JOURNAL OF MANAGEMENT STUDIES

Journal of Management Studies ••:•• 2010
doi: 10.1111/j.1467-6486.2010.00976.x

Management Innovation and Leadership: The Moderating Role of Organizational Size

Ignacio G. Vaccaro, Justin J. P. Jansen, Frans A. J. Van Den Bosch and Henk W. Volberda

Rotterdam School of Management, Erasmus University

ABSTRACT Recent research on management innovation, i.e. new managerial processes, practices, or structures that change the nature of managerial work, suggests it can be an important source of competitive advantage. In this study, we focus on management innovation at the organization level and investigate the role of leadership behaviour as a key antecedent. Due to its prominent role within organizations, top management has the ability to greatly influence management innovation. In particular, we focus on leadership behaviour 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 behaviours contribute to management innovation. Interestingly, our study indicates that smaller, less complex, organizations benefit more from transactional leadership in realizing management innovation. On the other hand, larger organizations need to draw on transformational leaders to compensate for their complexity and allow management innovation to flourish.

INTRODUCTION

As competition intensifies and the pace of technological change accelerates, firms need to renew themselves. The challenge is not only offering new products and services, but also changing the nature of management within organizations. This can take place by, for instance, adapting organizational structures, processes, and practices to generate a valuable source of competitive advantage (Teece, 2007). Early studies such as Chandler (1962) and, more recently, Mol and Birkinshaw (2008) clearly show how management innovation may not only change an organization and bring potential benefits to it, but also redefine an industry by influencing the spread of new ideas. Hence, scholars have directed their attention towards management as a fertile ground for innovation (Birkinshaw and Mol, 2006; Birkinshaw et al., 2008; Hamel, 2006, 2007; Mol and Birkinshaw, 2006). Birkinshaw et al. (2008, p. 829) define management innovation as

Address for reprints: Ignacio G. Vaccaro, Department of Strategic Management and Business Environment, Rotterdam School of Management, Erasmus University, Burg. Oudlaan 50, 3062 PA Rotterdam, the Netherlands (ivaccaro@rsm.nl).

'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'. Accordingly, in this definition 'newness' is related to management innovation at large, in other words, new to the world. Well known examples of management innovation are lean production (introduced by Toyota) and brand management (developed by Procter & Gamble) (Mol and Birkinshaw, 2008).

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). This underscores the relevant role of individuals within the organization, or as Birkinshaw et al. (2008) put it, 'the critical role of human agency' (p. 826), which makes the role of leadership especially relevant to management innovation.

This study contributes to the emergent dialogue on management innovation in at least two ways. 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 behaviour 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 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 a (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 behaviour 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 et al. (2002) have suggested that the impact of leadership behaviour 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 behaviour (Koene et al., 2002). Building on previous studies which asserted that the impact of leadership behaviour is dependent on organizational size, we study different types of leadership behaviour in relation to both larger, more complex organizations as well as smaller, arguably simpler, ones.

This paper is organized 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.

LITERATURE REVIEW AND HYPOTHESES

Management Innovation: Definition and Level of Analysis

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, p. 829). It addresses changes in what managers do and how they do it (Hamel, 2006), which 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 paper 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) reflect upon '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'. In the first instance, 'new to the state of the art' or new to the world, the level of analysis is management at large, or indeed the world, as this definition implies no known precedents. In the case of 'new to the organization', the level of analysis 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. While the development of management innovation that is new to the world involves a greater degree of uncertainty, the introduction of management innovation that is new to the firm is not without uncertainty. Firms, for instance, may be able to draw on the practices that have previously been implemented elsewhere, but the success of new practices may also depend on their adaptation to their idiosyncratic context within the organization in which they are introduced (Ansari et al., 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 a 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-managed teams*, which involves 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* refers to what managers do as part of their job on a day-to-day basis – setting objectives and associated procedures, arranging tasks and functions, developing talent, and meeting different demands from stakeholders, for example (Birkinshaw et al., 2008; Mol and Birkinshaw, 2009). The introduction of self-managed teams at Procter & Gamble changed the work of managers as employees became in charge of setting their own goals and deciding when and how tasks were going to be performed. *Management processes* refers 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 among others (Birkinshaw et al., 2008; Hamel, 2006, 2007). Following the introduction of self-managed teams at Procter & Gamble, reward and promotion systems were overhauled. Pay was determined in relation to skill, which in turn served as the basis for promotion, as evaluated by fellow team members. *Organizational structure*, that is, how organizations arrange communication, and 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.

Leadership and Management Innovation

Following Birkinshaw et al.'s (2008) focus on the role of human agency in management innovation, we centre on the specific actions from individuals inside the organization by focusing on leaders and associated behaviours. Due to their prominent role within organizations, leaders affect organizational conditions under which management innovation may be generated and implemented (Crossan and Apaydin, 2010; Hambrick and 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, 1984; Peters and Waterman, 1984). Elenkov et al. (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, and 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 also 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 behaviour, 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 behaviours affect 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 behaviours, 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, 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; Lindebaum and Cartwright, 2010). Transformational leadership consists of four dimensions: (1) idealized influence; (2) inspirational motivation; (3) intellectual stimulation; and (4) individual consideration (Avolio et al., 1999). Idealized influence represents the degree to which leaders are admired, respected, and trusted. This dimension includes charismatic behaviour 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 the 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 et al., 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 behaviour 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 behaviour and the management practices, processes, and structures. During the adoption of self-managed teams at Royal DSM, transformational leadership behaviour 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. Simi-

larly, 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 fulfilment 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 behaviour 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 et al., 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 fulfilment 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 et al., 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, in order 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 behaviour depends on contextual conditions, such as the stage of organizational growth, top management team homogeneity (Alexiev et al., 2010; 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' behaviour 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, 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 behaviour (Egri and Herman, 2000; Pawar and Eastman, 1997; Yang et al., 2010). 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, 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 leaders' 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 changes the context in which leadership is exercised (Hunt, 1991). As mentioned earlier, this type of leadership centres upon the completion of 'contracts' between leaders and followers (Bass and Avolio, 1993). The larger an organization becomes, the more 'contracts' (and associated control mechanisms) it needs in order to operate. This could give rise to several levels of bureaucracy in which divergence from known management processes, practices, structures, or techniques is 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 organiza-

tions 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.

METHODS

Research Setting and Data Collection

We drew a random sample of 1000 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. TMT members from 151 companies returned usable questionnaires, corresponding to a 15.1 per cent 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: manufacturing 51.6 per cent, construction 20.5 per cent, services 8.6 per cent, and others 19.3 per cent. 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 ($p < 0.05$). Aside from the risk of differences that 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. First, 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 a single factor. Second, we controlled for the effect of a single unmeasured latent method factor (Podsakoff et al., 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 ($\chi^2 = 1208.09$, d.f. = 492) and the model with the additional latent common factor ($\chi^2 = 1020$, d.f. = 459) indicates a better fit in the latter, less parsimonious model ($\Delta\chi^2 = 187.75$, Δ d.f. = 33, $p < 0.001$), the latent common factor accounted for a very small portion (4.0 per cent) of the total variance compared with management innovation, which accounted for 36.6 per cent 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 is not yet available, the following steps were taken to develop a new measure for this construct. First, 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 and 2 (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 and 4 (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 behaviour are rewarded and which are not, which relate to the way people are compensated. Items 5 and 6 (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. An overview of the items used in this scale is provided in the Appendix.

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 labelled, e.g. a group of practices and processes developed at Toyota that has been labelled '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 and Birkinshaw (2008) as one of the top 50 management innovations since the industrial revolution, and spans 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 per cent. 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 0.65, 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 ($r = 0.29$; $p < 0.01$) 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 ($\chi^2 = 315.72$, d.f. = 34, GFI = 0.93, CFI = 0.93, RMSEA = 0.098). All items loaded significantly ($p < 0.01$) 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

(χ^2 = 1,644.67, d.f. = 35, GFI = 0.64, CFI = 0.58, RMSEA = 0.231), 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 Avolio, 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 $r = 0.75$; $p < 0.01$) and past research has shown 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 ($\alpha = 0.94$). 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 MLQ (Bass and Avolio, 1995). Following previous practice (e.g. Ensley et al., 2006; Epitropaki and Martin, 2005; Lowe et al., 1996; Waldman et al., 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 ($\alpha = 0.70$). 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.

ANALYSIS AND RESULTS

Table I presents the descriptive statistics and correlations between the study variables. Table II shows the results of the regression analyses with management innovation as the dependent variable. Four models were specified in this analysis (see Table II). The first one (model 1) includes only the control variables. Subsequently the two leadership constructs were introduced (model 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-centred the individual variables

Table I. Descriptive statistics and correlations coefficients[a]

		Mean	*S.D.*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
1.	Management innovation	4.11	1.01									
2.	CEO tenure[b]	0.89	0.49	−0.10								
3.	CEO age[c]	1.65	0.08	−0.06	0.37**							
4.	TMT size[d]	0.73	0.21	0.11	0.01	0.09						
5.	Manufacturing	0.52	0.50	−0.01	−0.11	0.07	−0.12					
6.	Construction	0.21	0.41	−0.03	0.07	−0.08	0.02	−0.53**				
7.	Service	0.09	0.28	−0.07	0.11	−0.01	0.19*	−0.32**	−0.16			
8.	Transactional leadership	4.92	0.75	0.39**	−0.08	0.19*	0.00	0.06	0.00	−0.14		
9.	Transformational leadership	5.25	0.82	0.42**	−0.05	0.15	0.07	0.06	0.01	−0.20*	0.56**	
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

Notes: [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 employees.
[†] $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Table II. Results of hierarchical regression analyses[a]: management innovation

	Model 1	*Model 2*	*Model 3*	*Model 4*
Controls				
CEO tenure[b]	–0.08	–0.01	0.00	0.01
CEO age[c]	–0.05	–0.16[†]	–0.21*	–0.22*
TMT size[d]	0.13	0.10	0.02	–0.01
Manufacturing	–0.09	–0.08	–0.11	–0.14
Construction	–0.10	–0.09	–0.12	–0.16[†]
Service	–0.12	–0.03	–0.07	–0.08
Transformational leadership		0.30**	0.30***	0.26**
Transactional leadership		0.25**	0.28**	0.30**
Organizational size			0.22**	0.29**
Transformational leadership x Org. size				0.28**
Transactional leadership x Org. size				–0.22**
R^2	0.04	0.25	0.29	0.32
ΔR^2	0.04	0.21	0.04	0.03
F	0.89	5.96***	6.40***	5.90***
N	151	151	151	151

Notes: [a] Standardized coefficients.
[b] Logarithm of years in the organization.
[c] Logarithm of age.
[d] Logarithm of number of TMT members.
[†] $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

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 transformational leadership and management innovation (Hypothesis 1) was supported ($\beta = 0.30$; $p < 0.01$). Hypothesis 2, in which we proposed a positive relationship between transactional leadership and management innovation, was also supported ($\beta = 0.25$; $p < 0.05$). In addition to these direct effects, we also hypothesized that the relationship between leadership behaviours 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 that the effectiveness of transformational leadership increases with organizational size ($\beta = 0.28$; $p < 0.05$). 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 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 II, Hypothesis 4, which posited that the relationship between transactional leadership and management

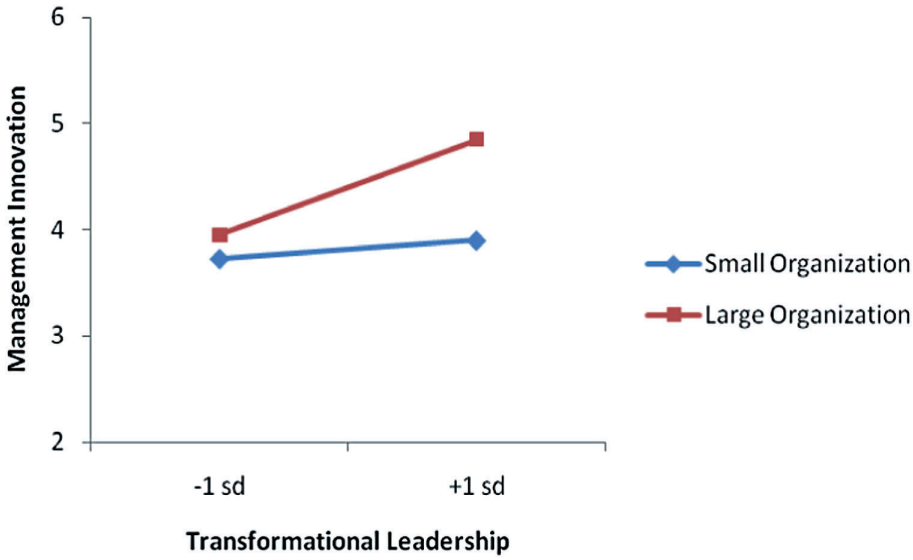

Figure 1. Effect of interaction between transformational leadership and organizational size on management innovation

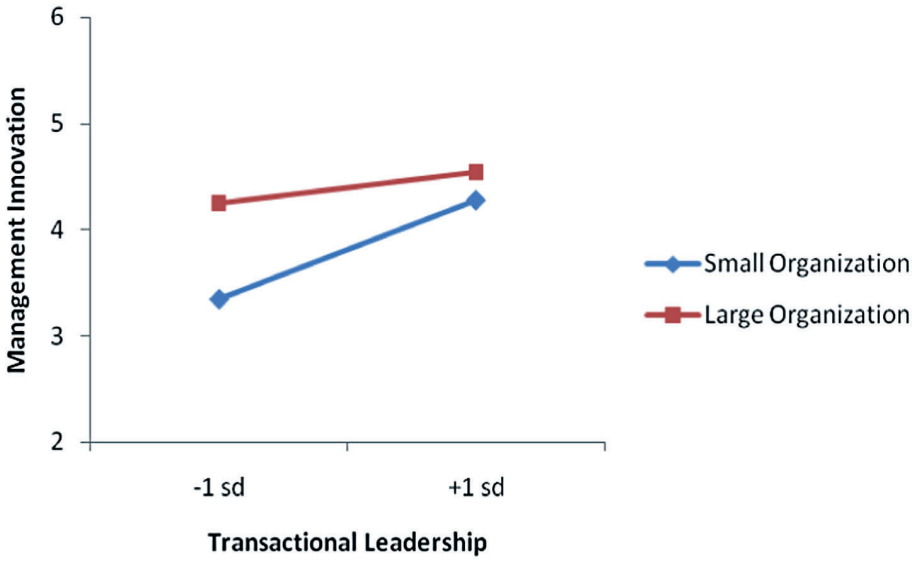

Figure 2. Effect of interaction between transactional leadership and organizational size on management innovation

innovation would be stronger in smaller organizations, was supported in our analysis ($\beta = -0.22$; $p < 0.05$). Consistently, the plot of this interaction in Figure 2 shows a positive relationship between transactional leadership and management innovation in small organizations.

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 behaviours, this study reflects top management's impact on management innovation (Birkinshaw and Mol, 2006; Birkinshaw et al., 2008). Our study contributes to new insights regarding the relative influence of transformational and transactional leadership behaviours on management innovation. Moreover, we show that the effectiveness of these leadership behaviours 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 agents (Birkinshaw et al., 2008) who impact the implementation of new practices, processes, and structures. 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 centred 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).

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 and 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 facilitate 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 and

Crossan (2004), that transactional leadership may be helpful in the implementation phase of management innovation – inducing organizational members to attempt to meet 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 honour 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 behaviour, 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 et al., 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 et al., 1987; Waldman and Yammarino, 1999). In this way transformational leaders may be able to exercise not only 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 et al., 1990; Shamir, 1995). These arguments could help to explain 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 instil 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. The role of leaders in the pursuit of management innovation is relevant through both transactional and transformational leadership behaviours, though this behaviour needs to be adapted according to the complexity of the organization, operationalized in this paper 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 paper we have begun to investigate 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 et al., 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 behaviour 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 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 study 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 behaviour and their impact upon management innovation, as well as the moderating effect of organizational size. Concluding, our paper illustrates the role of human agency in the pursuit of management innovation by studying both transformational and transactional leadership. While both types of leadership behaviour 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.

APPENDIX: ITEMS OF MANAGEMENT INNOVATION

1. Rules and procedures within our organization are regularly renewed.
2. We regularly make changes to our employees' tasks and functions.
3. Our organization regularly implements new management systems.
4. The policy with regard to compensation has been changed in the last three years.
5. The intra- and inter-departmental communication structure within our organization is regularly restructured.
6. We continuously alter certain elements of the organizational structure.

All items were measured on a 7-item scale, on which 1 was 'strongly disagree' and 7 was 'strongly agree'.

REFERENCES

Aiken, L. S. and West, S. G. (1991). *Multiple Regression: Testing and Interpreting Interactions*. Thousand Oaks, CA: Sage.

Alexiev, A. S., Jansen, J. J. P., Van den Bosch, F. A. J. and Volberda, H. W. (2010). 'Top management team advice seeking and exploratory innovation'. *Journal of Management Studies*, **47**, 1343–64.

Amabile, T. M. (1996). *Creativity in Context*. Boulder, CO: Westview Press.

Amabile, T. M. (1998). 'How to kill creativity'. *Harvard Business Review*, **76**, 76–87.

Anderson, J. C. and Gerbing, D. W. (1988). 'Structural equation modeling in practice: a review and recommended two-step approach'. *Psychological Bulletin*, **103**, 411–23.

Ansari, S. M., Fiss, P. C. and Zajac, E. J. (2010). 'Made to fit: how practices vary as they diffuse'. *Academy of Management Review*, **35**, 67–92.

Atwater, D. C. and Bass, B. M. (1994). 'Transformational leadership in teams'. In Bass, B. M. and Avolio, B. J. (Eds), *Improving Organizational Effectiveness through Transformational Leadership*. Thousand Oaks, CA: Sage, 48–83.

Avolio, B. J., Bass, B. M. and Jung, D. I. (1999). 'Re-examining the components of transformational and transactional leadership using the multifactor leadership questionnaire'. *Journal of Occupational & Organizational Psychology*, **72**, 441–62.

Bagozzi, R. P. and Phillips, L. W. (1982). 'Representing and testing organizational theories: a holistic construal'. *Administrative Science Quarterly*, **27**, 459–89.

Baldridge, J. V. and Burnham, R. A. (1975). 'Organizational innovation: individual, organizational, and environmental impacts'. *Administrative Science Quarterly*, **20**, 165–76.

Bantel, K. A. and Jackson, S. E. (1989). 'Top management and innovations in banking: does the composition of the top team make a difference?'. *Strategic Management Journal*, **10**, 107–24.

Bass, B. M. (1985). *Leadership and Performance Beyond Expectations*. New York: Free Press.

Bass, B. M. (1990). 'From transactional to transformational leadership: learning to share the vision'. *Organizational Dynamics*, **18**, 19–31.

Bass, B. M. (1994). 'Transformational leadership and team and organizational decision making'. In Bass, B. M. and Avolio, B. J. (Eds), *Improving Organizational Effectiveness through Transformational Leadership*. Thousand Oaks, CA: Sage, 104–20.

Bass, B. M. and Avolio, B. J. (1993). 'Transformational leadership and organizational culture'. *Public Administration Quarterly*, **17**, 112–21.

Bass, B. M. and Avolio, B. J. (1995). *MLQ Multifactor Leadership Questionnaire (Form 5x–Short)*. Redwood City: CA: Mind Garden.

Bass, B. M., Waldman, D. A., Avolio, B. J. and Bebb, M. (1987). 'Transformational leadership and the falling dominoes effect'. *Group & Organization Studies*, **12**, 73–87.

Bass, B. M., Jung, D. I., Avolio, B. J. and Berson, Y. (2003). 'Predicting unit performance by assessing transformational and transactional leadership'. *Journal of Applied Psychology*, **88**, 207–18.

Bell, G. G. (2005). 'Clusters, networks, and firm innovativeness'. *Strategic Management Journal*, **26**, 287–95.

Berson, Y., Shamir, B., Avolio, B. J. and Popper, M. (2001). 'The relationship between vision strength, leadership style, and context'. *Leadership Quarterly*, **12**, 53–73.

Birkinshaw, J. and Mol, M. J. (2006). 'How management innovation happens'. *MIT Sloan Management Review*, **47**, 81.

Birkinshaw, J., Hamel, G. and Mol, M. J. (2008). 'Management innovation'. *Academy of Management Review*, **33**, 825–45.

Blau, J. R. and McKinley, W. (1979). 'Ideas, complexity, and innovation'. *Administrative Science Quarterly*, **24**, 200–19.

Bono, J. E. and Judge, T. A. (2003). 'Self-concordance at work: toward understanding the motivational effects of transformational leaders'. *Academy of Management Journal*, **46**, 554–71.

Bunderson, J. S. and Boumgarden, P. (2010). 'Structure and learning in self-managed teams: why "bureaucratic" teams can be better learners'. *Organization Science*, **21**, 609–24.

Burns, J. M. G. (1978). *Leadership*. New York: Harper & Row.

Chandler, A. D. (1962). *Strategy and Structure: Chapters in the History of the Industrial Enterprise*. Cambridge, MA: MIT Press.

Crossan, M. M. and Apaydin, M. (2010). 'A multi-dimensional framework of organizational innovation: a systematic review of the literature'. *Journal of Management Studies*, **47**, 1154–91.

Damanpour, F. (1996). 'Organizational complexity and innovation: developing and testing multiple contingency models'. *Management Science*, **42**, 693–716.

Den Hartog, D. N., Van Muijen, J. J. and Koopman, P. L. (1997). 'Transactional versus transformational leadership: an analysis of the MLQ'. *Journal of Occupational and Organizational Psychology*, **70**, 19–34.

Detert, J. R. and Burris, E. R. (2007). 'Leadership behavior and employee voice: is the door really open?'. *Academy of Management Journal*, **50**, 869–84.

Dijksterhuis, M. S., Van Den Bosch, F. A. J. and Volberda, H. W. (1999). 'Where do new organizational forms come from? Management logics as a source of coevolution'. *Organization Science*, **10**, 569–82.

Egri, C. P. and Herman, S. (2000). 'Leadership in the North American environmental sector: values, leadership styles, and contexts of environmental leaders and their organizations'. *Academy of Management Journal*, **43**, 571–604.

Ehrlich, S. B., Meindl, J. R. and Viellieu, B. (1990). 'The charismatic appeal of a transformational leader: an empirical case study of a small, high technology contractor'. *Leadership Quarterly*, **1**, 229–48.

Elenkov, D. S. and Manev, I. M. (2005). 'Top management leadership and influence on innovation: the role of sociocultural context'. *Journal of Management*, **31**, 381–402.
Elenkov, D. S., Judge, W. and Wright, P. (2005). 'Strategic leadership and executive innovation influence: an international multi-cluster comparative study'. *Strategic Management Journal*, **26**, 665–82.
Ensley, M. D., Hmieleski, K. M. and Pearce, C. L. (2006). 'The importance of vertical and shared leadership within new venture top management teams: implications for the performance of startups'. *Leadership Quarterly*, **17**, 217–31.
Epitropaki, O. and Martin, R. (2005). 'The moderating role of individual differences in the relation between transformational/transactional leadership perceptions and organizational identification'. *Leadership Quarterly*, **16**, 569–89.
Finkelstein, S. (1992). 'Power in top management teams: dimensions, measurement, and validation'. *Academy of Management Journal*, **35**, 505–38.
Finkelstein, S. and Hambrick, D. C. (1990). 'Top-management-team tenure and organizational outcomes: the moderating role of managerial discretion'. *Administrative Science Quarterly*, **35**, 484–503.
Foss, N. J. (2003). 'Selective intervention and internal hybrids: interpreting and learning from the rise and decline of the Oticon spaghetti organization'. *Organization Science*, **14**, 331–49.
Haleblian, J. and Finkelstein, S. (1993). 'Top management team size, CEO dominance, and firm performance: the moderating roles of'. *Academy of Management Journal*, **36**, 844–63.
Hambrick, D. C. (1989). 'Guest editor's introduction: Putting top managers back in the strategy picture'. *Strategic Management Journal*, **10**, 5–15.
Hambrick, D. C. and Mason, P. A. (1984). 'Upper echelons: the organization as a reflection of its top managers'. *Academy of Management Review*, **9**, 193–206.
Hamel, G. (2006). 'The why, what, and how of management innovation'. *Harvard Business Review*, **84**, 72–84.
Hamel, G. (2007). *The Future of Management*. Boston, MA: Harvard Business School Press.
Howell, J. M. and Avolio, B. J. (1993). 'Transformational leadership, transactional leadership, locus of control, and support for innovation: key predictors of consolidated-business-unit performance'. *Journal of Applied Psychology*, **78**, 891–902.
Howell, J. M. and Higgins, C. A. (1990). 'Champions of technological innovation'. *Administrative Science Quarterly*, **35**, 317–41.
Hunt, J. G. (1991). *Leadership: A New Synthesis*. Newbury Park, CA: Sage.
Jansen, J. J. P., Van Den Bosch, F. A. J. and Volberda, H. W. (2006). 'Exploratory innovation, exploitative innovation, and performance: effects of organizational antecedents and environmental moderators'. *Management Science*, **52**, 1661–74.
Jung, D. I., Chow, C. and Wu, A. (2003). 'The role of transformational leadership in enhancing organizational innovation: hypotheses and some preliminary findings'. *Leadership Quarterly*, **14**, 525–44.
Kanter, R. M. (1984). *The Change Masters*. London: Unwin Hyman.
Karlsson, C. and Åhlström, P. (1996). 'Assessing changes towards lean production'. *International Journal of Operations & Production Management*, **16**, 24–41.
Kimberly, J. R. (1981). 'Managerial innovation'. In Nystrom, P. C. and Starbuck, W. H. (Eds), *Handbook of Organizational Design*. New York: Oxford University Press, Vol. 1. 84–104.
Koene, B. A. S., Vogelaar, A. L. W. and Soeters, J. L. (2002). 'Leadership effects on organizational climate and financial performance: local leadership effect in chain organizations'. *Leadership Quarterly*, **13**, 193–215.
Larsen, H. H. (2002). 'Oticon: unorthodox project-based management and careers in a "spaghetti organization" '. *Human Resource Planning*, **25**, 30–7.
Lawler, E. E. (1990). 'The new plant revolution revisited'. *Organizational Dynamics*, **19**, 4–14.
Lee, J. (2008). 'Effects of leadership and leader-member exchange on innovativeness'. *Journal of Managerial Psychology*, **23**, 670–87.
Lee, H., Smith, K. G. and Grimm, C. M. (2003). 'The effect of new product radicality and scope on the extent and speed of innovation diffusion'. *Journal of Management*, **29**, 753–68.
Lindebaum, D. and Cartwright, S. (2010). 'A critical examination of the relationship between emotional intelligence and transformational leadership'. *Journal of Management Studies*, **47**, 1317–42.
Lowe, K. B., Galen Kroeck, K. and Sivasubramaniam, N. (1996). 'Effectiveness correlates of transformational and transactional leadership: a meta-analytic'. *Leadership Quarterly*, **7**, 385–425.
Marion, R. and Uhl-Bien, M. (2001). 'Leadership in complex organizations'. *Leadership Quarterly*, **12**, 389–418.
Mintzberg, H. (1973). *The Nature of Managerial Work*. New York: Harper & Row.
Mol, M. J. and Birkinshaw, J. (2006). 'Against the flow: reaping the rewards of management innovation'. *European Business Forum*, **27**, 24–9.

Mol, M. J. and Birkinshaw, J. (2008). *Giant Steps in Management: Innovations that Change the Way We Work*. Dorchester: FT Prentice Hall.
Mol, M. J. and Birkinshaw, J. (2009). 'The sources of management innovation: when firms introduce new management practices'. *Journal of Business Research*, **62**, 1269–80.
Mumford, M. D., Scott, G. M., Gaddis, B. and Strange, J. M. (2002). 'Leading creative people: orchestrating expertise and relationships'. *Leadership Quarterly*, **13**, 705–50.
Nahavandi, A. and Malekzadeh, A. R. (1993). 'Leader style in strategy and organizational performance: an integrative framework'. *Journal of Management Studies*, **30**, 405–25.
Netter, J., Wasserman, W. and Kutner, M. H. (1990). *Applied Linear Regression Models: Regression, Analysis of Variance, and Experimental Designs*. Holmwood, IL: Irwin.
Pawar, B. S. and Eastman, K. K. (1997). 'The nature and implications of contextual influences on transformational leadership: a conceptual examination'. *Academy of Management Review*, **22**, 80–109.
Peters, T. J. and Waterman, R. H. (1984). *In Search of Excellence*. New York: Warner Books.
Podsakoff, P. M. and Organ, D. W. (1986). 'Self-reports in organizational research: problems and prospects'. *Journal of Management*, **12**, 531–44.
Podsakoff, P. M., MacKenzie, S. B., Jeong-Yeon, L. and Podsakoff, N. P. (2003). 'Common method biases in behavioral research: a critical review of the literature and recommended remedies'. *Journal of Applied Psychology*, **88**, 879–903.
Podsakoff, P. M., Bommer, W. H., Podsakoff, N. P. and Mackenzie, S. B. (2006). 'Relationships between leader reward and punishment behavior and subordinate attitudes, perceptions, and behaviors: a meta-analytic review of existing and new research'. *Organizational Behavior & Human Decision Processes*, **99**, 113–42.
Rubin, R. S., Munz, D. C. and Bommer, W. H. (2005). 'Leading from within: the effects of emotion recognition and personality on transformational leadership behavior'. *Academy of Management Journal*, **48**, 845–58.
Sarros, J. C., Tanewski, G. A., Winter, R. P., Santora, J. C. and Densten, I. L. (2002). 'Work alienation and organizational leadership'. *British Journal of Management*, **13**, 285–304.
Shalley, C. E. and Gilson, L. L. (2004). 'What leaders need to know: a review of social and contextual factors that can foster or hinder creativity'. *Leadership Quarterly*, **15**, 33–53.
Shamir, B. (1995). 'Social distance and charisma: theoretical notes and an exploratory study'. *Leadership Quarterly*, **6**, 19–47.
Siegel, P. A. and Hambrick, D. C. (2005). 'Pay disparities within top management groups: evidence of harmful effects on performance of high-technology firms'. *Organization Science*, **16**, 259–74.
Sosik, J. J. (1997). 'Effects of transformational leadership and anonymity on idea generation in computer-mediated groups'. *Group & Organization Management*, **22**, 460–87.
Teece, D. J. (2007). 'Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance'. *Strategic Management Journal*, **28**, 1319–50.
Vera, D. and Crossan, M. (2004). 'Strategic leadership and organizational learning'. *Academy of Management Review*, **29**, 222–40.
Volberda, H. W. and Bosch, F. A. J. (2005). 'Why management matters most'. *European Business Forum*, **22**, 36–41.
Waldman, D. A. and Yammarino, F. J. (1999). 'CEO charismatic leadership: levels-of-management and levels-of-analysis effects'. *Academy of Management Review*, **24**, 266–85.
Waldman, D. A., Ramirez, G. G., House, R. J. and Puranam, P. (2001). 'Does leadership matter? CEO leadership attributes and profitability under conditions of perceived environmental uncertainty'. *Academy of Management Journal*, **44**, 134–43.
Walumbwa, F. O., Wu, C. and Orwa, B. (2008). 'Contingent reward transactional leadership, work attitudes, and organizational citizenship behavior: the role of procedural justice climate perceptions and strength'. *Leadership Quarterly*, **19**, 251–65.
Waterman, R. H. (1994). *What America Does Right: Learning from Companies that Put People First*. New York: W. W. Norton & Co.
West, M. A. and Farr, J. L. (1990). *Innovation and Creativity at Work: Psychological and Organizational Strategies*. Chichester: Wiley.
Wiersema, M. F. and Bantel, K. A. (1992). 'Top management team demography and corporate strategic change'. *Academy of Management Journal*, **35**, 91–121.
Womack, J. P., Jones, D. T. and Roos, D. (1990). *The Machine that Changed the World*. New York: Rawson Associates.

Yammarino, F. J. and Bass, B. M. (1990). 'Transformational leadership and multiple levels of analysis'. *Human Relations*, **43**, 975–95.
Yammarino, F. J., Dubinsky, A. J., Comer, L. B. and Jolson, M. A. (1997). 'Women and transformational and contingent reward leadership: a multiple-levels-of-analysis perspective'. *Academy of Management Journal*, **40**, 205–22.
Yammarino, F. J., Spangler, W. D. and Dubinsky, A. J. (1998). 'Transformational and contingent reward leadership: individual, dyad, and group levels of analysis'. *Leadership Quarterly*, **9**, 27–54.
Yang, J., Zhang, Z. and Tsui, A. S. (2010). 'Middle manager leadership and frontline employee performance: bypass, cascading and moderating effects'. *Journal of Management Studies*, **47**, 654–78.
Zhou, J. and George, J. M. (2003). 'Awakening employee creativity: the role of leader emotional intelligence'. *Leadership Quarterly*, **14**, 545–68.