structures. They consider organizational members individually and generate greater predisposition to experiment with changing organizational tasks, functions, and procedures. Moreover, they may even promote organizational members to rethink existing structures, task specialization, and reconsider new ways for the organization to "get things done". Their leadership may also be conducive to making sense of an otherwise ambiguous type of innovation where goals and outcomes may not be as clear as in the case of, for instance, the development of a new product through technical innovation. With this prominent role of transformational leaders, our study contributes to prior studies relating transformational leadership to performance (Koene et al., 2002; Waldman et al., 2001), creativity (Mumford et al., 2002), and technical innovation (Jung et al., 2003). We go beyond these previous findings by providing evidence that transformational leadership is conducive to pursuing management innovation.

Although prior studies (e.g. Lee et al., 2003) have suggested that transactional leadership may reduce the ability of organizational members to suggest new ways for management and facilitating efforts for changing management practices (Amabile, 1998; Lee, 2008), our study shows that transactional leaders do contribute to lowering potential barriers associated with management innovation. This suggests, in line with Vera & Crossan (2004), that transactional leadership may be helpful in the implementation phase of management innovation - inducing organizational members to attempt to meeting targets not only by means of tried and trusted management methods, but also by setting targets and rewarding organizational members contingent upon the attainment of goals associated with management innovation. In this sense, management innovation may be generated and directed from the upper-echelon in organizations while the implementation of certain management innovations may be monitored and rewarded accordingly to pre-established goals. Alternatively, the relationship between transactional leadership and management innovation may also be mediated by trust, which may help employees cope with the potential uncertainty and complexity of new processes, practices or structures. As Avolio et al. (1999) suggested, contingent reward may be the basis through which expectations by both leaders and followers evolve, and trust is generated as parties honor their 'contracts' over time. The more 'contracts' are fulfilled over time, the

more organizational members are rewarded and the more transactional leaders may display trust in their followers ambition to generate and implement management innovations. In this sense, trust mediates the relationship between transactional leadership and management innovation as trust may be translated into increased 'freedom' to diverge from current management and engage in management innovation. Future research is necessary to understand the emergence and implementation of management innovations within organizations and uncover the relationship of leadership behavior, trust, and management innovation.

Regarding the potential moderating role of organizational size on the association between transformational and transactional leadership and management innovation, our study contributes to prior studies concerning the importance of incorporating organizational contingencies when studying leadership attributes (i.e. Pawar and Eastman, 1997; Shalley and Gilson, 2004). By influencing the complexity of communication structures and lowering the potential receptivity of organizational members, our study argued that organizational size would decrease the effectiveness of transformational and transactional leadership. Surprisingly, however, we found that transformational leadership becomes more important for generating and implementing management innovation in larger organizations. A potential explanation for this is that in large organizations transformational leadership may mitigate the negative impact of increased hierarchies and bureaucracies on members who may fail to make sense of their role within the organization's complex system of goals (Sarros, Tanewski, Winter, Santora, and Densten, 2002). Transformational leadership may complement an organization's increasing rigidity and bureaucracy by maintaining a sense of meaningfulness in members of the organization, which may be more conducive to management innovation. An alternative explanation is that transformational leadership can cascade from upper echelons through lower echelons such that in large organizations the message and intended effect of transformational leaders can be observed throughout the organization as a result of repetition of patterns across the different management layers (Bass, Waldman, Avolio, and Bebb, 1987; Waldman and Yammarino, 1999). In this way transformational leaders may not only be able to exercise direct leadership among those in contact with them, but also distant leadership as their message cascades down the different management layers (Vera and Crossan, 2004).

Our study reveals that transactional leadership is more important in smaller organizations when they want to pursue management innovation. In smaller

organizations 'contracts' may be more easily established and monitored, which may presuppose less room for divergence from the managerial status quo (Bass, 1985). However, this may also lead to repeated face-to-face interaction between transactional leaders and organizational members, which can lead to increased trust between the parties and extra effort in their work (Ehrlich, Meindl, and Viellieu, 1990; Shamir, 1995). These arguments could help explaining why under transactional leadership organizational members find the flexibility to introduce changes conducive to management innovation. Our findings can also be interpreted in light of different phases in the life of organizations. While organizations are small, they may be under greater pressure to achieve short-term goals, which would emphasize transactions required by management (which offers a reward) from followers (who offer their work). As organizations become larger, leaders may become more transformational in order to instill in members of the organization that sense of urgency to deliver.

Overall, our findings reflect Birkinshaw et al.'s (2008) rational perspective on management innovation, while underscoring the role of human agency. Leaders' role in the pursuit of management innovation is relevant through both transactional and transformational leadership behaviors, though this behavior needs to be adapted according to the complexity of the organization, operationalized in this chapter as organizational size.

This first effort towards operationalizing management innovation at the firm level and uncovering the role of leadership is constrained by at least three limitations, which also represent fertile ground for future research in this area. First, in this chapter we have begun investigating how leadership can affect management innovation. Building on this, a broader perspective may provide interesting avenues for further research. Multilevel research into the interaction between firms, industry, and external environment may be useful in order to better understand how management innovation is adopted and diffused within and across industries, as well as the influence that is exerted by external factors upon firms (Dijksterhuis, Van Den Bosch, and Volberda, 1999). Past research in the financial sector (Jansen et al., 2006) has looked at the effects of environmental dynamism and competitiveness upon innovation. Insights of this kind could contribute to investigating how environmental characteristics influence the relationship between leadership behavior and management innovation.

Second, in measuring management innovation at the organizational level we constructed a new scale. While we took steps to assess the validity and reliability

of our measure, other studies may seek to enhance this measurement and test its viability by applying it to different datasets. Moreover, the data we used were cross-sectional. Further longitudinal research could contribute to this area by empirically testing the causal relationships established in our model. Additionally, we relied on one member of the TMT per organization who may have responded based on aspirations of change rather than change itself. Multilevel analysis combining the view from the TMT with that of other levels may contribute to our understanding of management innovation. Finally, we have not investigated the impact of management innovation on organizational performance. Therefore, future research could also focus on the outcomes of management innovation. Management innovation has been explicitly defined as intended to further the organization's goals (Mol and Birkinshaw, 2006), and called upon in order to overcome adverse performance (Volberda and Van Den Bosch, 2005). An increased understanding of how and to what extent management innovation can add to an organization's performance is not only appealing for research, but necessary if this concept is to gain acceptance as a key instrument to improve competitive advantage in the corporate world.

Through this chapter we have contributed to the emerging literature on management innovation in several ways. We have introduced a complementary construct of management innovation that spans processes, practices, or structures that are new at the level of analysis of the organization. Additionally, we have introduced a new scale at the organizational level for this management innovation construct. Lastly, we have studied the influence of human agency, that is, the role of two types of leadership behavior and their impact upon management innovation, as well as the moderating effect of organizational size. Concluding, this study illustrates the role of human agency in the pursuit of management innovation by studying both transformational and transactional leadership. While both types of leadership behavior are relevant for management innovation, smaller, less complex, organizations benefit more from transactional leadership while larger organizations need to draw on transformational leaders to compensate for their complexity and allow management innovation to flourish.

CHAPTER 3.

STUDY 2: TOP MANAGEMENT TEAM DIVERSITY AND MANAGEMENT INNOVATION: THE MODERATING ROLE OF SOCIAL INTEGRATION AND ENVIRONMENTAL DYNAMISM [3]

3.1. Introduction

In this study we broaden our understanding of the role of internal change agents by considering top management team (TMT) members. Internal change agents, as employees of the innovating firms, will have a key role in identifying opportunities for the pursuit of new practices, processes or structures as well as implementing these changes (Birkinshaw et al., 2008). Due to their position within firms, TMT members typically have the ability and discretion to pursue changes in how the work of management is done, underscoring the role of human agency in management innovation. Their background and previous knowledge may affect their ability to recognize opportunities to pursue management innovation in their organizations (Shane, 2000). Because of this, we investigate the relationship between top management teams and management innovation.

[3] Earlier versions of this chapter were presented at the Strategic Management Society Special Conference 2010, Levi, Finland and EURAM Annual Conference 2010, Rome, Italy.

First, we investigate management innovation that is new to the firm, thus positioning our study at the organizational level of analysis, and focus on internal change agents. For this, we consider TMT demographic and process diversity as key antecedents of management innovation. Prior studies have proposed that characteristics of top managers can be used to understand organizational outcomes as they reflect its members' values and cognition (Hambrick and Mason, 1984). In this vein, research has suggested associations between TMT attributes and strategic choice (Finkelstein, 1992; Hambrick and Mason, 1984), performance (Cannella Jr, Park, and Lee, 2008), as well as firm ambidexterity (Jansen, George, Van den Bosch, and Volberda, 2008). However, studies have argued that the potential effect of TMTs on organizational outputs may be best understood through the analysis of both demographic and process variables (Edmondson et al., 2003; Pelled et al., 1999). TMT demographic diversity entails heterogeneity between its members in terms of characteristics such as age and gender, but also functional background and experience (Pelled et al., 1999), while TMT processes refers to behaviors within a team such as communication, which aid the dissemination of information within the TMT and reduces information asymmetries which may be detrimental to TMT effectiveness (Edmondson et al., 2003). Prior research has argued that managers may differ in their ability to recognize opportunities for change as a result of their background, particularly around their educational background and work experience (Shane, 2000). In addition, manager's exposure to diverse knowledge may influence not only their access to different ideas, but also their ability to implementation of new concepts, particularly complex and multifaceted ones (Rodan and Galunic, 2004). In this study we draw on TMT diversity and TMT internal advice seeking as demography and processes within the TMT and explore how they affect the pursuit of management innovation in organizations.

Second, we explore the moderating roles of two variables, TMT social integration and environmental dynamism. TMT social integration reflects the cohesion in their pursuit of goals and collaboration among TMT members (Ling et al., 2008; Magni et al., 2009; O'Reilly et al., 1989), which is associated with higher levels of team moral, satisfaction, and more efficient coordination (Smith et al., 1994). We then study the moderating effect of TMT social integration on the relationship between TMT diversity and management innovation as TMT social integration may affect the team's ability to process and benefit from the variation

in functional backgrounds and experience among its members. Similarly, TMT social integration may influence the relationship between TMT internal advice seeking and management innovation as it may aid the assimilation of new knowledge and ideas from within and outside the team. Environmental dynamism has been suggested as an important moderator for the relationship between TMTs and several outcomes. Studies have argued that as environmental conditions change, so does the effectiveness of different types of innovation (Jansen et al., 2006) and team structure (Keck, 1997). For instance, it has been argued that TMTs may also need to adapt their composition (Haleblian and Finkelstein, 1993; Homburg et al., 1999), as well as their managerial mental models (Reger and Palmer, 1996) as they cope with changes in the environment. This also relates to the influence internal change agents will experience from the environmental context in which the pursuit of management innovation takes place (Birkinshaw et al., 2008). In this sense, we explore the contingency that different levels of environmental dynamism may have an effect upon the relationship between TMT attributes and processes and management innovation, rendering some TMTs more effective than others given different environmental conditions. Therefore, in order to provide a more robust understanding of the relation between TMT attributes and processes and management innovation, we include the moderating effect of environmental dynamism in our model.

We organized this chapter as follows. In the next section we present a review of the relevant literature and develop our hypotheses. Subsequently, we present the findings obtained from the empirical analysis carried out using a sample of organizations spanning different industries. We conclude with a discussion of our findings, implications, limitations, and issues for further research.

3.2. Literature Review and Hypotheses

Top Management Teams. Since Hambrick and Mason's (1984) seminal article, scholars have turned to TMT demography in order to make sense of a variety of organizational processes and outcomes. In this way, studies have shown that heterogeneous TMTs (i.e. teams whose members differ with regards to their job experiences, backgrounds, and expertise) are more conductive to changes in strategy (Wiersema and Bantel, 1992), performance (Cannella Jr et al., 2008;

Naranjo-Gil, Hartmann, and Maas, 2008), and innovation (Bantel and Jackson, 1989). However, a more complete understanding of the TMT's influence has been argued to require the analysis of both demography and process within the TMT (Edmondson et al., 2003; Smith et al., 1994). To address this issue, we also consider the TMT's combined openness to new information from within the organization. TMT internal advice seeking reflects the extent to which there is a climate of openness, trust and willing internal consultation, which have been associated with an increased level of innovation (Alexiev, Jansen, Van den Bosch, and Volberda, 2010). It also suggests that TMT members are hold relevant and current information regarding their firm's strategy, which could allow them to better interpret the need for new practices, processes and structures in view of current or future developments in the firm's strategy.

As key decision-makers within organizations, what organizations do and how they do it lies, to a large extent, with the TMT (Finkelstein and Hambrick, 1996). This espouses Birkinshaw et al.'s (2008) view on management innovation as a deliberate action pursued by individuals with the organization. These individuals will have to be able to recognize opportunities for management innovation within, which may depend on their characteristics and the knowledge they hold (Shane, 2000). Given the relevance of management innovation to how managerial work is performed and the potentially systemic effects on the organization (Hamel, 2006), considering the relation between TMTs and management innovation is of particular relevance.

TMT Diversity. TMT diversity refers to the heterogeneity in knowledge and experience in different functional areas among members of the dominant coalition (Bantel and Jackson, 1989; Hambrick and Mason, 1984).

Several studies have pointed out that a diversified TMT is desirable in order to achieve increased performance and problem solving ability within the team (e.g. Campion et al., 1993; Hambrick and Mason, 1984; Keck, 1997), as well as innovation and strategic change (Bantel and Jackson, 1989; Barkema and Shvyrkov, 2007). The rationale followed is that increased diversity within a team will broaden the knowledge-base through different sets of expertise, which will allow members to learn from each other and come up with different ideas (Campion et al., 1993; Hambrick, Geletkanycz, and Fredrickson, 1993). Furthermore, Shane (2000) suggests that managers' knowledge may be linked to their prior experience in different roles in their careers and even in dealing with different stakeholders within and outside the organization. In this way, diversity

within the TMT regarding prior experience can affect the way individuals recognize opportunities for the pursuit of management innovation. For example, in the case of the introduction of self-managing teams at Royal DSM (which is reported in Chapter 4) top management did not develop the notion, but rather individuals within top management had the knowledge of such teams through relations they had acquired throughout their careers. In this way they could draw on the experience of another firm where production was organized around self-managing teams. Diversity, then, may serve management innovation, as a heterogeneous team may be able to consider new practices, processes, or structures that challenge the status quo. In particular, a diversified TMT may be able to make sense of new practices by drawing on the experiences and expertise of different members. Implementing actionable management processes may also be more efficiently done when teams can rely on a wide knowledge-base to generate new ideas and promote debate among different TMT members (Simons, Pelled, and Smith, 1999). Lastly, organizations can also benefit from diversified TMTs during the introduction of new organizational structures as the wide scanning and problem solving capabilities within the TMT may facilitate this type of change.

Hypothesis 1: Top management team diversity will be positively related to management innovation.

TMT Internal Advice Seeking. Members of the top management team may seek to acquire advice from others within their organization, as members may have access to different sets of knowledge within the organization (Argote and Ingram, 2000). Their willingness to systematically engage in consultation may be beneficial in pursuing changes within the organization, and also generate a climate of trust and openness (Inkpen and Choudhury, 1995). Studies have provided evidence that the pursuit of knowledge by TMTs within the organization is positively associated with exploration as top management teams may be able to utilize internally acquired knowledge to pursue ideas for new products or services (Alexiev et al., 2010). TMT members may draw on their relationship with others to access information, knowledge or work practices, but also to interpret diverse information (Mors, 2010). The diverse nature of the knowledge to which TMT members are exposed may be less important than their ability to access this knowledge through their relationship with other members of the organization

(Rodan and Galunic, 2004). Studies have shown that teams which go beyond cooperation and engage in advice seeking have a more positive effect on firm performance (Collins and Smith, 2006), suggesting that relevant knowledge availability is very relevant for the performance of teams. This can also be illustrated through the case of self-managing teams at DSM (Chapter 4), where management engaged in internal advice seeking in order to improve their knowledge regarding the firm's future strategy –move into biotechnology and build a new plant– and the possibility of incorporating self-managing teams in the new plant was brought into the discussion. Moreover, companies may deliberately try to facilitate the opportunities to seek advice by, for instance, organizing brainstorming sessions and encouraging managers with dissimilar sets of knowledge to interact.

The pursuit of management innovation through changes in practices, processes, or structures within an organization will be accompanied by certain degree of uncertainty and complexity (Birkinshaw et al., 2008). The use of knowledge acquired within the organization may contribute to reducing uncertainty and contribute to simplify complex dynamics within the organization as they introduce changes to their management. Moreover, as members of the TMT systematically acquire and employ knowledge generated through the advice sought from within the organization other members of the organization may become more adept to voicing their ideas (Somech, 2006). We therefore hypothesize that top management team internal advice seeking will be positively related to management innovation as it will allow top management team members to tap into a wider pool of knowledge and ideas that may aid the pursuit of changes in management processes, practices, or structures.

Hypothesis 2: Top management team internal advice seeking will be positively related to management innovation.

The Moderating role of TMT Social Integration. Social integration refers the extent to which top management teams are cohesive in their pursuit of goals, information exchange, and collaboration amongst members (Ling et al., 2008; Magni et al., 2009; Smith et al., 1994). It reflects the groupiness of the team (Moreland and McMinn, 2004) whose members feel attracted to the group, satisfied with other members and are willing to interact with them (O'Reilly et al.,

1989). In essence, teams with a high degree of social integration amount to more than a collection of executives, actively seeking to engage in the exchange of knowledge and information within the team and share decision making (Hambrick, 1994, 1998). Top management teams where social integration is high may be better suited to use their diverse backgrounds to change practices, processes and structures as they will connect and create stronger ties with each other (Oh, Chung, and Labianca, 2004). In this way, TMT social integration may enable teams to draw from their different backgrounds in order to pursue innovation on what managers do and how they do that within the organization. Conversely, in top management teams where social integration is low, the effect of diversity in background and expertise on management innovation may be attenuated by the lack of cohesiveness at within the team.

Hypothesis 3: TMT social integration moderates the relationship between TMT diversity and management innovation such that increased TMT social integration strengthens the positive effect of TMT diversity upon management innovation.

In top management teams where social integration is high, the relationship between TMT advice seeking and management innovation may become stronger as members of the TMT will be better aware of where the resources are within the team that could support the pursuit of new management practices, processes and structures (Oh et al., 2004). In top management teams in which social integration is low, the relationship between TMT internal advice seeking and management innovation my weaken as members may not be aware of knowledge stored within the team or how to access it.

Hypothesis 4: TMT social integration moderates the relationship between TMT internal advice seeking and management innovation such that increased TMT social integration strengthens the positive effect of TMT internal advice seeking upon management innovation.

The Moderating Role of Environmental Dynamism. Environmental dynamism has been characterized as the degree (and unpredictability) of instability present in the environment (Dess and Beard, 1984). In dynamic environments, top management teams need to interpret ambiguous information which they will need in order to asses and implement potential changes (Arendt, Priem, and Ndofor,

2005). In other words, as environments change, firms must meet the new challenges so as to avoid becoming in some way obsolete. Accordingly, TMT attributes may play different roles according to the level of environmental dynamism present at the time.

TMT diversity may play an even more prominent role in highly dynamic environments due to its ability to provide firms with a wider scan of possibilities and better overall sense making of complex situations, which may result in a broader set of potential solutions (Bantel and Jackson, 1989; Keck, 1997). In this way, the relationship between TMT diversity and management innovation may be stronger in highly dynamic environment as under these conditions more chances for the pursuit of new practices, processes or structures may become available (Baum and Wally, 2003) and the different backgrounds of TMT members may produce more alternatives (Eisenhardt, 1989b).

Hypothesis 5: Environmental dynamism moderates the relationship between TMT diversity and management innovation such that increased environmental dynamism strengthens the positive effect of TMT diversity upon management innovation.

Similarly, in highly dynamic environments, the relationship between TMT internal advice seeking and management innovation may strengthen, as TMT members may be able to make sense of ambiguous and diverse information through their relationship with others and the ability to draw on their knowledge (Mors, 2010). The relationship between TMT internal advice seeking and management innovation may strengthen when environmental dynamism is high as TMT members will be able to draw on different sources of advice and accelerate decision making (Eisenhardt, 1989b).

Hypothesis 6: Environmental dynamism moderates the relationship between TMT internal advice seeking and management innovation such that increased Environmental dynamism strengthens the positive effect of TMT internal advice seeking upon management innovation.

3.3. Methods

Setting and data collection. To test our hypotheses we conducted a survey among TMT members of companies registered at the Dutch chamber of commerce. Our initial sample was unstratified and included companies which employed at least 25 full-time employees. We ensured that the informants were professionally interested and committed to providing accurate data by assuring confidentiality and by offering them a summary of the results. In order to minimize the shortcomings associated with single-respondent and common method bias, we temporarily separated the measurement of our independent and dependent variables and collected data from different informants.

In 2007 surveys were sent to TMT members in 9,000 companies. Each company received 3 identical copies of the survey addressed to members of the TMT. We had identified these respondents as appropriate informants by means of the information available in our database. In order to increase our response rate, we followed our original mailing with a follow-up four weeks later. In both cases a cover letter and return envelope were included along with the survey. Lastly, we called those companies which had not returned their surveys two weeks after the reminders had been sent. A total of 1,102 surveys were returned, for a response rate of 12.24 percent. Approximately a year later, in 2008, a second survey was administered to TMT members of the same 1,102 companies to assess management innovation. Having followed a similar procedure, we obtained 257 usable surveys for a 23.32% response rate, considerably better than the typical rate for mailed surveys to top executives (Hambrick et al., 1993). Respondents had an average company tenure of 9.42 years (s.d.= 2.72). The mean size of the companies in our sample was 58.88 (s.d.= 3.09) full-time employees. T-tests comparing respondents and non-respondents showed no significant differences based on number of employees. In addition, we compared early and late respondents in terms of demographics and model variables. None of these tests revealed any significant differences ($p < 0.05$).

Regarding the issue of the possibility of common method bias, we carried out Harman's one-factor test using the items included in our model. Should common method bias be present, we would expect a single factor to be extracted and account for most of the variance in the variables included in our study (Podsakoff and Organ, 1986). Following our analysis we did not obtain such single factor.

Measures

Dependent variable. In order to operationalize management innovation at the firm level, an existing measurement (Vaccaro, Jansen, Van den Bosch, and Volberda, 2010) was employed and complemented with three new items in order to tap into the three facets of management innovation. Overall, a pool of items was developed which tapped into different domains of management innovation. From this pool of items, unique items were selected to be included in the initial survey. During subsequent interviews, various industry representatives were invited to suggest improvements to the survey items. Finally, the phrasing of the items was further enhanced by the authors and peers, a process that resulted in a final version of the measurement. In this way, we included items that referred to changes in management practices ("our employees may pursue different roles within the organization"), processes ("we usually alter the way in which we set our objectives"), and structures ("we regularly invest in developing our structure so as to make the most of our staff").

The resulting 9-item measure for management innovation captured the extent to which organizations change their management practices, processes, or structures. Exploratory factor analysis (EFA) of these 9 items results yielded a three-factor solution with eigenvalues larger than one and a cumulative explained variance of 68.20%, which replicated the 3 dimensions of management innovation included in our definition (i.e. practices, processes, and structures). Since these three dimensions in our measurement corresponded with the three facets of management innovation in our definition, we averaged these dimensions in to create a single index for management innovation. Our measurement of management innovation showed adequate reliability ($\alpha = 0.77$). We calculated the interrated score (r_{wg}) between the scores of the different TMT members (James, Demaree, and Wolf, 1984). The median [average] interrater agreement for management innovation was 0.94[0.89].

Independent Variables. To measure TMT diversity ($\alpha = 0.79$, $r_{wg} = .93[.83]$) we adapted a three-item measure from Campion et al. (1993) which tapped into width of expertise and backgrounds across members of the team. To measure TMT internal advice seeking ($\alpha = 0.92$, $r_{wg} = .88[.74]$) we used a three-item scale from Alexiev et al.(2010). Respondents rated the TMT's (1) frequency of advice seeking within their organization, (2) extent to which they gathered advice

regarding their current strategy within their organization, and (3) the extent to which they gathered advice with regard to their future strategy within their organization.

Moderating variables. Environmental dynamism ($\alpha = 0.83$, $r_{wg} = .83[.77]$) was adapted from Dill (1958) and Volberda and Van Bruggen (1997), consisting of four items, it tapped into the rate of change and instability of the external environment. The measure for TMT social integration ($\alpha = 0.86$, $r_{wg} = .92[.89]$) was adapted from Smith at al. (1994) had four items and refers to the extent to which team members exchange information, share decision making and really act like a team.

Control variables. In our empirical study we controlled for possible alternative explanations by including relevant control variables. TMT size could affect the heterogeneity of the top management team, and thus impact management innovation (Siegel and Hambrick, 2005). We measured TMT size through the logarithm of the number of members of the top management. We included a measure of TMT tenure as a control variable as it may influence the decision process regarding innovation (Elenkov et al., 2005). Because larger organizations may have more resources, yet they may lack the flexibility to introduce management innovation, we included the logarithm of the number of full time employees within the organization to account for firm size. Because incumbent firms may be more inclined towards exploiting existing management rather than introducing change, we included firm age measured by the logarithm of the number of years since the firm's founding. We also included variables to control for industry effects.

3.4. Analysis and Results

Table 3.1 presents the descriptive statistics and correlations between the study variables. Table 3.2 shows the results of the regression analyses with management innovation as the dependent variable. Seven models were specified in this analysis. The first one (model 1) includes only the control variables. Subsequently the two TMT constructs were introduced (models 2), then the moderating variables (model 3) and subsequently the interaction terms were added (models 4 to 7). To reduce the potential for multicollinearity, we followed Aiken and West (1991), and mean-centered the individual variables before calculating the interaction terms. Finally, we computed variance inflation factors (VIF) to further assess whether multicollinearity was a concern in our sample. All values

were well below the cut-off value of 10 (Netter et al., 1990), indicating no risk of multicollinearity.

The results show that our hypothesized positive relationship between TMT diversity and management innovation (hypothesis 1) was supported ($\beta = .13$; $p < 0.05$). Hypothesis 2, in which we proposed a positive relationship between TMT internal advice seeking and management innovation, was also supported ($\beta = .14$; $p < .05$). In addition to the direct effects, we also hypothesized that the relationship between TMT attributes and management innovation would be moderated by TMT Social Integration and environmental dynamism. Our results show that TMT social integration positively moderates the relationships between management innovation and both TMT diversity ($\beta = .10$; $p < .10$) and TMT internal advice seeking ($\beta = .12$; $p < .10$), supporting hypotheses 3 and 4. Figures 3.1 and 3.2 respectively show the plot of these interactions. The relationship between management innovation and TMT diversity was also found to be moderated by environmental dynamism ($\beta = -.13$; $p < .05$), though the negative moderation effect contradicted our hypothesis 5 which predicted a positive moderation. Figure 3.3 presents the plot of this interaction. Finally, hypothesis 6 was not supported as the moderating effect of environmental dynamism upon the relationship between management innovation and TMT internal advice seeking was not significant.

3.5. Discussion and Conclusion

By applying management innovation to the organizational level of analysis, and focusing on TMT demographic diversity and processes as well as environmental dynamism, this study begins to unfold how key internal change agents (Birkinshaw et al., 2008) relate to management innovation. Additionally, we provide evidence of how TMT social integration as well as differences in environmental dynamism may affect those relations.

Our analysis shows that TMT diversity is conducive to management innovation. This is in line with previous studies which have shown similar associations with innovation (Bantel and Jackson, 1989), performance (Campion et al., 1993), and problem solving (Keck, 1997). Diverse TMTs encapsulate differences in expertise and background that may help the team as a whole to consider a broader spectrum of potential solutions, and enhance creativity (Amabile, 1998), which may ultimately contribute to implementing new practices, processes, or structures. Exposure to different types of backgrounds, knowledge and expertise may improved management's ability to both recognize and

Table 3.1 Descriptive Statistics, Standard Deviations and Correlations[a]

	Mean	s.d.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1 Management Innovation	4.21	0.84	1											
2 Firm Age[b]	1.42	0.40	-0.07	1										
3 TMT Size[c]	0.66	0.22	0.06	.14*	1									
4 Firm Size[d]	1.77	0.49	0.11	0.22**	0.31**	1								
5 TMT Diversity	5.57	0.83	0.18**	-0.04	0.08	0.01	1							
6 TMT Social Integration	5.48	0.85	0.06	-0.12	-0.11	-0.05	0.28**	1						
7 Environmental Dynamism	4.50	1.25	0.23**	-0.06	-0.07	-0.02	0.02	0.06	1					
8 TMT Tenure	0.97	0.43	-0.04	0.15*	-0.01	-0.13*	0.04	0.13*	0.10	1				
9 Industry Other	0.03	0.17	-0.06	-0.04	-0.04	-0.06	-0.01	0.00	-0.15*	0.01	1			
10 Industry Manufacturing	0.42	0.49	-0.04	0.28**	-0.01	0.08	0.09	-0.15*	-0.11	0.01	-0.15*	1		
11 Industry Wholesale	0.09	0.29	0.05	0.09	0.08	-0.02	0.04	0.05	0.00	0.07	-0.06	-0.27**	1	
12 Industry Construction	0.14	0.35	-0.01	0.05	-0.03	0.09	-0.10	0.01	0.09	-0.07	-0.07	-0.35**	-0.13*	1
13 TMT Internal Advice Seeking	5.09	1.28	0.20**	0.00	0.13*	0.07	0.32**	0.26**	0.13*	-0.05	-0.08	-0.01	0.08	0.01

[a]N=257

[b] Logarithm of years since incorporation

[c] Logarithm of number of TMT members

[d] Logarithm of number of full time employees

† $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table 3.2 Effects of TMT diversity and TMT Internal Advice Seeking and their interaction with TMT social integration and environmental dynamism

	Management Innovation						
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Firm Age	-.10	-.09	-.08	-.07	-.07	-.07	-.08
TMT Size	.03	.03	.02	.02	.03	.02	.19
Firm Size	.12 †	.12 †	.11 †	.10 †	.11 †	.10	.12 †
TMT Tenure	-.01	-.01	-.03	-.03	-.03	-.03	-.03
Manufacturing	-.03	-.04	-.02	.01	-.02	-.02	-.02
Wholesale	.04	.02	.03	.02	.02	.02	.04
Construction	-.03	-.02	-.03	-.04	-.03	-.04	-.03
Other	-.06	-.05	-.02	-.01	-.01	-.01	-.03
TMT Diversity		.33 *	.14 *	.13 †	.15 *	.13 †	.14 *
TMT Internal Advice Seeking		.14 *	.12 †	.13 †	.11	.13 †	.12 †
TMT Social Integration			-.03	-.03	-.02	-.03	-.02
Environmental Dynamism			.21 **	.22 **	.21 **	.22 **	.21 **
TMT Social Integration*TMT Diversity				.10 †			
TMT Social Integration*TMT Internal Advice Seeking					.12 †		
Environmental Dynamism*TMT Diversity						.11 †	
Environmental Dynamism*TMT Internal Advice Seeking							-.04
R^2	0.03	0.08	0.12	0.13	0.13	0.14	0.12
F	0.98	2.10 *	2.81 ***	2.87 ***	2.89 ***	2.98 ***	2.62 ***

Standardized regression coefficients are reported

n=257; † p<0.1; * p<0.05; ** p<0.01; *** p<0.001

Figure 3.1 Effect of interaction between TMT diversity and TMT Social Integration on Management Innovation

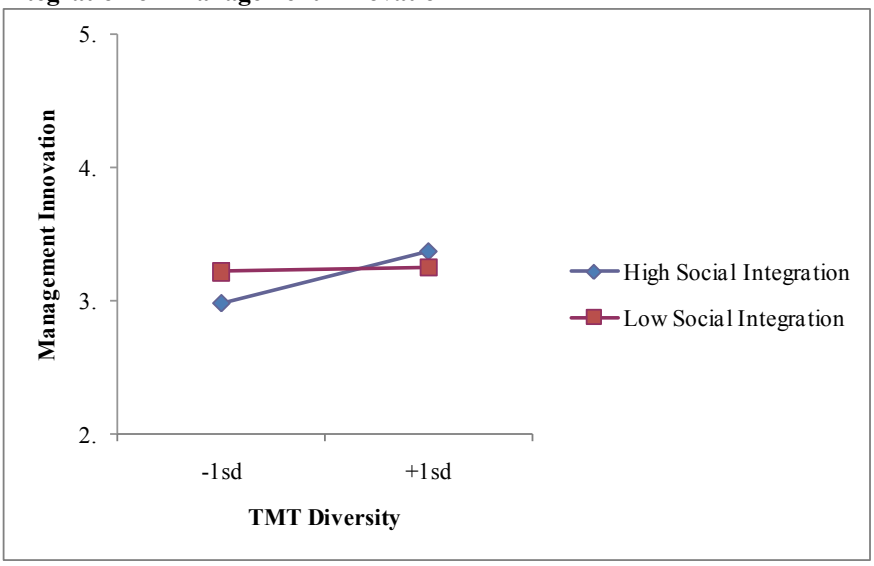


Figure 3.2 Effect of interaction between TMT internal advice seeking and TMT Social Integration on Management Innovation

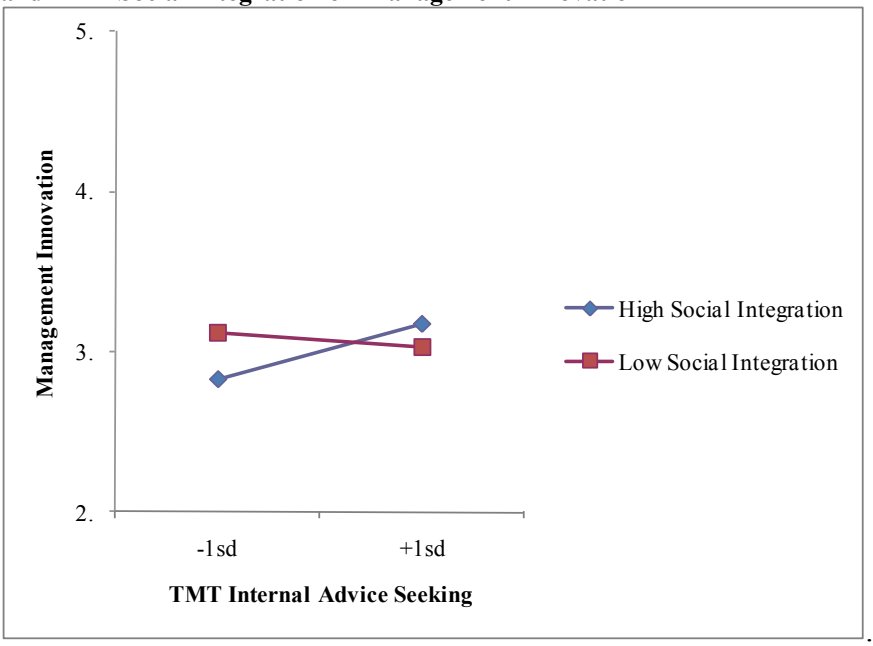


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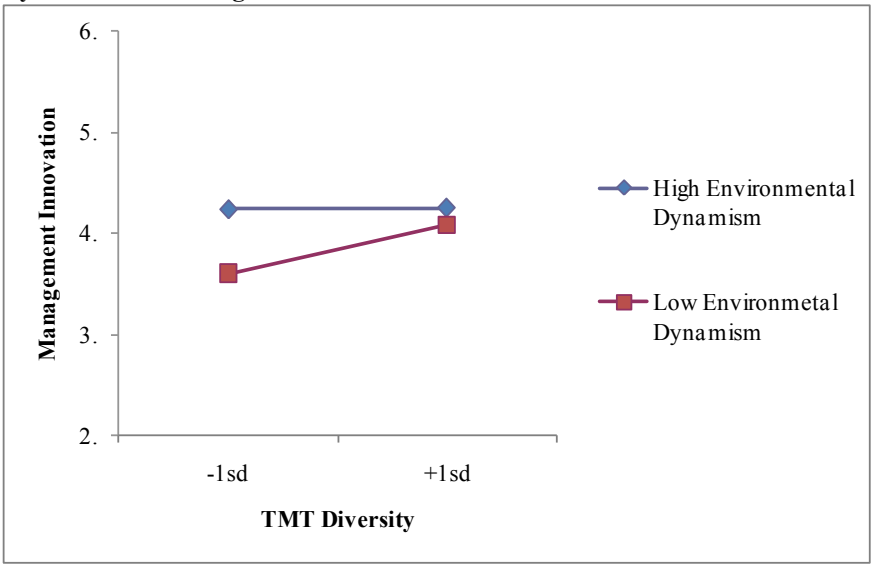
Figure 3.3 Effect of interaction between TMT Diversity and Environmental Dynamism on Management Innovation



implement management innovation (Rodan and Galunic, 2004). The proximity to TMT members with different background expertise as well as access to networks in those backgrounds may be crucial in developing or adopting management innovation that spans different parts of the organization (Kanter, 1988) as well as in gaining legitimacy from other who may play a role in the success of the management innovation (Rodan and Galunic, 2004).

The relationship between TMT diversity and management innovation was negatively moderated by environmental dynamism, which suggests that in environments characterised by a high degree of change and instability the association between TMT diversity and management innovation weakens. This seems to indicate that although TMT diversity brings different perspectives and experiences to a team, it may become an obstacle to advancing management innovation in fast changing environments. Mors (2010) suggests that when contexts are heterogeneous and managers are exposed to diverse information, they face an extra challenge in trying to interpret and make use of this information. This could relate to an increased level of task conflict, which has been argued to be driven by differences in functional background (Pelled et al., 1999). In this way, diverse teams could experience more disagreement regarding what and how things

should be done, which will negatively affect the pursuit of management innovation. Conversely, the relationship between TMT diversity and management innovation was strengthened by TMT social integration. This suggests that cohesive teams may be better equipped to profit from their background differences when pursuing management innovation. In this way, our study complements findings which point to the joint effect of TMT diversity and social integration on performance (Smith et al., 1994) by providing evidence of a similar association with respect to the pursuit of management innovation. Cohesive teams where members identify with the team may be able to profit from their background differences by means of better informal communication and higher efficiency in coordinating activities (O'Reilly et al., 1989). This in turn may help mitigate the uncertainty and ambiguity associated with the pursuit of management innovation (Birkinshaw et al., 2008).

Our study also indicates that TMT internal advice seeking is positively related to management innovation. This indicates that the pursuit of new management practices, processes, or structures may be associated with the extent to which TMT members regularly engage in consultation with colleagues within their organizations and discuss strategic issues. This may contribute to generating a climate of trust and openness (Inkpen and Choudhury, 1995) among key internal stakeholders in the pursuit of management innovation (Birkinshaw et al., 2008) while also providing TMT members with access to diverse knowledge (Rodan and Galunic, 2004). Members of the TMT may be able to draw support for changes in practices, processes, or structures within the TMT and tap into ideas for such changes within the organization. This may in turn lead to other members of the organization to share their ideas (Somech, 2006) as senior managers signal a more consultative decision making process.

Our research also suggests that the relationship between TMT internal advice seeking and management innovation becomes stronger when the TMT also shows a high level of social integration. This points to the importance of not only acquiring information within the organization, but also making it available to others who share goals and collaborate within a cohesive TMT (Ling et al., 2008; Magni et al., 2009). This resonates with Hambrick's (1998) assertion that TMT social integration helps in disseminating information and gathering support when challenging the status quo. Our research then suggests that promoting advice seeking as well as a high level of social integration among internal change agents

(Birkinshaw et al., 2008) may be relevant in the pursuit of management innovation.

Overall our study makes inroads into explaining the role of TMTs in the pursuit of management innovation. This adds to the emerging dialogue around management innovation by complementing studies that have focused on the role of external change agents (Mol and Birkinshaw, 2009). We see members of the TMT as key internal change agents that, due to their position within organizations, have the power to influence the pursuit of management innovation (Hambrick and Mason, 1984). Our research suggests that organizations should welcome diversity and a fluid exchange of ideas within TMTs. In addition, our research suggests that both diversity and internal advice seeking will have a stronger impact on pursuing management innovation when teams are cohesive and share relevant resources.

Our results also suggest that the relationship between TMT diversity and management innovation becomes more positive under less dynamic environments. Conversely, in highly dynamic environments, increases in TMT diversity are associated with a lower level of management innovation. This seem to indicate that as the external environment become more dynamic, and thus influence the priorities of key change agents (Birkinshaw et al., 2008), a high degree of diversity could prove an obstacle in advancing management innovation within the organization. Meanwhile, in relatively stable environments, increase diversity may be welcome into the TMT as a way of including additional variance into the team in order to stimulate new ways of thinking.

This study constitutes the first step towards uncovering the relationship between top management teams, environmental dynamism, and management innovation. There are, however, several limitations to this study which also serve as topics for future research.

While the role of TMT advice seeking was investigated, this study focused on exchanges within the organization, in other words, the knowledge sought by members of the TMT and other internal change agents. This, though providing valuable insights that may relate to how TMT members recognize and later implement management innovation, leaves out the potential role of advice seeking involving external sources of knowledge, for instance personal networks. In the management innovation process framework put forward by Birkinshaw et al.

(2008) external change agents have a clear role providing new ideas for, experimenting with and theorizing about management innovation that is new to the world. When management innovation is considered as new-to-the-organization, as it is in this dissertation, external change agents may still have a key role. Members of the innovating organization could draw on management practices, processes or structures from other organizations in their networks. For instance, research suggests that members of an industrial cluster usually exchange knowledge related to both technological and management innovation (Sammarra and Biggiero, 2008). Future research could focus on the influence of external sources of knowledge such as clients, suppliers or partners.

This study focused on the role of TMT demography and process and their association with management innovation. Building on this, future research could seek to explore the potential differential associations between different TMT attributes and different stages along the process of management innovation. For instance, building on the entrepreneurship literature, an avenue for research could be to consider management innovation having to be discovered, evaluated and implemented (Shane, 2000) by management.

In measuring management innovation at the organizational level we modified an existing scale (Vaccaro et al., 2010) to better reflect the different facets of management innovation at the firm level, i.e. practices, processes and structures. While we took steps to assess the validity of our measure, other studies may seek to enhance this measure and test its validity by applying it to different datasets. In particular, researchers may consider replicating the measurement of management innovation as consisting of three latent constructs.

This chapter has contributed to the literature on management innovation in several ways. It has analyzed the role of a group of key internal change agents: the top management team. In doing so the association between both TMT demography and process and management innovation was investigated. The availability of diverse backgrounds, experiences and sets of expertise within the TMT was positively associated with management innovation. In particular, this was the case when TMT also showed a high level of social integration, however it was less so when environments were highly dynamic. This study also showed that high levels of advice seeking were positively associated with management innovation in particular when social integration at the TMT was also high. Lastly, an existing

scale of management innovation at the firm level was complemented with new items to better reflect the different facets of management innovation.

CHAPTER 4.

STUDY 3: MANAGEMENT INNOVATION IN ACTION: LONGITUDINAL CASE STUDY OF SELF-MANAGING TEAMS (2001-2010)

4.1. Introduction

Birkinshaw et al. (2008) propose that internal change agents play a particularly relevant role as they are the individuals championing the introduction of new processes, practices, and structures in order to make the organization more efficient. In keeping with this rational view of management innovation, and in particular the role of human agency, we have studied the role of CEO leadership (cf. Chapter 2), and top management team advice seeking (cf. Chapter 3). Chapter 2 suggested that both transactional and transformational leadership behavior were positively associated with management innovation, contradicting previous studies that, for instance, suggested that transactional leadership would be detrimental (Lee, 2008). This, however, also suggests that both leadership behaviors may be required in the pursuit of management innovation. In Chapter 3, the role of advice seeking was analyzed by focusing on the TMTs. This was found to be positively associated with management innovation. In this study, we delve deeper into these issues investigated in preceding chapters and seek to expand our understanding of

how internal change agents shape management innovation by focusing on the functioning of self-managing teams.

In understanding how self-managing teams work, we consider the case of Royal DSM, a Dutch life sciences and material sciences company, which has been working with self-managing teams in its anti-infectives plant for 10 years. As manufacturers of pharmaceuticals in Asia continue to expand, manufacturing firms elsewhere continue to struggle to keep up. In coping with the cost advantages that companies can achieve in Asian production sites, and remain competitive, many firms have moved production to Asia and away from Europe and North America. Royal DSM, however, continues to produce in Europe while remaining competitive. One of the reasons for this is their use of self-managing teams in its anti-infectives plant in Delft, the Netherlands. In this chapter we seek to understand how self-managing teams work and what is the role of those involved with them to make them successful. Hence, our guiding research question is: What is the role of internal change agents in the functioning of self-managing teams? In answering this question, and building on insights from previous chapters, we focus our attention on three key issues related to internal change agents in the context of self-managing teams: leadership, knowledge exchange, and trust.

Our study contributes to the literature on management innovation in at least three ways. First, we present an in-depth case study of an instance of management innovation, which complements insights from conceptual (e.g. Birkinshaw et al., 2008), and large-sample studies (e.g. chapters 2 and 3). Second, we analyze the role of leadership, trust, and knowledge exchange within this instance of management innovation. Last, we analyze the period 2001-2010 during which self-managing teams have been active at DSM, providing longitudinal insights into the process of self-managing. Table 4.1 shows a summary of the main contributions of this study.

4.2.Self-managing Teams as a Management Innovation

Self-managing teams are teams which regulate their own functioning without the direct intervention of a supervisor (Waterman, 1994). These teams typically have no internal hierarchy and are accountable for achieving the goals they set for themselves (Zárraga and Bonache, 2005). Members of these teams typically interact face to face, have control over a well defined work area, and have discretion over decisions regarding how to organize and structure their work

(Bunderson and Boumgarden, forthcoming; Cohen and Ledford, 1994; Cummings, 1978).

Table 4.1 Contributions and focus of the case study

Contribution	Focus
In-depth study	Complement insights from Study 1 and Study 2
Complementary leadership	Simultaneous presence of both transactional and transformation leadership behaviors
Role of trust	Trust in teams, between teams and within teams
Role of knowledge exchange	Exchange within teams and between different constituencies
Process of self-managing teams 2001-2010	Development of self-managing teams at the Zor-f plant

Self-managing teams are by no means a new phenomenon, in fact Mary Parker Follet discussed their benefits in the early 1920s (Metcalf and Urwick, 1943). However, they became more prominent towards the end of the century, and several case studies have illustrated their benefits and challenges. Waterman (1994) discussed the pioneering introduction of self-managing teams at a Procter & Gamble plant in the early 1960s, which the company kept secret at the time as it considered it a major competitive advantage. Since then, companies such as Volvo (Van Hootegem, Huys, and Delarue, 2004), Harley-Davidson (Teerlink and Ozley, 2000), and Rolls-Royce (Birkinshaw, 2010) have adopted new practices, processes and structures by introducing self-managing teams in their plants.

Self-managing teams are an example of management innovation, as they represent a change in the way management work is performed (Hamel, 2006). In particular, self-managing teams trigger changes in three facets of management innovation: practices, processes and structures (Birkinshaw et al., 2008). Management practices refer to managerial day-to-day work, which may include setting objectives and procedures, developing talent and meeting demands from different stakeholders (Birkinshaw et al., 2008; Mol and Birkinshaw, 2009). Self-managing teams typically set their own production goals and decide on how those goals will be achieved by assigning responsibility for the different tasks amongst team members (Lawler, 1990). Management processes refer to the routines that govern the work of managers, drawing from abstract ideas and turning them into actionable tools, which typically include strategic planning, project management, and performance assessment (Birkinshaw et al., 2008; Hamel, 2006). In self-managing teams, for instance, reward systems may be linked to the set of skills

individuals possess, as this reflects the understanding and know-how team members have about the job their team is responsible for (Lawler, 1990). Organizational structure, that is, how organizations arrange communication, align and harness effort from their members (Birkinshaw et al., 2008; Hamel, 2007), is typically adapted to reflect the self-managing teams autonomy and discretion. This usually involves the elimination of a foreman or supervisor position, making the structure flatter, and allowing for teams to report directly to management (Bunderson and Boumgarden, forthcoming; Lawler, 1990). Table 4.2 shows each of these facets illustrated by quotes obtained during interviews at DSM anti-infectives regarding their use of self-managing teams.

4.3. Theoretical Background: Leadership, Knowledge Exchange, and Trust

Leadership. Studies of leadership in the context of self-managing teams have often faced the paradoxical task of studying how leaders can lead others who are supposed to lead themselves (Stewart and Manz, 1995). Some authors have proposed that self-managing teams may be fit to lead themselves (Manz and Sims, 1987), thus bypassing the need for external leadership. Similarly, others have studied the emergence of leadership within such teams (e.g. Wolff, Pescosolido, and Druskat, 2002). Yet others, however, have focused on the role of leadership as a facilitator for self-managing teams. Authors in the latter stream propose, for instance, that leadership behavior characterized by guidance, encouragement and delegation (Stewart and Manz, 1995) as well as providing autonomy (Yukl and Yukl, 2002) is conducive to self-management within teams. Our view of the role of leadership regarding self-managing teams remains close to the latter view.

In studying the context in which self-managing teams develop and function, we draw on transactional and transformational leadership (Bass, 1990). Transactional leadership entails engaging followers by means of transactions between leaders and followers. This is commonly done by the clear establishment of goals and rewards as well as the active involvement of leaders when expected standards are not met (Bass, 1990; Bass and Avolio, 1993; Yammarino and Bass, 1990).

Table 4.2 Illustrative quotes of management innovation facets

MI Facet	Illustrative Quotes from DSM	Notes
New Management Practices	*"Operators who went to work in the early days, they did their work and nothing else, now-a-days you have to think more about the job you are doing, you have to think better about it, can we improve? (...) In the early days we had to go to the technologist to solve the problems, and now a days we have to do that ourselves. There has to be a change in the way you thought as process operator, and for most people that was a good thing to do."* Operator	This illustrates a shift in what is done by the operators and teams. Rules and procedures formerly precluded operators from addressing problems themselves, while now they have to do it.
New Management Processes	*"In the past, a shift leader was working and come up and say: "You have to do that and you will do that." And if you have a problem you called the shift supervisor and say: "Ok, I have a problem." And then the supervisor had to come and help the shift leader out. That is the 'old' way. (...) With the building of this [plant], if one technologist or a member of the group, they give you work to do. And if you had a problem, you'd have to try and solve it yourselves. Don't run back to the staff-group leader and come with a problem to solve, but solve it and report what you did (to solve it)."* Operator	This reflects changes in how people do things. Before, the management system emphasized the role of the operator as the executor of orders and the leader as the problem solver. After the introduction of self-managing teams, execution *and* problem solving reside within the teams of operators.
New Management Structures	*"They [operators] were looking for an anchor point, which used to be the shift supervisor, but this anchor was not there anymore, so they had to communicate directly with the staff, and the technologists in the staff in the past used to communicate via shift supervisors"* Former Plant Manager	Reducing hierarchical layers to allow self-managing teams to take control.

Transformational leadership entails instilling a sense of purpose and identification in followers towards the achievement of common goals (Bass, 1985; Burns, 1978). Transformational leaders are usually admired and trusted by their followers and promote the questioning of assumptions. They also consider their followers' individual needs and inspire them by attaching meaning and challenge to what they do (Bass et al., 2003). In addition, research suggests that

transformational leaders promote proactive behavior amongst followers (Belschak and Den Hartog, 2010), which relates to self-managing as it implies taking charge of one's work and also suggest putting forward ideas for new work methods to improve production and team processes (Parker et al., 2010). Moreover, teams led by transformational leaders may favor cooperation as opposed to competition when resolving conflict within the team, which may subsequently translate into better performance (Zhang et al., forthcoming).

Knowledge Exchange. At the core of self-managing teams is the notion that they are ultimately accountable for the organization of their work and its execution. Because of this, members of self-managing teams will see their work affected by that of others within or outside the team as knowledge is obtained from these different sources. The experience of individuals or groups that come into contact with the work of other units may affect the work of a self-managing team (Argote and Ingram, 2000). Self-managing teams are given the independence and the tools to collaborate and exchange the necessary knowledge to execute their work (Wageman, 1995). Yet, collaboration alone may be insufficient for a team to achieve higher levels of performance, needing also to exchange knowledge to achieve performance and implement innovative measures (Collins and Smith, 2006). Cummings (2004) shows that teams that exchange information across functions and geographical locations achieve better levels of performance.

Due to the fact that self-managing teams are highly interdependent, their need to share knowledge becomes essential in carrying out their work. This has been argued to lead to a higher sense of collective responsibility and promote cooperation (Wageman, 1995). Furthermore, research suggests that accountability for the way in which work is done in groups is associated with better decision quality (Scholten, van Knippenberg, Nijstad, and De Dreu, 2007).

In order to achieve high levels of performance, group members need to have the ability to recognize and incorporate relevant knowledge from other members (Thomas-Hunt, Ogden, and Neale, 2003).

Trust. Trust implies the willing vulnerability of a party to another's actions, based on the expectation that the trustor will perform a valuable action the trustee may not be able to monitor or control (Mayer, Davis, and Schoorman, 1995).

The implementation of self-managing teams means that individuals within these teams will have a high degree of independence and that their work will depend on others' and vice versa. Because teams will operate in this way without supervision, making members vulnerable to the actions of others (Kiffin-Petersen and Cordery, 2003), trust will become particularly relevant (Mayer et al., 1995).

Trust relates to the development of self-managing teams as it increases with the successful completion of trust-based assignments (Gagnon, Jansen, and Michael, 2008). Research has proposed that trust plays a key role in the employee's willingness to accept his or her role within self-managing teams, the associated increase in co-operation with others and interdependence (Kiffin-Petersen and Cordery, 2003). Teams may benefit from the development of trust as they will regulate their functioning in the absence of direct supervision from a team manager. Because of this, their performance as a team will be related to their ability to effectively rely on the autonomous work of the different members and the competent execution of such work.

Kiffin-Petersen and Cordery (2003) and De Jong and Elfing (2010) find that trust amongst team members is positively related to their performance as a team. This suggests that trust aids the team in meeting the demands of increased interdependence and accountability within a self-managing team by engaging in productive interaction (De Jong and Elfring, 2010).

4.4. Methods

In studying management innovation within an organization we are studying a dynamic process, which may include many different actors. In order to best capture these dynamics we chose to employ a case study methodology. Case study is an appropriate methodology as it suited to our 'what' research question and allows for the investigation of a phenomenon in-depth and within its context (Yin, 2009).

For our analysis we selected the case of DSM, which had implemented a management system centered on self-managing teams at one of its plants (see Table 4.1). By focusing on self-managing teams at DSM, we analyze a "transparently observable" (Pettigrew, 1990) example of this management innovation in action. We employed this form of theoretical sampling as the organization open to cooperate with our study, which enabled us to further

understand this management innovation (Eisenhardt, 1989a) while complementing our findings in chapters 2 and 3.

Research Setting Our study was carried out at the Zor-f plant, a DSM anti-infectives plant that produces a key ingredient for a family of antibiotics through a biochemical process (see Exhibit 4.1). DSM is a large life sciences and material sciences company founded in the Netherlands in 1902, which employs over 20,000 people worldwide and had net sales of €7.7 billion in 2009. The production of anti-infectives is a part of DSM's Pharma business group, which represents 9.39% of the company's operation by net sales.

DSM's Zor-f Plant. We focused our study on the DSM Anti-Infectives plant Zor-f, where self-managing teams have been in place since the plant began production in 2001. In particular, we looked at the functioning of self-managing teams of process operators at Zor-f. The Zor-f plant, located within a DSM site in Delft, the Netherlands, specializes in the production of 7-ADCA through a biotechnology process (see Exhibit 4.1) and is one of the largest producers worldwide as well as one of the last ones outside of Asia.

The Zor-f plant employs 60 people, which includes process operators (28) in charge of running the production process, process technologists (4) overseeing the technical aspects of the biotechnology production, planners (3) in charge of logistics, as well as an operations manager, a maintenance manager and a plant managers. There are 5 self-managing teams of process operators with 5 operators each. These teams work in shifts of 8 hours, keeping the production facility running 24 hours a day, 7 days a week. Teams rotate shifts in cycles of 2 morning shifts, 2 afternoon shifts, 2 evening shift.

While the teams are self-managing and have no formal supervisor, there is an operations expert who sits as an interface between the teams and management. This position has no formal authority, in fact is at the same hierarchical level as process operators, however it is acknowledged by managers and operators alike as a key element keeping in the functioning of self-management at the plant.

In addition to this, a maintenance team services the plant. This team is the product of a joint venture between DSM and two maintenance companies, which means that some of the employees within the joint venture are DSM employees while others are not. The relationship between DSM and the maintenance joint venture is regulated by a contractual agreement between the parties. This

agreement in itself represented a departure from the way in which maintenance had been arranged in the past. Under this agreement, the joint venture has the obligation to deliver a functioning plant, however it did not charge DSM by the hour, but rather had a participation in the savings it could produce beyond an established threshold. These savings could relate to both maintenance and operations. In this way, maintenance personnel were explicitly invited to get involved to get involved in all aspects of the plant, effectively broadening the span of their work beyond maintenance itself.

Exhibit 4.1 Background: Biotechnology at DSM Zor-f Anti-Infectives Plant in Delft

DSM's Zor-f plant is a purpose-built biochemistry-based facility, which since 2001 has been producing a type of antibiotic called cephalexin. Cephalexin is a type of cephalosporin C, which is more efficient at fighting gram-negative bacteria while being less toxic than penicillin. Over the years, semi-synthetic antibiotics based on cephalosporin C, such as cephalixin, have been developed.

Between 1975-1985, cephalexin was produced employing traditional chemistry processes involving 10 different steps. This, however, led to a relatively large amount of waste, reaching 30-40 kg per kg of product. In addition, these processes would be run at high temperatures and would involve the use of several solvents and toxic materials.

While improvements to the process were later achieved through recycling and optimization, the breakthrough came in 1995 when biocatalysis was used to produce cephalexin, yielding a six-step process that produced 10 kg of waste per kg of product. Further development of this process at DSM have resulted in the production of the key raw material for cephalexin, 7-ADCA (7-aminodeacetoxy cephalosporanic acid), by direct fermentation, shortening the overall process to 4 steps. This process yields now between 2-5 kg of waste per kg of product. Additionally, the amount of toxic materials employed has been sharply reduced and production is carried out at lower temperatures.

Sources: DSM, 2000, *DSM N.V. Annual Report 2000*, OECD (2001) , *The Application of Biotechnology to Industrial Sustainability*, OECD, Paris

Data Collection and Data Sources. Primary data were collected by means of semi-structured interviews key informants involved with self-managing teams at the Zor-f plant during the second semester of 2009.

In order to have a better understanding of the phenomenon under study as well as the key individuals involved, before starting collecting data we had a series of meetings with members of the management at DSM. These interviews were carried out with managers from DSM corporate as well as with plant management at Zor-f. In these initial meetings we obtained information regarding key individuals involved in self-managing teams at Zor-f (formerly and currently working at this plant) as well as information regarding self-managing teams we subsequently used in drafting questions for our semi-structured interviews.

During our research, we interviewed current plant management at Zor-f as well as operators. Interviews with members of the plant management often led to referrals for other sources of evidence, typically former members of the plant management, now occupying management positions in other part of the organization within DSM. This contributed to a richer understanding of the underlying logic of the phenomenon under study and enabled us to contrast the different accounts given by the interviewees (Pettigrew, 1990; Yin, 2009). Similarly, we interviewed the operators themselves working in self-managing teams. We ensured we interviewed at least one member of each team. Table 4.3 shows an overview of the interviews carried out at the Zor-f plant.

In carrying out the interviews we employed multiple researchers. Typically two or three researchers would be present during the interviews, with one asking the questions and the other(s) taking notes and asking for clarification when needed. All interviews were recorded with the consent of interviewees and later transcribed. Overall, we had 864 minutes of recoded interviews, which represented 236 pages of transcripts plus field notes. For the analysis of the data, we also employed multiple researchers. In order to minimize the possibility of a biased interpretation of the data, three researchers independently analyzed the data. Furthermore, one of them had not been present during the interviews, so his or her analysis would not have been influenced by the collection of the data (Eisenhardt, 1989a).

Each researcher analyzed the data and coded passages that illustrated actions and behaviors associated with self-managing, transactional and transformational leadership, knowledge exchange and trust. We then compared the results of the analysis and further discuss the instances in which there was disagreement.

Table 4.3 Overview of interviews carried out at the Zor-f plant (2009-2010)

Job Function	Job Title	Number of Interviewees	Duration of interview (minutes)	Transcript (pages)
Management	Former Site Manager	1	81	16
Management	Plant Manager	1	60	15
Management	Former Plant Manager	4	260	51
Management	Operations Manager	1	79	22
Management	Maintenance Manager	1	60	17
Management/Production	Operations Expert	1	70	16
Production	Process Operator	6	254	99
Total		**15**	**864**	**236**

In addition, secondary data was collected in order to supplement the longitudinal study of the implementation of self-steering teams as well as the competitive dynamics present during that time. For this we relied primarily on annual reports (1998-2009), but also drew from other sources such as financial newspapers (e.g. Financieel Dagblad) and industrial organizations (e.g. European Chemical Industry Council). These data were not only relevant in articulating the context in which the implementation of a management innovation took place, but also as a way of triangulating the data obtained through interviews on related topics.

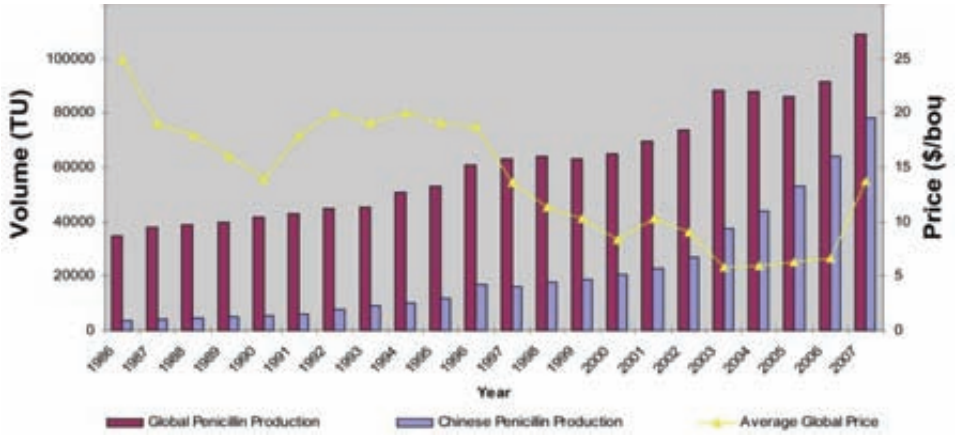
4.5. Background: competitive dynamics and the implementation of self-managing teams

DSM's participation in the global penicillin market was intensified in 1998 with the merger with Gist-Brocades, a Dutch producer of biotechnological products such as enzymes, penicillin and penicillin derivatives. As a part of DSM Anti-Infectives, this merger allowed DSM to develop the industrial production of

the breakthrough technological innovation allowing 7-ADCA to be produced through biocatalysis (see Exhibit 4.1) in the purpose-built Zor-f plant in Delft, opened in October 2001.

The global industrial production of penicillin is characterized by excess supply most of which is produced in China, where DSM itself produces through a joint venture with a local partner. Over the last 15 years, this has put pressure on producers outside of China as prices have decreased considerably over the same period. Figure 4.1 shows the increasing share of global penicillin production coming out of China. The growth of the Chinese producers and the decrease in the price of penicillin had serious implications for DSM anti-infectives in Delft and the viability of continuing production at the Zor-f plant. Against this backdrop, the future of Zor-f was unclear only a few years after its opening and the option of moving production entirely to China was being considered. In this environment, the management of Zor-f decided to push forward with the concept of self-managing teams and achieving increased efficiency through smaller teams, more interaction between different constituencies and a larger, more active, involvement of maintenance.

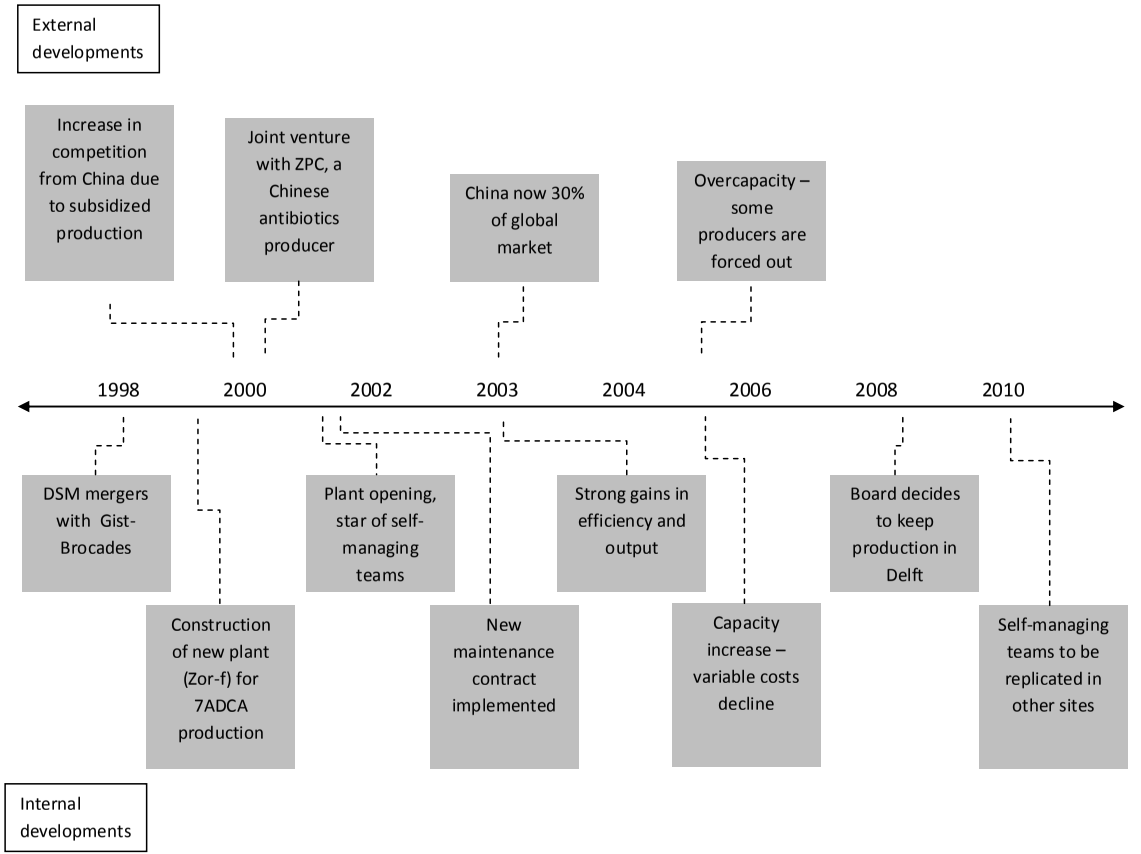
Figure 4.1 Global vs Chinese penicillin production and price (1986-2007)



Source: European fine chemicals group / CEFIC

Figure 4.2 presents a longitudinal view of the most significant milestones in the global penicillin market and the development of the Zor-f plant. This illustrates the external and internal dynamics that affected the implementation of self-managing tams at DSM anti-infectives.

Figure 4.2 External and Internal developments influencing the implementation of self-managing teams (2000-2010)



Sources: Royal DSM Annual Reports (1996-2009), Financieel Dagblad (2000) *Het ruikt weer cyclisch bij DSM*, Financieel Dagblad (1999) *DSM in Chinese antibiotica*.

4.6. Findings

Leadership. In our study of self-managing teams at DSM we observed that the leadership behavior displayed by different internal change agents showed traits of both transactional and transformational leadership. Each of these leadership behaviors, however, tended to be more strongly associated with different levels of hierarchy within the plant.

At the level of the plant management, leadership behavior was predominantly transactional. In this way, while keeping to the principles of self-managing teams, managers were primarily concerned with gaining compliance from operators by clearly specifying targets and rewards and intervening when the achievement of these goals seemed compromised.

Managers focused largely on achieving results, typically around production targets. This can be associated with contingent reward, a dimension of transactional leadership, whereby managers seek commitment to fulfill 'contracts' with subordinates (Avolio, 1999; Bass and Avolio, 1993). Interviews with members of the plant management (past and current) illustrate this.

> *"Everything is fine with me, as long as the key performance indicators are booked. (…) If you are incapable of keeping that business within the KPIs, and do not deliver on the contract, then you have 1 or 2 chances to do, and then you will be replaced".*
> Interview with former site manager at DSM Anti-Infectives Delft, 18-08-2009

> *"What we did (with managers) is to drill down their part of the organization into a set of key performance indicators. That was the contract we had. They were very detailed, not because they have to be detailed, but if because if you have detailed KPIs then you really start to understand your business".*
> *Interview with site plant manager at DSM Anti-Infectives Delft, 18-08-2009*

These quotes show how the contractual nature of the relationship between the site manager and managers at DSM anti-infectives. While the emphasis is on the accomplishment of targets, the manner in which they are achieved is largely left to the subordinates to decide. In this way, contingent reward seems to serve as

a means to set the targets that self-managing teams will strive for in the way they think best.

In a similar way, transactional leadership behavior, in particular contingent reward is also present in the relationship between the operations manager and the operators. Rewards are a strong feature in motivating operators and ensuring goals are met.

> *"I've got 52 direct reports, attention is the first thing that will suffer. But I still think that (…) you need a reward, and you can reward and get reward from anyone else, but a reward from your boss is different from a reward from your colleague".*
> *Interview with operations manager at DSM Anti-Infectives Delft, 29-09-2009*

Operators saw their relationship with management as being based on meeting these targets, with management intervening only to take corrective action when things did not go to plan. This reflects a second dimension of transactional leadership: active management by exemption.

Active management by exemption implies the leader's intervention when standards seem compromised and rectification is needed to meet objectives. In the case of DSM anti-infectives, teams were free to decide how to organize their work and distribute the workload as they saw fit. However, management would intervene when problems arouse.

> *"He (the plant manager) is responsible for everything at the end. He is the one looking down (…) he will come and tell somebody or the entire group "it's going the wrong way, we have to do this or we have to do that"".*
> *Interview with operator at DSM Anti-Infectives Delft, 15-09-2009*

> *"When there is a problem, then he (the plant manager) can talk about it at a higher level… or solve a huge problem. That's his thing I think".*
> *Interview with operator at DSM Anti-Infectives Delft, 17-09-2009*

Traits of transformational leadership were also prominent at DSM anti-infectives. These traits, however, primarily concerned the relationship between operators and the operations expert. Through this kind of leadership behavior, leaders stimulated operators by inspiring operators to identify with the plant's goals, stimulating them to take charge of their jobs and be creative while also attending to their individual needs.

> *"I think the problem [of motivation] is here as well, but the lever or solution is also in the operations expert, because he stimulates people, in a positive way, to find their own solutions, and manage their problems". Interview with operations manager at DSM Anti-Infectives Delft, 29-09-2009*

> *"His [the operations expert] role is management too, but in a way of trying to give a message to operators. (...) It is not formal. It has its ups and downs, but in a way ... you talk to him and go back to your seat and want to try and do it."*
> *Interview with operator at DSM Anti-Infectives Delft, 17-09-2009*

This illustrates the role of the operations expert as a predominately transformational leader capable of inspiring and stimulating operators to look for new solutions, experiment and challenge assumptions. This is key in the development and functioning of self-managing teams, as leaders will rely, to a large extent, on their ability to self-regulate, organize their work and deliver results without close supervision.

> *"I always try to approach people enthusiastically, because in organizations you always give a lot but don't get as much back. This, obviously, has its limits. It's all about emotions, really. If people feel good in their own skin and you give them the space to develop, it really helps them".*
> *Interview with operations expert at DSM Anti-Infectives Delft, 08-10-2009*

The operations expert's predominately transformational leadership behavior was important in motivating and stimulating operators to identify with their work

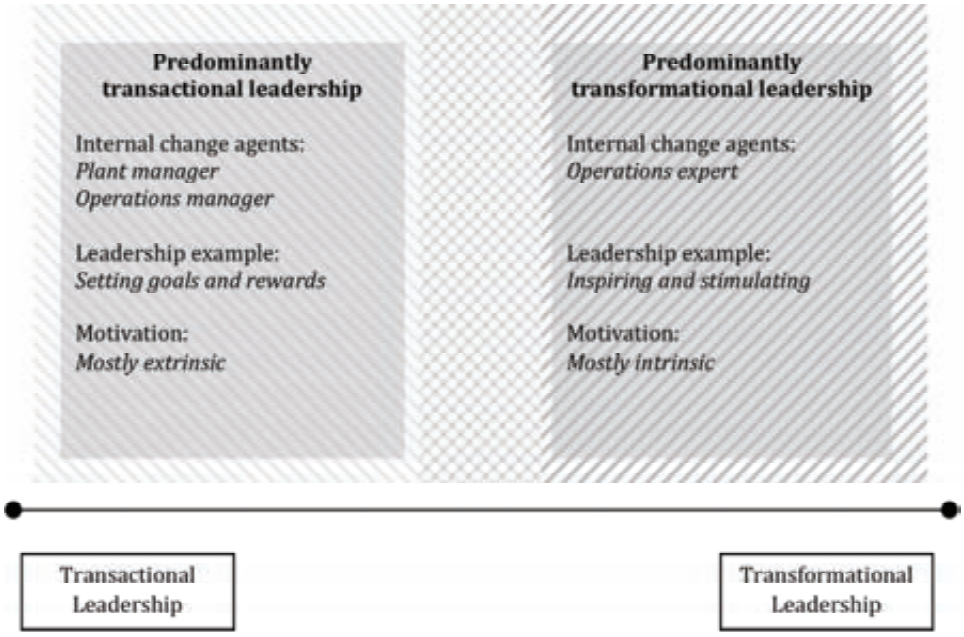
and the plant. Operators sought to perform well, largely, because they felt ownership for their work and the results the plant achieved. This identification with their job was closely related with the leadership behavior exercised by their leader, the operations expert.

> *"He [the operations expert] knows exactly how to talk to you. He knows how to 'massage' somebody to get him in the direction he wants, or to make him do something he actually didn't want to do. He knows how to do this in a good way".*
> *Interview with operator at DSM Anti-Infectives Delft, 15-09-2009*

Both transformational and transactional leadership behaviors are found at DSM anti-infectives, which seem to provide the appropriate environment for the development of self-managing teams. On the one hand, leaders make goals and rewards clear, an example of extrinsic motivation. On the other hand, they inspire others to identify with their work and their self-managing team in order to achieve their goals, which is an instance of intrinsic motivation. This may imply, as Vera & Crossan (2004) suggest, that leaders may be able to display both transactional and transformational traits. In the case of the DSM's Zor-f plant leadership spans both transactional and transformational behaviors. Figure 4.1 illustrates along a continuum the presence of both transactional and transformational leadership behaviors at the Zor-f plant.

> *Proposition 1: Employing both transactional and transformational leadership behaviors facilitates the pursuit of management innovation by allowing management to stress the achievement of results while stimulating experimentation with new practices, processes and structures.*

Figure4.3 Both transformational and transactional leadership behaviors present at Zor-f



Knowledge Exchange. The work of self-managing groups at DSM anti-infectives implied that these teams had a high degree of autonomy. In this way, teams decided upon how to carry out their work, without the intervention of a supervisor. Because of these, operators sought to exchange relevant information and knowledge not only as a way in which to stay current with new developments in the plant, but also in a bid to build on improvements introduced by other teams. In this way, exchange of knowledge took place within teams as well as between them.

> *"Before, you had an assistant chief and a chief. They would tell you what to do, and that's what you would do all day. Now we are part of team, we decide what people are going to do, when and how. (...) With this structure you will create specializations. For instance, if my specialization is fermentation, my colleagues will know. They know that, if something happens, they can always ask me for information". Interview with operator at DSM Anti-Infectives Delft, 15-09-2009*

"We have, almost every day, a work meeting where we come together for half an hour and we talk about problems and solutions within the plant. All specialties are represented".
Interview with operator at DSM Anti-Infectives Delft, 22-09-2009

Interestingly, knowledge exchange was also observed to take place between different constituencies. As team supervisors were not part of the organization at DSM anti-infectives, it was up to operators to exchange the necessary knowledge to complete tasks with others within the plant. In this way, it was common for teams to exchange knowledge with the maintenance teams.

Management encouraged the involvement of maintenance in knowledge exchange through the way in which their contract was arranged. Instead of being paid a fee for carrying out routine maintenance, they were asked to deliver a functioning plant and actively engage in suggestions for improvements (of which they would share the benefits). These suggestions could be around maintenance or operational cost reduction, explicitly inviting the maintenance team to become familiar with the job of process operators, and effectively expanding the scope of maintenance work. To further encourage this, the maintenance teams were also self-managing.

"The main idea of the maintenance concept is that the service operators add rather than optimize the process. These people are also self-managing. They picked it up quickly, they like the freedom".
Interview with Plant Manager at DSM Anti-Infectives Delft, 17-02-2010

"The scope of maintenance is wider than just maintenance. (…) Their job is not only to improve production, but also the whole way in which we work".
Interview with Maintenance Manager at DSM Anti-Infectives Delft, 17-02-2010

"They [maintenance] have the same goal as I do. Otherwise, we are pursuing two different goals. That's how we manage the whole process – by communicating at the same level. What we do here, they have to know

about, and also think from our perspective. We coach them and they coach us".
Interview with operator at DSM Anti-Infectives Delft, 17-09-2009

"It is up to us to manage, take responsibility and make decisions about, not only our job, but also things that have do with maintenance and groups around it. This is strengthening everybody (…) so it is a kind of web. In the early days you were just a person working in a specific place in the plant, not knowing what happened around you. Now you know nearly everything ".
Interview with operator at DSM Anti-Infectives Delft, 15-09-2009

The quotes above illustrate how people from different functions, operations and maintenance, engage in exchange of knowledge. Plant management attributes to this collaboration significant savings in maintenance cost and a decrease in production down-time due to maintenance. Initiatives from maintenance personnel have also led to more efficient use of energy, who in turn are more motivated by their involvement in the plant4.

Similarly, operators were encouraged to interact with the technologists at the plant. As operators became more involved in the generation of improvements in the production process, exchange of knowledge with technicians became commonplace.

"The technologists across the hall, they are making plans and you try to find the way to make their plans happen. We are also free to do things the way we want to. Our ideas of how to produce more … we also give them to the technologists and they find out whether it would be a good way of producing".
Interview with operator at DSM Anti-Infectives Delft, 15-09-2009

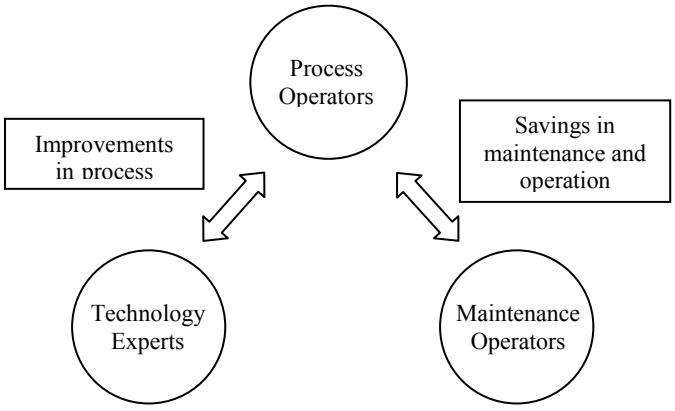
[4] Interviews with Plant Manager at DSM anti-infectives in Delft 17 February 2010 and interview with Maintenance Manager at DSM anti-infectives in Delft 17 February 2010.

"A good part of self-managing is that you get your ideas across. Before you would just be working here and nobody actually listened to you. You had your task and that was it. If you thought you had a good idea, there was always a boss saying 'no'. Now, because we're all close to the technologists, everybody is talking, listening and getting knowledge from each other. In the end, that will have a positive result in the quality and quantity of your product".
Interview with operator at DSM Anti-Infectives Delft, 15-09-2009

Management also encouraged this as it was seen as a way to improve the knowledge of operators and bring a host of new ideas for improvement to the attention of technologists. One of the ways in which this was encouraged was to reward the high performing operators who had ideas for improvements with the possibility to work with the technologists assisting in the development of projects or even working as internal consultants to improve processes. Figure 4.2 illustrates the knowledge exchange between the different teams of operators as well as the exchange of knowledge between operators and both technologists and maintenance.

Proposition 2: The pursuit of management innovation requires both the presence of diverse knowledge as well as the conditions for that knowledge to be exchanged across the organization

Figure 4.4 Knowledge exchange dynamics at Zor-f



Trust. The implementation of self-managing teams within an organization carries with it a certain amount of trust associated with the level of autonomy embedded in them. In the case of DSM anti-infectives trust is seen within the teams, where members trust one another, between teams, where members of the different teams trust members of other teams with whom they share the running of the same continuous production process, and finally we see trust in teams from management, where management trusts the different teams to perform their job without intervening in the way teams organize themselves as well as how they carry out the work.

Teams of operators were completely in charge of the plant during their shift. They were trusted to run the plant in the way they thought best. In the absence of s shift supervisor, management relied entirely on the teams and had only a limited ability to control or monitor their actions.

> *"It's like they [management] says: It's your plant! You are here for 8 hours with your group. You 5 people are the owners of the factory and you decide what is going to happen".*
> *Interview with operator at DSM anti-infectives in Delft, 15-09-09*

> *"You know that when you're here for 8 hours, you have to produce (…) and take care of the quality of the product. It is something that you take for granted… "I have to do it, but I have to do it right". Nobody will tell you how to do it".*
> *Interview with operator at DSM anti-infectives in Delft, 17-09-09*

Trust dynamics between plant management and the different teams was primarily from management to teams, with the opposite trajectory, i.e. from teams to management, not characterized by a strong trusting relationship. Teams saw the managerial positions at the plant as a step in the career of high-potentials typically rotated every 2 years.

Because of the independence with which they carried out their work, and the lack of a shift supervisor, operators at DSM anti-infectives also had to trust their teammates to do their fair share of work and do it well.

"It's easy to write down some numbers and say "I checked it"... that comes with the freedom I guess".
Interview with operator at DSM anti-infectives in Delft, 15-09-09

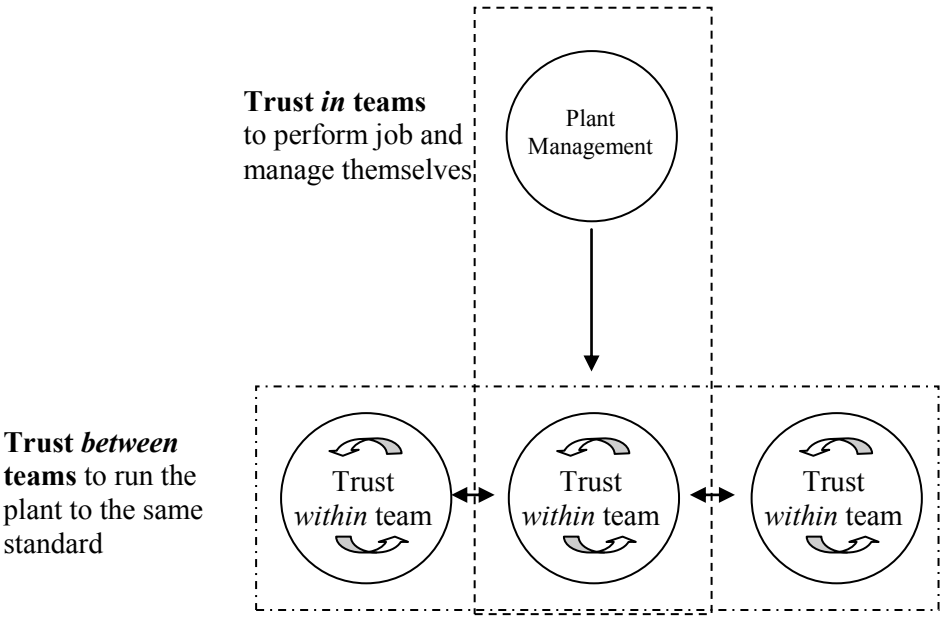
Trust between teams and management's trust in teams enabled them to become more entrepreneurial. Teams were trusted and encouraged to improve processes and try to become more efficient. In this way, teams introduced many changes to the processes, albeit some of them were ultimately unsuccessful. However, this also facilitates learning and improvement of team capabilities.

"Trust people and give them a chance, also when it goes wrong. Give them the trust to manage the next time. Self-managing has a learning curve, you need to go step by step".
Interview with operator at DSM anti-infectives in Delft, 22-09-09

Overall, trust at DSM anti-infectives plays an instrumental role in enabling operators to pursue self-managing teams. Because management shows trust in the different teams by being dependent on their actions to complete tasks, yet largely unable to monitor and control the process, operators enjoy the freedom to organize and carry out their work in the way they consider best. This trust, ultimately, fosters innovation in teams as they feel empowered to try new ways of doing things. Similarly, teams trust one another to run the production of the plant to the same standard, as teams depend on each other to meet the production goals established by the plant management. Figure 4.3 illustrates the different trust dynamics present at the Zor-f plant.

Proposition 3: Trust will contribute to an environment conducive to management innovation.

Figure 4.5 Trust dynamics at Zor-f



4.7. Discussion and Conclusion

In this chapter we set off to understand what the role of internal change agents is in the functioning of self-managing teams. For this, a longitudinal study of self-managing teams was carried out at Zor-f, a Royal DSM plant in Delft, the Netherlands. We focused on three key issues related to internal change agents, which are particularly relevant for self-managing teams: leadership, knowledge exchange and trust. Table 4.4 summarizes the main insights generated in this study and their relation to issues outlined in studies 1 and 2 of this dissertation.

Our study suggests that both transformational and transactional leadership are present at the Zor-f plant, though these leadership behaviors are each more strongly associated with different levels of hierarchy. Studies suggest that teams whose leaders display traits of transformational leadership will be more proactive (Belschak and Den Hartog, 2010) and will take a cooperative approach to resolving conflict, which in turn will improve team coordination and ultimately lead to better team performance (Zhang et al., forthcoming). In this way, this sort of leadership, shown at the Zor-f plant by the teams' leader, relates to the teams'

ability to efficiently organize and coordinate their functioning. Both leadership behaviors, nevertheless, contribute to an environment that is conducive to the development of self-managing teams, seemingly striking a balance between emphasizing the achievement of results and its associated rewards, and stimulating employees to identify and engage with their work. This resonates with studies that have proposed a guiding and encouraging role for leadership when organizing for self-managing teams (Stewart and Manz, 1995) and providing them with autonomy (Yukl and Yukl, 2002).

Table 4.4 Summary of main insights and relation to other studies

Insight	Key internal change agent	Key issue from previous studies
Both transactional and transformational leadership play a relevant role, though predominantly at different hierarchical levels	Plant management, operations expert	Leadership
Knowledge exchange within and between teams contributes to team autonomy	Process operators	Advice seeking
Knowledge exchange between different constituencies promotes familiarity with knowledge stocks and alignment across functions	Process, technical and maintenance operators	Advice seeking
Trust allowed teams to resolve task conflict and act without supervision	Process operators	-

Our study also showed that both transactional and transformational leadership played a role in managing for self-managing teams. This complements our study in Chapter 2 where we reported the positive association between management innovation and both transactional and transformational leadership. In this study, we go beyond this association in showing that both leadership styles contribute to management innovation, but seem to be associated with leaders at different hierarchical levels. This means that the two leadership behaviors operators are exposed to within the plant may encourage them to display attitudes of creativity and risk-taking –when transformational leadership is predominant– or risk aversion and accuracy –when transactional leadership is more prominent

(Kark and Van Dijk, 2007). This relates to the notion that employees may be able to attend to both creativity and accuracy (Miron et al., 2004), implying that both types of leadership behavior may play a role in creating an environment for self-managing teams. This ability to consider both transformational and transactional leadership and meet creativity and accuracy needs, further underpins the self-regulatory nature of self-managing teams.

Regarding knowledge exchange, our study shows that knowledge was not only exchanged within teams but also, and perhaps most importantly, between different constituencies with different –yet related– tasks and backgrounds. Due to the autonomy and ownership that operators had over their work, knowledge exchange was the natural way of carrying out their work and ensuring that the process run smoothly. The routine exchange of knowledge may make teams more efficient as the retrieval of information becomes more accurate as team members are familiar with the different knowledge stocks (Hinsz et al., 1997). During interviews carried out at the plant it was clear that operators found it essential to be able to communicate directly with the different parties involved in running the plant, be it from maintenance or technology. Besides the exchange of knowledge, this facilitates quick feedback regarding ideas, problems or solutions (Hinsz et al., 1997) which may be beneficial in understanding the ramifications of actions beyond an employee's function, e.g. operations, maintenance or technology. This in turn underscores the self-managing teams' discretion and control over their work. This may also contribute to implementing new ways of working within the plant, as operators know what knowledge is available within the plant and how to retrieve it (Hinsz et al., 1997).

Trust was also found to play a prominent role in self-managing teams. Our interviews point to trust within teams, between different teams, and from management towards the teams. Teams members display trust in one another as their taking on different, yet interrelated, roles without direct supervision and on which they depend. Such trust may contribute to the teams' ability to acquire new competencies and improve their functioning. De Dreu (2006) suggests that within-team trust may promote an environment in which task conflicts can be openly discussed and in this way stimulate creativity and innovation. In this way, teams may be better equipped to deal with issues related to work allocation, procedures and changes to the production processes they oversee that could improve their performance. Similarly to the dynamics we found between individuals (Serva et al., 2005), we also observed trust between teams, where individual teams relied

and depended on other teams to run the production process to a similar standard. A team's perception that another team's competence to carry out their tasks may have contributed to increasing the team's trust (Serva et al., 2005). The continuous nature of production process lends itself to allow teams to the previous shift managed the production process as they over the process. Lastly, we confirmed management's trust in the operators to run the production process and organize their functioning within their respective teams independently. While this is to be expected in a plant where self-managing teams have been put in place, it is not trivial. Support for trust and autonomy from management also signals support for innovative initiatives (Scott and Bruce, 1994) which contributes to an environment in which self-managing teams develop.

As a single case study, this study of self-managing teams as a management innovation introduced at a DSM plant is limited to the context of one firm. Future research may consider alternative methodologies, such as a multiple-case design, through which to assess the salience of the issues outlined in this chapter. Another limitation is analysis of internal knowledge exchange alone. Birkinshaw et al. (2008) clearly state a role for external knowledge to influence management innovation. Future research may consider the knowledge acquired from sources external to the organization or brought in by external personnel temporarily involved with the innovating organization such as consultants. Last, in order to understand the introduction and functioning of self-managing teams we drew on archival data and carried out interviews with key informants involved in the process. Future studies may consider alternative approaches closer to ethnographic research and witness the introduction of such changes to an organization to gain a more detailed understanding of the challenges faced by innovating organizations and how these may be overcome.

Overall, this case study makes several contributions to the management innovation literature. In particular, it describes the introduction and development of self-managing teams over a ten-year period, it shows how complementary leadership behaviors coexist, how trust and knowledge exchange processes affect the development of self-managing teams.

In conclusion, this study shows that different internal change agents play a fundamental role in the functioning of self-managing teams. The Zor-f plant at DSM shows that internal change agents such as plant management, but also the

operators themselves, are key in setting up an environment that is conducive to the success of management innovation, underscoring the paramount role of human agency.

CHAPTER 5.

IMPLICATIONS AND CONCLUSIONS

5.1. Introduction

In making a contribution to the emerging dialogue around management innovation, this dissertation aimed to improve our understanding of the role of internal change agents in the pursuit of management innovation. The role of internal change agents is particularly relevant as it relates to the central actors and main premise of management innovation, i.e. changes in what managers do and how they do it (Hamel, 2006) through new management practices, processes and structures (Birkinshaw et al., 2008). Internal change agents have the ability to recognize opportunities to pursue management innovation, as well as leading its implementation and gathering the necessary organizational resources to ensure its success. Such view espouses the rational perspective on management innovation (Birkinshaw et al., 2008), which depicts internal change agents as deliberately introducing management innovation to their organizations with the purpose of improving organizational performance. Such view also underscores the key role of human agency in propelling the pursuit of management innovation. Overall, these studies echo the arguments of Volberda and Van Den Bosch (2005) who maintain

that management matters most in providing the right organizational context to foster management innovation.

This dissertation indentified and investigated the role of different internal change agents spanning several hierarchical levels. While there may be a host of different internal change agents other than the ones studied in this dissertation, these studies contribute relevant insights into how individuals within firms can affect management practices, processes and structures. First, as the individuals at the top of organizations capable of identifying new trends in the environment and the need for management innovation within the organization, CEOs and their associated leadership behaviors, were studied. This study showed that both transactional and transformational leadership behaviors are positively associated with management innovation. In addition, transactional leadership was found to be strongly associated with management innovation in smaller firms, while in larger firms transformational leadership was more strongly associated with management innovation. Second, following upper-echelons literature (Hambrick and Mason, 1984) this dissertation also studied top management teams (TMTs) as a group of key internal change agents who, due to the nature of their position within the organization, are capable of fostering the pursuit of management innovation. To obtain a more complete understanding of the potential influence of TMTs, both demographic (TMT diversity) and process (TMT advice seeking) variables were employed in the analyses (Edmondson et al., 2003; Pelled et al., 1999) and found to positively affect management innovation. These relationships were stronger when TMTs had a high degree of social integration, though in highly dynamic environments homogeneous TMTs were better suited for management innovation. Lastly, in the study of a management innovation in action, it is illustrated how leadership –again both transactional and transformational– plays a key role in balancing the tension between meeting objectives and exploring new ways of working. In this study it is also shown how knowledge is exchanged throughout the organization ensuring all internal change agents know more about the jobs around them and stimulating quick feedback on innovative ideas. Moreover, trust is shown to contribute to an environment which stimulates creativity and innovation and allows for experimentation.

5.2. Summary of the findings of the studies

Study 1. Management Innovation and Leadership: the moderating role of organizational size

Study 1 reports a strong positive association between management innovation and both CEO transactional and transformational leadership behavior. This extends previous research which shows evidence of the relationship between leadership and product and organizational innovation (e.g. Elenkov and Manev, 2005). In addition, it departs from other studies primarily concerned with technological innovation, which focus only on transformational leadership (Howell and Higgins, 1990), or find transactional leadership to be negatively related (Lee et al., 2003). Organizational size was found to moderate the relationship between transformational leadership and management innovation such that this relationship was stronger in larger firms, possibly reflecting the fact that influencing a larger, more complex, organization requires a predominantly transformational leader. On the other hand, the relationship between transactional leadership and management innovation was moderated by organizational size such that this relationship was stronger in smaller organizations. This may imply that where 'contracts' can be more easily established and monitored, such as in small organizations, transactional leadership may be better in pursuing management innovation. Table 5.1 presents a summary of the hypotheses tested in study 1.

Table 5.1 Summary of hypotheses in study 1

Hypotheses	Support
H 1: Transformational leadership will be positively related to management innovation within an organization	Supported
H 2: Transactional leadership will be positively related to management innovation within an organization	Supported
H 3: Organizational size moderates the relationship between transformational leadership and management innovation such that increased organizational size weakens the positive effect of transformational leadership upon management innovation.	Not supported
H 4: Organizational size moderates the relationship between transactional leadership and management innovation such that increased organizational size weakens the positive effect of transactional leadership upon management innovation.	Supported

Study 2. Top Management Team Diversity and Management Innovation: the moderating role of social integration and environmental dynamism

In study 2 the focus is on top management teams as a group of key internal change agents who, due to the nature of their position, are capable of fostering or discouraging management innovation. This study suggests that TMTs where members have different sets of expertise and background are positively associated with management innovation. This association was found to be contingent upon at least two factors. On the one hand, the relationship was exacerbated when teams showed a high degree of social integration, as they were better equipped to profit from their diverse backgrounds. On the other hand, this relationship was weakened as environmental dynamism increased, signaling that in unstable environments diversity may become an obstacle in advancing management innovation.

This study also reports positive relationship between TMT internal advice seeking and management innovation, supporting the notion that consultation and openness towards colleagues (Inkpen and Choudhury, 1995) amongst key internal stakeholders (Birkinshaw et al., 2008) may positively impact the pursuit of new practices, processes and structures within organizations. Furthermore, this relationship was stronger when teams showed a high level of social integration.

Overall, exposure to diverse knowledge and backgrounds as well as the ability to access such knowledge through exchange with other internal change agents (Kanter, 1988; Rodan and Galunic, 2004) seems particularly relevant in the pursuit of management innovation. Table 5.2 presents a summary of the hypotheses tested in study 2.

Study 3. Management Innovation in Action: the case of self-managing teams

In study 3 the role of internal change agents is investigated in the context of self-managing teams. To do this, a case study was carried out at a Royal DSM plant in Delft, the Netherlands. In this case study, both transactional and transformational leadership were found to be present, though in addition to the findings reported in Study 1, each leadership style was found to be predominantly associated with different positions at different hierarchical levels, suggesting a complementary balance between the two styles which ultimately provides an environment conducive to self-managing.

Table 5.2 Summary of hypotheses in study 2

Hypotheses	Support
H 1: Top management team diversity will be positively related to management innovation.	Supported
H 2: Top management team internal advice seeking will be positively related to management innovation	Supported
H 3: TMT social integration moderates the relationship between TMT diversity and management innovation such that increased TMT social integration strengthens the positive effect of TMT diversity upon management innovation.	Supported
H 4: TMT social integration moderates the relationship between TMT internal advice seeking and management innovation such that increased TMT social integration strengthens the positive effect of TMT internal advice seeking upon management innovation.	Supported
H 5: Environmental dynamism moderates the relationship between TMT diversity and management innovation such that increased Environmental dynamism strengthens the positive effect of TMT diversity upon management innovation.	Not supported
H 6: Environmental dynamism moderates the relationship between TMT internal advice seeking and management innovation such that increased Environmental dynamism strengthens the positive effect of TMT internal advice seeking upon management innovation.	Not supported

Knowledge exchange was also investigated in this case study and was found to underpin the autonomy and ownership required for the efficient functioning of self-managing teams, extending our insights from Study 2. This also facilitated the quick feedback regarding ideas, problems or solutions that helped understanding the ramifications of actions beyond the employee's function. Lastly, this case study points to the role of trust as promoting an environment in which task conflict can be openly discussed and in this way stimulate creativity and innovation. Overall, Study 3 shows how different internal change agents, in management and otherwise, play a fundamental role in the functioning of self-managing teams, underscoring the role of human agency in management innovation. Table 5.3 presents a summary of the main insights from study 3.

Table 5.3 Summary of the main insights from study 3 and relation to studies 1 and 2

Insight	Key internal change agents	Relation to other studies
Both transactional and transformational leadership play a relevant role, though predominantly at different hierarchical levels	Plant management, operations expert	Study 1
Knowledge exchange within and between teams contributes to team autonomy	Process operators	Study 2
Knowledge exchange between different constituencies promotes familiarity with knowledge stocks and alignment across functions	Process, technicians and maintenance operators	Study 2
Trust allowed teams to resolve task conflict and act without supervision	Process operators	-

5.3. Theoretical Implications

Throughout this dissertation the different roles of various internal change agents were investigated making several contributions to the emergent dialogue on management innovation.

Contribution 1: Beyond technology innovation – why management matters

In describing other types of innovation related to management innovation, in this dissertation and in other literatures, it was argued that research has been biased towards technological innovation (Birkinshaw et al., 2008). Scholars, however, have recently argued that, while innovations around technology can deliver value for the innovating organization, it is crucial to also address innovation in the way in which the work of management is performed (Hamel, 2006, 2007; Volberda and Van Den Bosch, 2005). While it is not a core argument of the study, Chapter 4 offers a glimpse into the association and potential synergies of considering both technology and management innovation. As presented in the case study of the Zor-f plant of DSM anti-infectives, this plant was built specifically to house the production of a type of anti-infective through a revolutionary process involving biotechnology instead of chemistry. The company management recognized that the new plant and new technology could operate in a more efficient way if changes to how management was performed were introduced as well. The result, as reported in Chpater 4, was the elimination of certain supervisory positions and the implementation of self-managing teams. In the

context of a very specific technological advancement, this contributes to the role of human agency in providing an adequate organizational environment for management innovation to be pursued.

Contribution 2: the key role of internal change agents in the pursuit of management innovation

In their 2008 article, Birkinshaw and colleagues put forward a process framework of management innovation in which two types of agents are discerned: internal and external change agents. In this dissertation several inroads have been made towards understanding the role of internal change agents in the pursuit of management innovation. Internal change agents, as employees of the innovating organization will have access to knowledge, network and organizational resources, while also being accountable for the changes introduced to management practices, processes and structures. Their involvement illustrates the role of human agency in management innovation. This is a key distinction between internal and external change agents, as the former will have a large influence on the implementation and success of management innovation, while the latter will typically be involved as suppliers of ideas.

Internal change agents spanning different hierarchical levels within the organization play a relevant role in the pursuit of management innovation. At the CEO level (Chapter 2), leadership behavior contributes to the conditions under which management innovation may be generated and implemented (Hambrick and Mason, 1984). While CEOs may not be the developers or implementers of management innovation, their leadership will be instrumental in developing an environment conducive to such changes. Through transformational leadership, their vision may clarify an otherwise ambiguous innovation and inspire people to challenge assumptions and consider new ways of carrying out managerial work. This complements literature relating transformational leadership to performance (Koene et al., 2002), creativity (Mumford et al., 2002), and technical innovation (Jung et al., 2003). CEO transactional leadership was also found to be positively associated with management innovation. While prior research has found this leadership behavior to be detrimental for the pursuit of new ways of working (Amabile, 1998; Lee et al., 2003; Lee, 2008), in this dissertation it is argued that transactional leadership may be helpful in implementing management innovation, as suggested by Vera and Crossan (2004). In this way, transactional leadership

may reduce the complexity around management innovation while rewarding the achievement of goals by means associated to new practices, process, or structures. This dissertation also supports the notion that transformational leadership may be better suited to large organizations where it may be more efficient at reaching members in spite of more intricate networks and larger hierarchies (Sarros et al., 2002). Conversely, transactional leadership was found to be associated with smaller organizations where 'contracts' may be easier to establish and control.

At the TMT level (Chapter 3) both demography and process contribute to the pursuit of management innovation. Top management teams represent a key group of internal change agents in a position to interpret the vision for the organization and take concrete steps to introduce the necessary changes and provide an adequate environment to achieve that vision, functioning as an interface between the CEO and middle management (Raes, Heijltjes, Glunk, and Roe, 2011). This constitutes another example of the role of human agency in management innovation. Building on studies linking TMT diversity to innovation (Bantel and Jackson, 1989), performance (Campion et al., 1993), and problem solving (Keck, 1997) this dissertation reports positive impact of TMT diversity on management innovation, indicating that different backgrounds and experiences within the TMT may contribute to considering a wider spectrum of potentially new practices, processes or structures. This may be even more critical when TMTs display a high level of unity and cohesiveness. Conversely, when environments are particularly turbulent, diversity in the TMT may be detrimental for management innovation. In addition, TMT internal advice seeking was also positively associated with management innovation, indicating that the ability to access knowledge, share information and build enthusiasm and support for new ideas (Rodan and Galunic, 2004; Somech, 2006) is important in pursuing management innovation. This association, is even stronger when TMTs display high levels of social integration.

Finally, at the operational level (Chapter 4) front-line employees and their supervisors are the key change agents implementing and operating within new practices, processes and structures. At this level, both transactional and transformational leadership behaviors are involved in promoting the achievement of results while stimulating creativity and new ways of working. In addition, these internal change agents actively exchange knowledge related to their work and to new ways of work, seemingly aligning different constituencies around the successful implementation of new practices, processes, and structures.

Overall, this dissertation contributes to a more encompassing understanding of different internal change agents and their associated roles in the pursuit of management innovation. From CEO to front-line employees, internal change agents have ability to influence change through different ways, such as articulating compelling visions, providing an environment conducive to change and implementing such changes.

Contribution 3: Leadership dynamics in the pursuit of management innovation

Building on the rational view on management innovation and underscoring the role of human agency (Birkinshaw et al., 2008) this dissertation contributes to our understanding of how leadership can contribute to an environment conducive to management innovation.

Leaders within organizations not only have the ability to assign attention and resources towards different projects but also to influence followers. Using the notions of transactional and transformational leadership (Bass, 1985) this dissertation explored how they related to management innovation. Studies have proposed that transformational leaders, through idealized influence, inspirational motivation, intellectual stimulation and individual consideration (Avolio et al., 1999), are able to obtain performance beyond expectation from followers, which may extend to performance (Koene et al., 2002; Waldman et al., 2001) as well as creativity (Mumford et al., 2002). Conversely, transactional leadership, through contingent reward and management by exception, has been typified as reducing followers' ability to challenge the status quo and pursuit changes in management practices, processes and structures (Amabile, 1998; Lee et al., 2003; Lee, 2008). Remarkably, in two different studies which employed different methodologies (Chapters 2 and 4) both transactional and transformational leadership behaviors were found to be positively associated with the pursuit of management innovation. In the first instance (Chapter 2) CEO leadership behavior, both transactional and transformational, was positively associated with management innovation. In addition, the effect of transformational leadership was stronger in larger firms, while the opposite was true for transactional leadership. This points to two different ways to motivate followers to experiment with change around management innovation. On the one hand, in larger organizations, leaders may need to inspire followers to identify with a vision and be intrinsically motivated to find different ways of carrying out their duties. On the other hand, in smaller organizations, leaders may need to articulate specific arrangements that include the

utilization of new practices, processes or structures, or reward behavior that is conducive to the pursuit of such facets of management innovation.

In a different study (Chapter 4) the leadership dynamics of self-managing teams are reported. Here both transactional and transformational leadership coexist, though each leadership behavior is more prominent in different leaders with different hierarchies. At the level of the plant management, leadership towards operators is predominantly transactional, while at the level between operators and plant management leadership is predominantly transformational. This duality may contribute to striking a balance between the demands from plant management to meet certain deadlines and fulfill production targets, with the identification of employees with their work in a context of the autonomy afforded by self-managing teams. This relates to research which suggests that individuals are motivated to perform by having the ability, the motivation and drive to do their job (Parker et al., 2010). Different types of leadership may provide to this elements by assigning the tasks, allowing teams to determine how to best carry out their duties and giving ownership of the processes, increasing the intrinsic motivation and drive to adopt innovative ways of working (such as self-managing teams) and search for new ways of executing their job (e.g. through improvements to different processes). Additionally, the role of the 'operations expert' as an interface between plant management and operators may be crucial in brokering knowledge across the different levels, developing trust, which ultimately may lead to better decision and production quality (Raes et al., 2011).

Contribution 4: Operationalization of management innovation at the firm level

In carrying out the studies included in this dissertation scales were developed for the assessment of management innovation at the organizational level. While management innovation as defined by Birkinshaw et al. (2008) as new-to-the-world refers to rich instances of paradigm shifting development of new practices, processes and structures, their occurrence is relatively rare. By adopting a new-to-the-organization approach, the pool of potential instances of management innovations widens significantly, allowing for analyses such as the ones presented in Chapters 2 and 3. Overall, the scales developed reflect all three facets of management innovation, namely new practices, new processes and new structures.

5.4. Managerial Implications: pursuing management innovation

In addition to the theoretical implications that emerge from the studies reported in this dissertation, there are relevant implications for management that can contribute to the successful pursuit of management innovation within organizations.

Underscoring the notion that management matters most in innovation (Volberda and Van Den Bosch, 2005), change agents within the organization have a fundamental role in the pursuit of management innovation as they will be instrumental in providing a climate in which management innovation can be pursued. The kind of leadership behavior exercised within the organization can have a great bearing in the development and implementation of management innovation. Firms may seek to ensure that their top management displays leadership behaviors conducive to experimentation with new management practices, processes and structures. Achieving this may involve attuning recruitment policies or training personnel as the organization embarks in a process of management innovation. The prominence of either transactional or transformational leadership behavior may vary according to the size and complexity of the organization. Similarly, different hierarchical levels may be characterized by different types of leadership behavior.

Firms may also consider their managers' backgrounds as well as the communication processes available to members of the organization. Managers with diverse backgrounds and experiences may not only contribute different ideas, they may have the ability to recognize different opportunities for the pursuit of management innovation. Equally important is the availability of channels for fluent and efficient communication within the organization. Members in this way may be able to exchange knowledge and ideas, while building momentum and support for their management innovation initiatives, which may also facilitate implementation. This kind of exchange may also be stimulated by allowing and encouraging employees to search for new ways of working and sponsoring such initiatives by giving employees the freedom to pursue these ideas during their working hours. Successful developments could also see individuals taking on new roles to implement their ideas, thus affording them the possibility to interact with other people outside their network and exchanging new information.

While management innovation may come to influence the whole organization, its initial development may take place at one particular echelon, often the upper echelon. In order to effectively reach people in lower echelons and implement change, management may consider interface roles with a predominant transformational leadership behavior. This type of role may contribute to aligning expectations regarding new practices, processes or structures, build commitment to its implementation, and develop trusting relationships that facilitate implementation by lowering resistance to change.

In addition to furthering management innovation in business, this dissertation may also contribute to policy. Governmental policy has, particularly during the last decade, stimulated the development of search and development, often promoting and in many ways supporting investments in technology innovation – i.e. what to produce. However these or similar initiatives tend to offer limited support to management innovation – i.e. how the work of management is done. The joint support of innovation in what and how an economy produces may be the key to unlocking a knowledge economy's potential (Volberda and Van Den Bosch, 2005).

5.5. Limitations and suggestions for future research

This dissertation has several limitations that suggest new lines of inquiry. Since specific limitations to each of the studies have been outlined in the corresponding chapters, the focus of this section is on the general limitations of the dissertation and the correspondent areas of further research.

First, this dissertation deals with the role of internal change agents in the pursuit of management innovation. While the role of external change agents, as proposed by Birkinshaw et al. (2008) is acknowledged in the co-evolutionary framework of management innovation, it is not addressed in the studies presented in this dissertation. Mol and Birkinshaw (2009) suggests that firms may find in professional networks as well as in customers, clients and competitors, potential sources of new management practices. One potential avenue for research is to distinguish between different types of involvement at different stages along the management innovation process. For instance, firms may decide to introduce new management practices, processes or structures they see in their reference group (Greve, 1998) while involving others during its implementation. Moreover, the

distinction between internal and external change agent may become blurry as roles may actually be hybrid (2008).

Second, the case study of self-managing teams at DSM anti-infectives provides an illustration of certain elements of the process of management innovation. Future studies could delve deeper into how the process of management innovation unfolds. Birkinshaw et al. (2008) put forward a process framework of management innovation, though they suggest that in actual practice, management innovation may not follow the order implied in their framework. For instance, new practices may emerge and be tested in one part of the organization and then an agenda be set for its company-wide implementation.

Third, the impact on firm performance, in addition to the drivers, of innovation could be studied. In the studies included in this dissertation, management innovation was assumed to be pursued in order to further organizational goals (Birkinshaw et al., 2008) and improve organizational performance, yet it cannot be derived from these studies that management innovation had a positive impact on firm performance. Future research may examine the effects, and eventual contingencies, of management innovation on firm performance.

5.6. Conclusion

The aim of this dissertation was to understand the role of internal change agents in the pursuit of management innovation. The studies that make up this dissertation argue that their role is multifaceted and very relevant for the organizations implementing management innovation. This dissertation has also outlined several areas for future research that should continue to enrich the literature on management innovation.

Finally, this dissertation has made a contribution towards research in innovation other than technological, which has dominated academic research (Birkinshaw et al., 2008; Crossan and Apaydin, 2010). In this way, this dissertation has also made a contribution towards understanding *why management matters most in innovation.*

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NEDERLANDSE SAMENVATTING

Inleiding

Een van de fundamentele principes van strategisch management is dat het toepassen van innovatie bedrijven kan helpen beter te presteren dan de concurrenten. Hoewel innovatie, zowel in leidinggevende als in academische publicaties, een van de meest besproken onderwerpen is, heeft het onderzoek naar innovatie zich voornamelijk toegespitst op de ontwikkeling van nieuwe producten, technologie of diensten. Mitsdien krijgt het onderzoek naar technologische innovatie binnen het onderzoek naar innovatie de meeste aandacht. Desalniettemin, naarmate de concurrentie toeneemt, kunnen bedrijven voornemen om op zoek te gaan naar andere gebieden waarin geïnnoveerd kan worden om een concurrentievoordeel te verwerven en te behouden. Dit voornemen zou kunnen ontaarden in een zoektocht niet alleen naar nieuwe producten en nieuwe technologieën, maar ook naar manieren om de aard van het management van een bedrijf te veranderen, zijnde een management innovatie.

Management innovatie wordt gedefinieerd als het "genereren en implementeren van managementpraktijken, -processen, -structuren of -technieken die nieuw zijn voor de huidige stand van de kennis en bedoeld zijn om organisatorische doelen te bevorderen" (Birkinshaw, Hamel, en Mol, 2008, p.829). Hiermee wordt bedoeld datgene wat managers doen en hoe ze dat doen (Hamel, 2006), met bijzondere aandacht voor de activiteiten van een centrale speler, zijnde de manager. Hoewel

de systematische studie van management innovatie pas sinds kort de aandacht krijgt in de literatuur, zijn gevallen van dit fenomeen en de mogelijke voordelen daarvan voor bedrijven in overvloed aanwezig in verschillende stromen van de literatuur.

Onderzoeksdoel

Desondanks het belang van managementinnovatie voor organisatorische prestaties (Birkinshaw en Mol, 2006; Hamel, 2006), is verrassend weinig onderzoek gedaan naar de antecedenten ervan. Management innovatie is een omvattend en complex type van verandering in de wijze waarop het managementwerk wordt uitgevoerd. Ter illustratie: management innovaties ontstaan over het algemeen zonder een daarop toegespitste infrastructuur (zoals onderzoekslaboratoria die technologische innovatie ondersteunen) en zijn relatief abstract en ongrijpbaar, waardoor ze potentieel complex en dubbelzinnig kunnen worden (Birkinshaw et al., 2008).Het doel van dit proefschrift is het analyseren van de rol van interne veranderingsagenten. Dit onderstreept de belangrijke rol van individuen binnen het bedrijf, of - zoals Birkinshaw et al. (2008, p.826) betogen - "de kritische rol van het menselijk handelen."

Het doel van dit proefschrift is de rol van de interne veranderingsagenten in te begrijpen het streven naar management innovatie op bedrijfsniveau

Bij het aanpakken van dit probleem presenteert dit proefschrift drie verschillende studies waarin verschillende interne veranderingsagenten zijn geanalyseerd.

Bevindingen

Studie 1. Managementinnovatie en Leiderschap: de moderatie effect van de omvang van het bedrijf

Studie 1 meldt een positieve associatie tussen management innovatie en zowel CEO transactioneel als transformationeel leiderschapsgedrag. Dit gaat verder dan voorgaande onderzoek waarin de relatie tussen leiderschap en product- en organisatorische innovatie is aangetoond (bijv. Elenkov en Manev, 2005). Bovendien wijkt deze studie af van andere studies die met name betrekking hebben op technologische innovatie, die alleen gericht waren op transformationeel

leiderschap (Howell en Higgins, 1990), of een negatieve associatie meldden tussen transactioneel leiderschap en management innovatie (Lee et al., 2003).
De omvang van het bedrijf bleek de relatie tussen transformationeel leiderschap en management innovatie te modereren, met dien verstaande dat deze relatie sterker was in de grotere bedrijven, mogelijk als gevolg van het feit dat het beïnvloeden van een grotere, complexer bedrijf een overwegend transformationele leider vereist. Aan de andere kant werd de relatie tussen transactioneel leiderschap en management innovatie gematigd door de omvang van het bedrijf, met dien verstaande dat deze relatie sterker was in kleinere bedrijven. Dit zou kunnen betekenen dat wanneer 'contracten' makkelijker kunnen worden vastgesteld en gecontroleerd, zoals bij kleine bedrijven, transactioneel leiderschap wellicht beter is bij het nastreven van management innovatie.

Studie 2. Top Management Team Diversiteit en Management Innovatie: de moderatie effect van sociale integratie en omgevingsdynamiek
In studie 2 ligt de focus op de topmanagement teams (TMT's) als een groep van belangrijke interne veranderingsagenten, die vanwege de aard van hun positie in staat zijn management innovatie te bevorderen of te ontmoedigen. Deze studie suggereert dat TMT's een positieve associatie hebben met management innovatie, mits de TMT-leden verschillende samenstelling van deskundigheid en achtergrond hebben. Deze associatie blijkt afhankelijk ten zijn van ten minste twee factoren. Aan de ene kant werd de relatie verscherpt wanneer teams een hoge mate van sociale integratie vertoonden, aangezien zij beter uitgerust waren om te profiteren van hun diverse achtergronden. Aan de andere kant werd deze relatie verzwakt bij toename in omgevingsdynamiek. Dit duidt erop dat in onstabiele omgevingen diversiteit een belemmering kan zijn bij het bevorderen van management innovatie.
Deze studie rapporteert ook positieve relatie tussen interne kennisuitwisseling in TMT's en management innovatie. Dit ondersteunt de gedachte dat overleg en openheid ten opzichte van collega's (Inkpen en Choudhury, 1995) tussen belangrijke interne belanghebbenden (Birkinshaw et al., 2008) een positieve invloed kan hebben op het streven naar nieuwe praktijken, processen en structuren binnen bedrijven. Deze relatie was bovendien sterker bij teams die een hoge mate van sociale integratie vertoonden.
In het algeheel genomen lijkt blootstelling aan diverse kennis en achtergronden, alsmede het vermogen om die kennis te benaderen via uitwisseling met andere

interne veranderingsagenten (Kanter, 1988; Rodan en Galunic, 2004), bijzonder relevant te zijn bij het nastreven van management innovatie.

Studie 3. Management Innovatie in Actie: de casus van zelfsturende teams
In studie 3 wordt de rol van interne veranderingsagenten in het kader van zelfsturende teams onderzocht. Hiertoe is een casusstudie uitgevoerd bij een Koninklijke DSM-fabriek in Delft, Nederland. In deze casusstudie bleek zowel transactioneel als transformationeel leiderschap aanwezig te zijn, maar in aanvulling op de bevindingen gerapporteerd in studie 1, bleek elke stijl van leidinggeven voornamelijk geassocieerd te zijn met verschillende posities op verschillende hiërarchische niveaus. Dit suggereert een complementair evenwicht tussen de twee stijlen leiderschapsgedrag, dat uiteindelijk zorgt voor een omgeving die bevorderlijk is voor zelfsturing. In deze casusstudie is ook de uitwisseling van kennis onderzocht, die de autonomie en eigen inbreng die nodig zijn voor het efficiënt functioneren van zelfsturende teams bleek te ondersteunen, waarmee onze inzichten uit studie 2 zijn uitgebreid. De uitwisseling van kennis vergemakkelijkte ook de snelle feedback met betrekking tot ideeën, problemen of oplossingen die hielpen inzicht te geven in de gevolgen van de acties verder dan de functie van de werknemer. Ten slotte wijst deze casusstudie op de rol van het vertrouwen, die een klimaat bevordert waarin een conflict omtrent een taak openlijk kan worden besproken en op deze manier creativiteit en innovatie stimuleert. In het algeheel genomen toont studie 3 hoe de verschillende interne veranderingsagenten, in management en anderszins, een fundamentele rol spelen in het functioneren van zelfsturende teams, waarmee de rol van menselijk handelen in management innovatie wordt benadrukt. Tabel 5.3 geeft een overzicht van de belangrijkste inzichten uit studie 3.

Theoretische Implicaties
In dit proefschrift zijn verschillende rollen van verschillende interne veranderingsagenten onderzocht, waarmee een aantal bijdragen zijn geleverd aan de opkomende discussie over management innovatie.

Bijdrage 1: Meer dan alleen technologische innovatie - waarom management van belang is
Bij het beschrijven van andere vormen van innovatie die verbonden zijn aan management innovatie is in dit proefschrift en in andere literatuur aangevoerd dat het onderzoek vooral is gericht op technologische innovatie (Birkinshaw et al.,

2008). Echter, geleerden hebben onlangs betoogd dat hoewel de innovaties met betrekking tot technologie een toegevoegde waarde kunnen leveren voor het innoverend bedrijf, het van cruciaal belang is om de innovatie ook te bezien als een manier waarop het werk van management wordt uitgevoerd (Hamel, 2006, 2007; Volberda en Van Den Bosch, 2005). Hoewel het niet een kernargument van deze studie is, biedt hoofdstuk 4 een blik in de associatie en potentiële synergieën als de technologie én management innovatie in aanmerking worden genomen. Zoals gepresenteerd in de casusstudie uitgevoerd bij DSM, was deze fabriek speciaal gebouwd om de productie van een bepaalde anti-infective te huisvesten, door een revolutionair proces waarbij in plaats van chemie gebruik werd gemaakt van biotechnologie. De bedrijfsleiding heeft erkend dat de nieuwe fabriek en de nieuwe technologie efficiënter kunnen opereren wanneer veranderingen met betrekking tot het voeren van management tegelijkertijd worden ingevoerd. Het resultaat, zoals gerapporteerd in hoofdstuk 4, was de uitschakeling van bepaalde toezichthoudende functies en de implementatie van zelfsturende teams. In de context van een zeer specifieke technologische vooruitgang, draagt dit bij aan de rol van het menselijk handelen in het verstrekken van een adequate organisatorische omgeving om management innovatie na te streven.

Bijdrage 2: De sleutelrol van de interne veranderingsagenten bij het streven naar management innovatie

In dit proefschrift zijn een aantal nieuwe benaderingen geschetst om de rol van interne veranderingsagenten bij het streven naar management innovatie beter te begrijpen. Interne veranderingsagenten, zijnde medewerkers van het innoverend bedrijf, zullen toegang hebben tot kennis, netwerk en organisatorische middelen, terwijl ze ook verantwoording dragen voor de veranderingen in management praktijken, processen en structuren. Hun betrokkenheid illustreert de rol van het menselijk handelen in management innovatie.

Interne veranderingsagenten, verspreid over verschillende hiërarchische niveaus binnen een bedrijf, spelen een belangrijke rol bij het streven naar management innovatie. Op de CEO-niveau (hoofdstuk 2), dragen zowel transactioneel als transformationeel leiderschapsgedrag bij aan de voorwaarden waaronder management innovatie kan worden gegenereerd en geïmplementeerd (Hambrick en Mason, 1984). Op de TMT-niveau (hoofdstuk 3), dragen zowel de demografie als het proces bij aan het streven naar management innovatie. Topmanagement teams vormen een sleutelgroep van de interne veranderingsagenten, die in staat zijn om de visie van het bedrijf te interpreteren en concrete maatregelen te nemen

om de noodzakelijke veranderingen door te voeren en een passende omgeving voor die visie te realiseren, handelend als een interface tussen de CEO en middel management (Raes, Heijltjes, Glunk en Roe, 2011). Dit is een ander voorbeeld van de rol van het menselijk handelen in management innovatie. Ten slotte, op operationeel niveau (hoofdstuk 4), zijn de frontlijn werknemers en hun begeleiders de sleutel veranderingsagenten, die de uitvoering en het opereren binnen de nieuwe praktijken, processen en structuren bewerkstelligen. Op dit niveau bevorderen zowel transactioneel als transformationeel leiderschapsgedragingen het behalen van resultaten, en stimuleren tegelijkertijd creativiteit en nieuwe manieren van werken. Bovendien wisselen deze interne veranderingsagenten actief kennis uit met betrekking tot hun werk en de nieuwe manieren van werken, waarbij verschillende elementen rond de succesvolle implementatie van nieuwe praktijken, processen en structuren op een lijn lijken te worden gebracht.

Bijdrage 3: Leiderschapsdynamiek bij het streven naar management innovatie

Voortbouwend op de rationele visie van management innovatie en het benadrukken van de rol van het menselijk handelen (Birkinshaw et al., 2008) draagt dit proefschrift bij aan ons begrip van hoe leiderschap kan bijdragen aan een gunstige omgeving voor management innovatie.

Leiders binnen bedrijven hebben niet alleen de mogelijkheid om aandacht en middelen toe te wijzen aan verschillende projecten, maar ook om volgelingen te beïnvloeden. Met behulp van de noties van transactioneel en transformationeel leiderschap (Bass, 1985) is in dit proefschrift onderzocht hoe deze zich verhouden tot management innovatie. In twee verschillende studies waarin verschillende methodologieën zijn gebruikt (hoofdstukken 2 en 4), bleken zowel transactioneel als transformationeel leiderschapgedragingen positief geassocieerd te zijn met het streven naar management innovatie. In eerste instantie (hoofdstuk 2) was CEO-leiderschapsgedrag, zowel transactioneel als transformationeel, positief geassocieerd met management innovatie. Bovendien was het effect van transformationeel leiderschap sterker bij grotere bedrijven, terwijl het omgekeerde gold voor transactioneel leiderschap. In een andere studie (hoofdstuk 4) wordt gerapporteerd over de leiderschapsdynamiek van zelfsturende teams. In deze situatie bestaan zowel transactioneel als transformationeel leiderschap naast elkaar, hoewel elk leiderschapsgedrag meer prominent aanwezig is in verschillende leiders afkomstig uit verschillende hiërarchieën. Deze dualiteit kan bijdragen tot het vinden van evenwicht tussen de eisen van de bedrijfsleiding om bepaalde deadlines en productietargets te halen met de identificatie van

medewerkers met hun werk in een context van de autonomie die wordt geboden door zelfsturende teams. Dit heeft betrekking op onderzoek dat suggereert dat individuen gemotiveerd zijn om te presteren als zij het vermogen, de motivatie en de drive hebben om hun werk te doen (Parker et al., 2010). Verschillende soorten leiderschap kunnen bijdragen aan deze elementen middels het toewijzen van taken, waardoor teams zelf kunnen bepalen hoe hun taken het beste kunnen worden uitgevoerd en door het overdragen van verantwoordelijkheid over de processen, waardoor de intrinsieke motivatie en de drive om vernieuwende manieren van werken aan te nemen (zoals zelfsturende teams) en het zoeken naar nieuwe manieren van hun werk uit te voeren (bijvoorbeeld door verbeteringen van verschillende processen) wordt vergroot. Daarnaast kan de rol van het 'operations expert' als een interface tussen de bedrijfsleiding en de operators van cruciaal belang zijn bij het verspreiden van kennis over de verschillende niveaus, het ontwikkelen van vertrouwen die uiteindelijk kan leiden tot betere besluitvorming en de kwaliteit van de productie (Raes et al., 2011).

Bijdrage 4: Operationalisering van management innovatie op bedrijfsniveau
Bij de uitvoering van de studies in dit proefschrift zijn schalen ontwikkeld voor de beoordeling van management innovatie op organisatorisch niveau. Hoewel management innovatie, zoals gedefinieerd door Birkinshaw et al. (2008) als 'new-to-the-world', verwijst naar rijkelijke voorbeelden van paradigmaverschuiving in ontwikkeling van nieuwe praktijken, processen en structuren, is hun voorval relatief zeldzaam. Door het aanwenden van een 'new-to-the-organisation' aanpak (Vaccaro, et al., 2010), wordt de pool van potentiële gevallen van management innovaties aanzienlijk vergroot, waardoor de analyses zoals die in de hoofdstukken 2 en 3 zijn gepresenteerd mogelijk worden gemaakt. In het algeheel genomen weerspiegelen de ontwikkelde schalen alle drie de facetten van management innovatie, namelijk de nieuwe praktijken, nieuwe processen en nieuwe structuren.

Implicaties voor het Management
Ter onderstreping van het idee dat management het meest van belang is, spelen veranderingsagenten binnen het bedrijf een fundamentele rol bij het streven naar management innovatie, aangezien zij een omgeving bewerkstelligen waarin management innovatie kan worden nagestreefd. Het soort leiderschapsgedrag dat wordt uitgeoefend binnen het bedrijf kan een grote invloed hebben op de ontwikkeling en uitvoering van management innovatie. Bedrijven zouden kunnen proberen ervoor te zorgen dat hun topmanagement een leiderschapsgedrag

vertoont die bevorderlijk is voor experimenten met nieuwe management praktijken, processen en structuren. Om dit te bereiken zou het wervingsbeleid hierop kunnen worden afgestemd of het personeel zou kunnen worden opgeleid als het bedrijf begint aan een proces van management innovatie. Het op de voorgrond treden van transactioneel dan wel transformationeel leiderschapsgedrag kan variëren naar gelang van de grootte en complexiteit van het bedrijf.
Bedrijven kunnen ook de achtergronden van hun managers, alsmede de communicatieprocessen beschikbaar voor leden van het bedrijf in overweging nemen. Mensen met verschillende achtergronden en ervaringen kunnen niet alleen verschillende ideeën bijdragen, maar kunnen ook het vermogen hebben om verschillende kansen voor het streven naar management innovatie te herkennen. Even belangrijk is de beschikbaarheid van kanalen voor vlotte en efficiënte communicatie binnen het bedrijf. Leden van het bedrijf worden op deze manier in staat gesteld om kennis en ideeën uit te wisselen, terwijl er momentum en ondersteuning wordt gecreëerd voor hun management innovatie initiatieven, die ook de implementatie kunnen vergemakkelijken.
Hoewel management innovatie het hele bedrijf zou kunnen beïnvloeden, vindt de oorspronkelijke ontwikkeling plaats op een bepaalde laag, vaak de hoogste laag binnen het bedrijf. Om mensen in de lagere lagen van het bedrijf effectief te bereiken en de verandering te implementeren, kan het management het gebruik van interface rollen overwegen. Een interface rol kan bijdragen aan de harmonisatie van verwachtingen ten aanzien van nieuwe praktijken, processen of structuren, het bewerkstelligen van betrokkenheid bij de tenuitvoerlegging ervan, en de ontwikkeling van vertrouwde relaties die de implementatie vergemakkelijken door het verlagen van de weerstand tegen verandering.

Behalve het stimuleren van management innovatie in het bedrijfsleven, kan dit proefschrift ook een bijdrage leveren aan beleid. Overheidsbeleid heeft, met name tijdens het laatste decennium, de ontwikkeling van de kenniseconomie gestimuleerd, waarbij vaak investeringen in technologische innovatie - wat te produceren - werden bevorderd en op vele manieren ondersteund. Echter, deze of soortgelijke initiatieven lijken management innovatie - hoe het werk van het management wordt gedaan – maar beperkt te ondersteunen. De gezamenlijke ondersteuning van innovatie in wat en hoe een economie produceert, kan de sleutel zijn tot het ontsluiten van het potentieel van een kenniseconomie.

RESUMEN EN ESPAÑOL

Introducción

Uno de los principios fundamentales del gestión estratégica es que la innovación puede ayudar a las organizaciones a superar a su competencia. Mientras que, no sorprendentemente, la innovación es uno de los temas más usualmente estudiados en publicaciones tanto académicas como empresariales, la investigación ha en general entendido innovación como el desarrollo de nuevos productos, tecnologías o servicios. Como consecuencia de esto, la innovación tecnológica ha sido predominante en la investigación relacionada a la innovación. De todos modos, al intensificarse la competencia, las empresas pueden comenzar a buscar otras áreas en donde innovar como medio de ganar y mantener su competitividad. Esto no solo supondría no solamente nuevos productos o nuevas tecnologías, pero también cambios en la naturaleza de la gestión de una empresa, es decir, innovación en gestión.

Innovación en gestión es definida como la "generación e implementación de una práctica, proceso, estructura o técnica de gestión que es nueva para el estado de arte y tiene como intención facilitar los objetivos de la organización" (Birkinshaw, Hamel, y Mol, 2008, p. 829). Esto se refiere a lo que los gerentes hacen y cómo lo hacen (Hamel, 2006), destacando la acción de un actor central, el gerente. Mientras que el estudio sistemático de innovación en gestión sólo ha comenzado a emerger recientemente, ejemplos de este fenómeno y sus potenciales beneficios

para las organizaciones abundan en diferentes tipos de literaturas. Uno de los ejemplos más prominentes es la estructura multidivisional, desarrollada e implementada por General Motors en los años 1920 (Chandler, 1920), la cual subsecuentemente se convirtió en una de las más grandes empresas del mundo, mientras que la estructura multidivisional se convirtió en la estructura más utilizada por décadas.

Objetivo de Investigación

Dada su importancia para el rendimiento organizacional (Birkinshaw y Mol, 2006; Hamel, 2006), sorprendentemente poca investigación ha sido dedicada a la explicación de los antecedentes de la innovación en gestión. La innovación en gestión implica un tipo de cambio multifacético y complejo en la manera en la cual el trabajo de gestión es realizado. Por ejemplo, la innovación en gestión típicamente emerge sin una estructura dedicada (como un laboratorio de investigación – lo cual asiste a la innovación tecnológica) y es relativamente abstracta e intangible, lo que la hace potencialmente compleja y ambigua (Birkinshaw et al., 2008).

El objetivo de esta tesis es analizar el role de los agentes internos de cambio. Esto remarca el relevante rol de individuos dentro de la organización o – como Birkinshaw et al. (2008, p. 826) lo han puesto – "el rol crítico de la agencia humana".

El objetivo de esta tesis es entender el rol de los agentes internos de cambio en la búsqueda de innovaciones en gestión al nivel de la empresa

En función de este objetivo, esta tesis presenta tres estudios en los que diferentes agentes internos de cambio don analizados.

Estudio 1. Innovación en gestión y liderazgo: el rol moderador del tamaño organizacional

El estudio 1 reporta una asociación positiva entre innovación en gestión y tanto el comportamiento de liderazgo transaccional y transformacional por parte del CEO. Esto extiende investigaciones previas que muestran evidencia entre liderazgo e innovación en productos (ej. Elenkov y Manev, 2005). Adicionalmente, departe de otros estudios principalmente concentrados en

innovación tecnológica que están enfocados solamente en liderazgo transformacional (Howell y Higgins, 1990), o encuentran el liderazgo transaccional negativamente relacionado con innovación (Lee et al., 2003). Este estudio también encontró al tamaño organizacional como un moderador de la relación entre liderazgo transformacional y innovación en gestión de tal modo que esta relación es más fuerte en organizaciones más grandes, posiblemente reflejando el hecho que influenciar una organización grande, más compleja, requiere un tipo de liderazgo predominantemente transformacional. Mientras tanto, la relación entre liderazgo transaccional e innovación en gestión fue moderado por tamaño organizacional de manera tal que esta relación es más fuerte en empresas de menor tamaño. Esto puede implicar que donde 'contratos' puedan ser más fácilmente controlados, como en una organización pequeña, el liderazgo transaccional puede ser más favorable en la búsqueda de innovación en gestión.

Estudio 2. Diversidad en el equipo de alta dirección e innovación en gestión: el rol moderador de la integración social y el dinamismo ambiental

En el estudio 2 el foco recae sobre el equipo de alta dirección como un grupo de agentes internos de cambio clave quienes, dada la naturaleza de su posición, son capaces de estimular o desalentar la innovación en gestión. Este estudio sugiere que equipos de alta dirección donde los miembros tienen diferente tipos de especialidades y conocimientos están positivamente asociados con innovación en gestión. Esta asociación depende de al menos dos factores. Por un lado, la relación es exacerbada cuando los equipos también tenían un alto nivel de integración social, ya que podrían beneficiarse más de su diversidad en especialidades y conocimiento. Por el otro lado, la relación se vuelve más débil cuando el dinamismo ambiental es alto, señalando que en ambientes inestables la diversidad puede volverse un obstáculo en el avance de la innovación en gestión.

Este estudio también reporta una relación positiva entre la búsqueda interna de conocimiento en el equipo del alta dirección y la innovación en gestión, dando soporte a la noción que consultar y estar abierto a otro colegas (Inkpen y Choudhury, 1995) puede impactar positivamente la búsqueda de nuevas practicas, procesos y estructuras dentro de las organizaciones. Esta relación fue también más fuerte cuando el nivel de integración social fue más alto.

En general, la exposición a diversos tipos de conocimiento y experiencias, así como la habilidad para acceder a tal conocimiento a través del intercambio con otros agentes internos de cambio (Kanter, 1988; Rodan y Galunic, 2004) parece de especial relevancia en la búsqueda de innovaciones en gestión.

Estudio 3. Innovación en gestión en acción: el caso de los equipos autogestionados.

En el estudio 3 el rol de los agentes internos de cambio es investigado en el contexto de equipos autogestionados. Con tal fin, un caso de estudio fue realizado en una planta de la DSM, una empresa multinacional holandesa productora de químicos. En este caso de estudio tanto liderazgo transaccional como transformacional fueron observados, aunque en adición a lo reportado en el estudio 1, cada tipo de estilo de liderazgo estaba predominantemente asociado con diferentes posiciones en diferentes jerarquías, sugiriendo un balance entre los dos estilos que, en última instancia, provee un ambiente propicio para la autogestión. El intercambio de conocimiento también fue estudiado en este caso de estudio, apuntalando la autonomía y el sentido de propiedad requerido para el funcionamiento eficiente de equipos autogestionados, extendiendo los resultados del estudio 2. Esto también facilitó la rápida obtención de comentarios acerca de ideas, problemas o soluciones que ayudó a entender las ramificaciones de las acciones más allá de las funciones de los empleados. Por último, este caso de estudio señala al rol de la confianza para promover un ambiente en el cual conflicto en las tareas específicas del trabajo puede ser discutido abiertamente y de esta manera estimular la creatividad e innovación.

En general, el estudio 3 muestra como diferentes agentes internos de cambio, tanto en gestión como en otros cargos, juegan un papel fundamental in el funcionamiento de los equipos autogestionados, subrayando el role de la agencia humana en la innovación en gestión.

Implicaciones teóricas

A través de esta tesis los diferentes roles de varios agentes internos de cambio fueron investigados, haciendo varias contribuciones al emergente dialogo sobre innovaciones en gestión.

Contribución 1: Más allá de la tecnología – porque la gestión importa

Al describir otros tipos de innovación relacionados a la innovación en gestión, en esta tesis y otra literatura, fue argumentado que la investigación estaba volcada principalmente a la innovación tecnológica (Birkinshaw et al., 2008). Académicos, sin embargo, han argumentado recientemente que, mientras que la innovación en tecnología puede dar valor a una empresa, es también crucial prestar atención a la innovación en la manera en que el trabajo de gestión es realizado (Hamel, 2006, 2007; Volberda y Van Den Bosch, 2005). Si bien no es un argumento fundamental

de este estudio, el tercer estudio deja entrever la asociación y potencial sinergía en considerar conjuntamente la innovación tecnológica y la innovación en gestión. Tal como presentado en el caso de estudio llevado a cabo en DSM, esta planta fue construida específicamente para la producción de anti-infectivos a través de un revolucionario proceso biotecnológico en vez del tradicional proceso químico. La gerencia de la compañía reconoció que la nueva planta y la nueva tecnología podían operar de una manera más eficiente si también se introdujesen cambios en la manera en que el trabajo de gestión es realizado. El resultado, como es reportado en el capítulo 4, fue la eliminación de ciertas posiciones de supervisión y la implementación de equipos autogestionados. En el contexto de un avance tecnológico muy específico, esto contribuye al rol de la agencia humana en proveer un ambiente organizacional adecuado para la innovación en gestión.

Contribución 2: el rol clave de los agentes internos de cambio en la búsqueda de innovación en gestión

En esta tesis varios avances fueron hechos hacia el entendimiento del rol de los agentes internos de cambio en la búsqueda de innovación en gestión. Los agentes internos de cambio, como empleados de la compañía innovadora, tienen acceso al conocimiento, interrelaciones y recursos organizacionales, al tiempo que son responsables por los cambios introducidos a la práctica, procesos y estructuras de la gestión. Su desempeño ilustra el role de la agencia humana en la innovación en gestión.

Agentes internos de cambio que abarcan diferentes niveles jerárquicos en la organización juegan un papel relevante en la búsqueda de innovación en gestión. Al nivel del CEO (Capítulo 2) tanto el liderazgo transformacional como el transaccional contribuyen a las condiciones bajo las cuales la innovación en gestión puede ser generada e implementada (Hambrick y Mason, 1984). Al nivel del equipo de alta dirección (Capítulo 3) tanto la demografía como los procesos contribuyen a la búsqueda de innovación en gestión. Los equipos de alta dirección representan un grupo clave de agentes internos de cambio en una posición para interpretar la visión para la organización y tomar pasos concretos para introducir los cambios necesarios y proveer un adecuado entorno para alcanzar esa visión, funcionando como una interfase entre el CEO y los mandos intermedios (Raes, Heijltjes, Glunk y Roe, 2011). Esto constituye otro ejemplo del role de la agencia humana en la innovación en gestión. Finalmente, en el nivel operacional (Capítulo 4) empleados de línea y sus supervisores son los agentes de cambio clave en implementar y operar con nuevas prácticas, procesos y estructuras. En este nivel,

tanto el liderazgo transformacional como el transaccional están involucrados en promover el alcance de los resultados al mismo tiempo que estimulan la creatividad. Adicionalmente, estos agentes internos de cambio intercambian conocimiento relacionado a su trabajo y a nuevas formas de hacerlo, de esta manera alineando diferentes partes de la empresa alrededor de la exitosa implementación innovación en gestión.

Contribución 3: Dinámicas de liderazgo en la búsqueda de innovación en gestión

Basándose en la visión racional de la innovación en gestión y subrayando el role de la agencia humana (Birkinshaw et al., 2008), esta tesis contribuye al entendimiento de cómo el liderazgo puede contribuir a un entorno propicio a la innovación en gestión.

Lideres dentro de la organización no solo tienen la habilidad para asignar atención y recursos a diferentes proyectos, pero también tienen la habilidad para influir a sus seguidores. Usando la noción de liderazgo transformacional y transaccional (Bass, 1985) esta tesis explora cómo estos tipos de liderazgo están relacionados a la innovación en gestión. En dos estudios diferentes que emplean diferentes metodologías (Capítulos 2 y 4) tanto uno como el otro tipo de liderazgo estuvieron positivamente relacionados con la innovación en gestión. In la primera instancia (Capitulo 2) el comportamiento del CEO, tanto transformacional como transaccional, fue positivo para la innovación en gestión. Adicionalmente, el efecto del liderazgo transformacional fue más fuerte en empresas de mayor envergadura, en tanto que el este efecto fue opuesto para el liderazgo transaccional. En otro estudio (Capitulo 4) las dinámicas del liderazgo de equipos autogestionados son reportadas. En este caso, ambos tipos de liderazgo coexisten, aunque cada tipo es más prominente en líderes de distintas jerarquías. Esta dualidad puede contribuir a encontrar un balance entre las demandas de la alta gestión para cumplir con ciertos objetivos en plazo, y la identificación de los empleados con su trabajo en un contexto de autonomía ofrecida por los equipos autogestionados. Esto está relacionado la investigación que sugiere que los individuos son motivados por tener la habilidad, motivación e impulso para hacer su trabajo (Parker et al., 2010). Diferentes tipos de liderazgo pueden proveer estos elementos mediante la asignación de tareas, permitiendo a los equipos determinar cómo mejor llevar a cabo sus tareas y darles la propiedad de los procesos, incrementando la motivación intrínseca para impulsar la adopción de nuevas maneras de realizar el trabajo (tales como los equipos autogestionados) y buscar

nuevas maneras de ejecutar su trabajo (por ejemplo, a través de mejoras en los distintos procesos). Adicionalmente, el rol de ¨experto operacional¨ como una interfase entre el Management de la planta y los operadores puede ser crucial en la distribución de conocimiento a través de los distintos niveles, desarrollando la confianza, lo cual en última instancia pueda llevar a una mejor decisión y calidad de producción (Raes, et al., 2011).

Contribución 4: Operacionalización de innovación en gestión al nivel de la empresa

Al llevar a cabo los estudios incluidos en esta tesis se desarrollaron escalas para poder evaluar la innovación en gestión al nivel de la empresa. Mientras que innovación en gestión tal y como definida por Birkinshaw et al., (2008) como nueva-para-el-mundo se refiere a ejemplos muy ricos de desarrollos de nuevas prácticas, procesos y estructuras capaces de cambiar paradigmas, su ocurrencia es relativamente rara. Adoptando este concepto como nuevo-para-la-empresa (Vaccaro et al., 2010), el potencial para encontrar muchos mas ejemplos es significativo, permitiendo el análisis como los presentados en los capítulos 2 y 3.

Implicaciones prácticas

Subrayando la noción de que la gestión es lo que más importa, los agentes internos de cambio tienen un rol fundamental dentro de la organización en la búsqueda de innovación en gestión, dado que pueden proveer el clima que conduce a dicha búsqueda. El tipo de liderazgo ejercitado dentro de la organización puede tener un gran peso en el desarrollo e implementación de la innovación en gestión, y las organizaciones quizá busquen mantener estos tipos de liderazgo en sus gerentes. Para alcanzar esto, quizá sea necesario ajustar acordemente las políticas de reclutamiento o capacitación de personal. La prominencia de alguno de estos tipos de liderazgo puede variar de acuerdo al tamaño y la complejidad de la organización.

Las empresas también pueden considerar los antecedentes de sus gerentes como también los procesos de comunicación disponibles. Personas con antecedentes y experiencias diversas puede contribuir, no solo ideas diferentes, pero también pueden contribuir a reconocer diferentes oportunidades para introducir innovación en gestión. Igualmente importante es la disponibilidad de canales apropiados para la fluida y eficiente comunicación dentro de la empresa. Los miembros de ésta podrán no solo intercambiar conocimiento e ideas, pero también dar impulso y soporte a otras iniciativas, facilitando así su implementación.

Mientas la innovación en gestión puede influenciar toda la organización, su desarrollo inicial puede tener lugar en un lugar en particular dentro de la empresa, por lo general en la gerencia. Para que estas ideas llegue de manera efectiva a otros dentro de la empresa, role de interfase pueden ser considerados. Este tipo de rol contribuye a alinear expectativas acerca de nuevas prácticas, procesos y estructuras, generar compromiso para su implementación, y desarrollar relaciones basadas en la confianza que facilitan la implementación de innovación en gestión bajando la resistencia al cambio.

ABOUT THE AUTHOR

Ignacio Vaccaro is a graduate from the research master programme of the Erasmus Research Institute of Management (ERIM). Prior to that, he obtained a graduate degree in Strategic Management and an undergraduate degree in International Business Administration, both from the Rotterdam School of Management, Erasmus University. In his research, Ignacio Vaccaro explores the role of internal change agents in promoting and implementing management innovation in firms. In doing this he has collaborated with Royal DSM N.V. to study the development and replicability of a management innovation first introduced in one of their plants in Delft. His research has been presented at several international conferences including the Academy of Management Annual Meeting, Strategic Management Society Conference, the European Group for Organizational Studies Colloquium and the European Academy of Management (EURAM) Annual Conference where, in the 2010 edition, he also chaired the Strategic Management Special Interest Group. In addition, one of the chapters in his dissertation will be published in a forthcoming issue of the Journal of Management Studies. Next to his research, he taught at both undergraduate and executive programmes.
Ignacio Vaccaro currently works as a consultant at BTS in Amsterdam.

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MANAGEMENT INNOVATION
STUDIES ON THE ROLE OF INTERNAL CHANGE AGENTS

One of the fundamental tenets of strategic management is that innovation can help organizations outperform their competitors. While technological innovation has been predominant in research, less attention has been given to management innovation, which addresses changes in the way managerial work itself is performed through the adoption of new practices, processes and structures.

This dissertation identifies and investigates the role of managers as the central internal change agents capable of enabling the pursuit of management innovation within firms. In doing so, the role of internal change agents spanning several hierarchical levels is studied: chief executive officers, top management teams, and self-managing teams.

The studies reported in this dissertation suggest a key role for internal change agents in the pursuit of management innovation by displaying a wide spectrum of leadership traits, articulating a compelling vision, providing an environment conducive to change and supporting the implementation of new practices, processes and structures. This dissertation also suggests that potential synergies exist between technological and management innovation, underscoring the need to consider changes in *what* is produced next to changes in *how* the work of management is performed.

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Tel. +31 10 408 11 82
Fax +31 10 408 96 40
E-mail info@erim.eur.nl
Internet www.erim.eur.nl

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