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Employee innovativeness in organizations: a review of the antecedents

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Employee innovativeness in organizations: A review

ABSTRACT

This article presents a review of recent research on factors that influence employee innovativeness at the workplace. Based on a literature search on 15 peer-reviewed journals published during the period 2000–2005 and other relevant materials, it summarizes and discusses individual, job, team and organizational level factors that have been found to influence innovativeness in organizations. The article concludes with an evaluation of the current state of innovativeness research.

Key words: *creativity, innovation, innovativeness, review*

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1. INTRODUCTION

In 1994, Wolfe concluded that 'our understanding of innovative behaviour in organizations remains relatively underdeveloped' (p. 405). More than a decade later, with increasing emphasis placed upon creativity in the knowledge economy, we have witnessed a mushrooming of conferences, courses, publications and journals devoted to uncovering the sources of innovativeness at work. Innovation research has, no doubt, progressed and advanced, and shed light on the factors that support or inhibit employees' innovativeness. These factors are commonly divided into four broad categories, i.e. *individual, job, team* and *organizational level,* as they influence innovative behaviour at different levels, sometimes independently, but most often in interaction (Woodman, Sawyer & Griffin 1993, Anderson, Dreu & Nijstad 2004, Shalley & Gilson, 2004).

Although the knowledge base of the factors that influence employee innovativeness has grown, in our view, most studies have focused on isolated factors, and a holistic perspective is lacking. At the same time, increasing emphasis is placed on the individual's creative abilities and their use in organizations, and at both societal and national levels (Oinas 2005, Himanen 2007). For example in Finland, innovation, and ultimately the innovativeness of individual employees, are presented as a critical factor that has contributed to economic success in the past, and continues to do so in the future (ibid.). Consequently, we argue that a review of the factors that influence employee innovativeness is now due in order to advance our understanding of how to better support and foster innovative efforts in the workplace.

The purpose of this article is hence to review existing research on the factors that influence employee innovativeness, with the aim of providing an integrated view of the knowledge we have. We specifically address the question of what is known about the factors that influence employee innovativeness at individual, job, team and organizational levels, and outline directions for future research. We will begin by providing a brief background of this review in terms of definitions and included material. We will then move on to review and discuss the research findings on factors that influence employee innovativeness at the different levels. This is followed by an evaluation of the current state of research concerning innovativeness, and suggestions for future studies.

2. BACKGROUND: CORE CONCEPTS AND METHODOLOGY

Employee innovativeness can be defined as engagement in innovative behaviours, which includes behaviours related to the innovation process, i.e. idea generation, idea promotion and idea realization, with the aim of producing innovations (Kanter 1988, Scott & Bruce 1994, Ramamoorthy, Flood, Slattery & Sardessai 2005). Innovations connected to the implementation

or adoption of novel ideas can in turn be categorized as either technological (changes in products, services, production processes) or administrative (changes in activities, social processes, structures), and as either radical or incremental, depending on the extent of their influence for existing products or processes (Damanpour 1991). Employee innovativeness can thus be examined throughout the innovation process, from initial idea generation to product development, and eventually to product commercialization, or the adoption of new processes or structures in the organization (Axtell, Holman, Unsworth, Wall, Waterson & Harrington 2000, Vincent, Decker & Mumford, 2002).

Although creativity is central to the whole innovation process, many authors draw a line between creativity and innovation (Amabile, Conti, Coon, Lazenby & Herron 1996, Anderson et al. 2004, Miron, Erez & Naveh 2004, Shalley & Gilson 2004). Innovation can be seen as a successful implementation of creativity and something that produces economic value, whereas creativity has to do with idea production (Scott & Bruce, 1994). Creativity is thus limited to idea generation alone, or concerns an individual's own pleasurable experience, when, for example, performing arts (Anderson et al. 2004, Miron et al. 2004). Therefore, it can be argued that every innovation requires creativity, but creativity does not necessarily lead to innovation. Employee innovativeness can thus be argued to cover a broader range of behaviours than creativity. Most of the recent empirical research on employee innovativeness has however adopted a micro-level approach and focused on assessing what contributes to an employee's tendency to generate innovative ideas that eventually lead to innovations (Anderson et al. 2004). Further, as argued by Woodman, Sawyer and Griffin (1993), organizational creativity is dependent on the creativity of the group, which in turn is dependent on individual creativity. Actual new processes and products i.e. innovations reflect these creative efforts.

We began preparing for this review by conducting literature searches using five academic search engines, namely *Science Direct, Psychinfo, Business Source Premier, JSTOR and Blackwell Synenergy*, using search terms such as innovation, innovativeness and creativity. The data collection was carried out as part of a larger research project concerning the promotion of innovation. We limited our initial literature search to peer-reviewed articles that were published between 2000 and 2005, with an aim to start our review with the most recent empirical work published on the topic. Based on these initial search results, we selected fifteen academic journals for closer examination[1].

1 A complete list of reviewed journals: Leadership Quarterly, Journal of Organizational Behaviour, Technovation, Journal of Product Innovation Management, Journal of Management, Human Relations, Journal of Occupational and Organizational Psychology, Work & Stress, Journal of Management Studies, Creativity and Innovation Management, Organization, Academy of Management Journal, Academy of Management Review, International Journal of Innovation Management and R&D Management.

After having identified the initial pool of recent studies through electronic searches, we read the abstracts of these studies in order to select the most relevant articles for this review. We favoured empirical papers that 1) assessed variables that have implications for employee innovativeness as defined earlier; 2) provided quantitative meta-analyses of studies or qualitative reviews on innovation research; and 3) were practice-orientated and carried out specifically in an R&D context. The references of the selected articles were checked in order to identify further studies that had not been picked up by our search strategy or that had been published before the year 2000. Some additional materials such as books and other recent research reports and papers were also included if they were referenced frequently in the studies we had initially identified, and if they appeared relevant to our review.

The selected articles and materials were then examined in terms of their level of analysis, i.e. whether they examined individual, job, group or organizational -level factors. It has to be noted, however, that although our focus is on employee innovativeness, some of the included materials discuss innovativeness and innovation at an organizational or group level, or draw on early theorizing on innovations at a macro-level. For example, Damanpour's (1991) frequently cited meta-analysis on the antecedents of innovation focuses on organizational innovation. We decided, however, to take into account some of the findings of these studies, and to consider their implications for employee innovativeness. On the whole, it is the organization that provides the context for employee creativity and innovativeness, which in turn is at the root of every innovation – whether measured at individual, team or organizational level (Amabile et al. 1996, Anderson et al. 2004, Woodman et al. 1993).

Furthermore, as the measures used for innovativeness varied considerably, we decided not to limit ourselves to how innovativeness was evaluated or whether the focus of the studies was on technological or administrative/process innovations. Thus, some studies measure employee innovativeness in terms of self-reported data (e.g. Bharadwaj & Menon 2000, Ramamoorthy et al. 2005), some through manager evaluations (e.g. Thamhain 2003, Miron et al. 2004), some as new products (e.g. Damanpour 1991), some as new processes (Damanpour, 1991; Baer and Frese, 2003) and some as patent applications (Kivimäki, Länsisalmi, Elovainio, Heikkilä, Lindström, Harisalo, Sipilä & Puolimatka 2000). We have also included studies that have examined employee creativity and use the terms employee innovativeness and creativity interchangeably, which is most likely due to the close link between the ideas of creativity and the generation stage of innovation as described above. We decided to exclude leadership from this analysis, as this presents a cross-cutting issue in innovation literature, covering a whole wealth of research in itself.

The following sections will summarize our findings according to level, from individual level factors to innovativeness, then continuing with job, team and organizational level factors.

3. INDIVIDUAL LEVEL FACTORS

As it is individual employees, either alone or together in groups, who are the source of creative ideas and subsequent innovation, it is not surprising that large amounts of research have been devoted to the examination of personality or person-specific factors that contribute to innovativeness. The broad aim of this stream of research has been to identify how innovativeness is affected by differences in individual characteristics, for example in terms of their demographic or biographic factors (Anderson et al. 2004, Shalley et al. 2004)

An individual's engagement in innovative work behaviours requires the individual to be both able (e.g. has certain cognitive capabilities, expertise, relevant task knowledge, necessary technical skills and personality characteristics) and willing (e.g. motivated and satisfied) to be innovative (Woodman et al. 1993, Collins & Amabile 1999, Weisburg 1999, Ford 2000). With respect to abilities, for example above-average skills, knowledge and general intellect, as well as task-specific skills and knowledge have been found to facilitate innovativeness (Barron & Harrington 1981, Taggar 2002). Skills relevant to creativity can be defined as the ability to think creatively, generate alternatives, engage in divergent thinking, and suspend judgement (Vincent et al. 2002, Shalley & Gilson 2004). Domain or task-specific skills in turn reflect an employee's level of education, training, experience, and knowledge within a particular context and with reference to particular tasks.

Openness to new experiences, independence of judgement, a firm sense of self as creative, and self-confidence have been consistent personality characteristics among more creative employees (Amabile 1988, George & Zhou 2001, Georgsdottir & Getz 2004, Shalley, Zhou & Oldham 2004). Flexibility and a preference for a change and novelty have also been associated with creativity in several studies (Georgsdottir & Getz 2004). Successful scientists, for example, have been found to be more flexible than less successful ones. Miron, Erez and Naveh (2004), in turn, found, in their study of 349 engineers and technicians working in R&D tasks, that employees who scored high in both creative skills and in initiative also obtained the highest scores in innovative behaviours, as evaluated and rated by their managers.

Innovativeness inherently involves risks (Janssen, van de Vliert & West 2004), and consequently, creative and innovative individuals have to be willing to try and accept the possibility of failing. However, environment and psychosocial safety at the workplace influence risk-taking; an employee's predisposition towards risk is also an important factor: some people are naturally more averse to taking risks than others (Ng & Van Dyke 1996).

Research has repeatedly highlighted the importance of intrinsic motivation in creative work (Collins & Amabile 1999, Jung 2001). Innovativeness requires a certain level of internal force that pushes the individual to persevere in the face of challenges in creative work (Shalley & Gilson 2004). Moreover, it is this internal force that keeps the person going even when the challenges

are successfully overcome: it is question of positive tension, perseverance and desire to excel. Though management, work tasks, working conditions and atmosphere play a role in enhancing positive tension, some individuals may naturally have a higher drive, and a need for achievement, that help them to remain intrinsically motivated.

To a great extent, the skills, abilities and personality that are required from employees in contemporary organizations include those related to networking, new technology, languages, cultural sensitivity, ethical behaviour, learning skills, reflective skills, flexibility, entrepreneurship, problem-solving and reliability (Tynjälä 2003). Although these attributes can be to some extent tested while recruiting, some of them are context-specific and can only be developed and tested in the real world of work. Therefore, in addition to only hiring individuals that are more predisposed to creativity and have certain sets of skills and knowledge, innovation-relevant skills can be developed, sustained and enhanced by an encouraging and supportive work environment and further general training in, for example, problem-solving (Bharadwaj & Menon 2000, Shalley & Gilson 2004).

In sum, a relatively large part of research has focused on examining the influence of person-related factors on innovativeness. Although this is a natural tendency given the emphasis on micro-level factors in recent innovation research (Anderson et al. 2004), it is worth reminding ourselves that the job, team and organizational context provide the boundaries for employee innovativeness.

4. JOB LEVEL FACTORS

Job-related factors cover the contextual characteristics of the everyday work that influence an employee's innovativeness. Specific jobs and tasks play a significant role in influencing whether the employee engages in innovative work behaviour, partially through motivating employees (Amabile 1988, Collins & Amabile 1999; Ford 2000, Vincent et al. 2002). That is, the way in which jobs are structured contributes to an employee's motivation, and thereby to their innovative behaviours. In the following section, we will discuss some of the most studied job characteristics influencing employee innovativeness.

Of these characteristics, autonomy has probably received the most attention in innovation research (Shalley, Gilson & Blum 2000, Shalley & Gilson 2004). Autonomy encompasses personal control over how time is allocated, and determination of how the work is carried out. Empirical evidence is supportive of the positive relationship between autonomy and innovation: autonomy and control over one's job have been found to correlate positively with employee engagement in innovative work behaviours, and contribute to employee work satisfaction (Csikszentmihalyi 1996, Axtell et al. 2000, Shalley et al. 2000).

Autonomy should not, however, be understood as 'goal-less', or lack of direction (Amabile & Gryskiewicz 1987, Amabile, Hadley & Kramer, 2002). Goals increase attention and effort, and provide clear targets towards which individuals can direct their effort and creativity. For example, a study of 400 project teams found that a clearly stated mission enabled teams to focus on the development of new ideas and subsequently predicted successful innovation (Pinto & Prescott 1988). Similarly, several studies have found that when individuals are explicitly told that creativity is important, they are actually more likely to behave creatively (Shalley 1991, 1995). This suggests that creativity can be encouraged by setting creativity goals or standards for the job: when employees know what is expected of them, they are able to direct their efforts into fulfilling these expectations more efficiently.

Furthermore, research has consistently shown that lack of routine is positively associated with innovativeness (Amabile & Gryskiewicz 1987; Van der Vegt & Janssen 2003). Specifically, when the job is complex and demanding, employees are more likely to consistently focus their attention and effort on the job, and to consider various alternatives when looking for solutions (Shalley & Gilson 2004). In comparison to routine work, non-routine tasks and jobs are more challenging, require more thought and provide opportunities for learning and personal growth, which in turn promote innovativeness. However, balance is important: too much challenge may cause over-stimulation, exhaustion and stress, thereby overwhelming the employee and killing creativity (West & Hirst 2003, Huhtala & Parzefall 2006). The assessment of employee autonomy and workload through surveys for example, is thus important in order to monitor and maintain the balance at work.

Having sufficient material resources to carry out the job of being creative is naturally a prerequisite for innovative outcomes (Amabile & Gryskiewicz 1987, Amabile 1997, West & Hirst 2003). The definition of sufficient is, nevertheless, controversial. While the availability of material resources is central for testing different solutions, sometimes it may prevent employees from thinking in alternative ways. More important than the question of material resources is, nevertheless, time (Amabile & Gryskiewicz, 1987, Lawson 2001). In today's workplaces, employees are too often time constrained, causing them to feel overworked, fragmented and burnt-out. At times, employees may accept and want to be involved in many projects, but at others, the rush may reflect the constantly evolving nature of tasks and increases in work-load, which is detrimental to employee innovativeness. For example, Amabile and her colleagues (2002) have found in their studies that one of the most frequently cited factors necessary for innovativeness is sufficient *time* to think creatively and to explore different perspectives, to play with ideas. When employees don't feel time pressure, they are at their most creative, and orientated toward exploring and generating new ideas. During periods when time pressure is unavoidable, clear goals help employees to focus on what is essential to complete the tasks at hand within the time available to them.

To summarize, the job level factors of autonomy, clear goals combined with a sufficient level of challenge, and time emerge as the key attributes of jobs in which employee creativity has the best chance to flourish.

5. TEAM LEVEL FACTORS

As stable job content is a thing of the past in most professions, and the majority of individual tasks are now interrelated, team context, tasks and their characteristics can be seen as essential determinants of innovativeness (West & Hirst 2003). However, team tasks have mostly been studied in safety critical environments such as nuclear power plants, aviation or navigation, which are highly regulated work environments (West & Hirst 2003). Team and project-based work can be seen as one of the central organizational mechanisms to enhance and support employee innovativeness, but most of the research has been conducted on individual and organizational level variables, and much less attention has been paid to team level factors (Anderson et al. 2004).

The existing research findings indicate that team composition is very important in facilitating innovativeness. Deep-level diversity i.e. diversity in skills and knowledge, or functional diversity is particularly desirable, because it helps the team to pool information and combine different viewpoints (Paulus 2000, Keller 2001, West and Hirst 2003). Consequently, interdisciplinary teams are more likely to produce innovative solutions than teams that are very homogenous. Diversity can, however, also have a negative impact on innovativeness, if it threatens the team's safety and integration (Van der Vegt & Janssen 2003). Diversity may also increase stress levels among team members (Keller 2001).

Team processes finally determine the extent to which the innovative potential of the group is fully realized. For example, team cohesiveness; the extent to which the team members agree on the goals of the team and interdependency in team members' work, contributes to the extent to which the diverse skills and knowledge of the its members are beneficial for the team (Van der Vegt & Janssen 2003). Under low levels of cohesiveness, diversity can easily cause communication problems, stress and conflict and thereby have detrimental effects on innovativeness (Keller 2001, Van der Vegt & Janssen 2003). The processes that determine the potential benefits of diversity depend, for example, on norms, climate and team leadership, but are also influenced by the wider organizational context (De Dreu 2002). The importance of cohesion and agreement on goals highlights the importance of team management and activities in order to facilitate innovativeness in teams with high levels of diversity (Keller 2001).

As regards cohesiveness and agreement among team members, several researchers have suggested that good interpersonal relations and the quality of team member exchange relationships play a central role in supporting innovativeness (Kanter 1988, Scott & Bruce 1994). Trust

between team members and trust between teams and the organization are equally important (Zakaria, Amelinckx & Wilemon 2004). The ability to collaborate depends largely on trust: reciprocity and sharing of information and knowledge will not exist without trust. Empirical evidence is provided, for example, by Van der Vegt and Janssen (2003) and Janssen (2004), who emphasize the role of social relations, trust and fairness in promoting innovativeness. Their research shows that interdependence and goal alignment between members make for teams in which individuals are most likely to produce innovative results (Van der Vengt & Janssen, 2002). Perceived fairness was also shown to decrease the level of stress associated with uncertainty, which often surrounds innovativeness (Janssen 2004). In other words, the highest level of innovative behaviour seems to occur when team members both need each other in order to carry out their tasks, and believe that their goals can only be achieved if the goals of the other team members are too.

Similarly, a study by Thamhain (2003), who examined innovativeness in 74 project teams drawn from 27 high-technology multinational companies, concluded that the most significant team level correlates of innovativeness were low conflict among the team members, prompt problem-solving, and alignment of goals. In this study, innovativeness was measured on the basis of managers' perceptions of several indicators: resource effectiveness, effectiveness of cross-functional communication and market focus, responsiveness and speed. Closely related to good interpersonal relations, experimenting and other team processes conducive to innovativeness, is the psychological climate for psychological safety both within the team and within the organization (Baer & Frese 2003).

Overall, the extent of team-based work in organizations is regarded a good predictor of innovation (West & Hirst 2003). Reflective orientation appears, however, to play an important role in teams that perform innovatively (De Dreu & West 2001, De Dreu 2002). According to West and Hirst (2003), high reflexivity exists when teamwork is characterized by detailed planning, consideration of a wide range of potential problems, a hierarchical order in planning, and long- as well as short-range planning. The results of some empirical findings support these propositions. De Dreu (2002) for example, demonstrates in his study of 32 teams performing complex tasks, that a high level of reflexivity moderates the effects of minority dissent on a team's performance in such a way that minority dissent increases innovativeness, but only when reflexivity among team members is high.

In sum, team-related factors are particularly important in providing support for innovativeness. It is crucial to ensure that team members have complementing skills and knowledge, and that their profiles match the requirements of the challenges they face. The quality of the relationships and shared goals is particularly important when diversity among team members is high.

6. ORGANIZATIONAL LEVEL FACTORS

Organizational level factors that play a role in individual innovativeness are most complex to analyse, and may range from the individual characteristics of the CEO to organizational culture, the size of the firm and its market share (Damanpour 1991, Anderson et al. 2004). With reference to employee innovative behaviour, organizational factors may play a more important role in predicting the realization of innovations into actual marketable products than in influencing employee tendency to produce creative and innovative ideas (Axtell et al. 2000, Clegg, Unsworth, Epitropaki & Parker 2002). Furthermore, contrary to more recent studies, most early studies and theories examined innovativeness at macro-level or at organizational level (Damanpour 1991, Anderson et al. 2004). However, organizational factors do create the overall context in which employees perform their daily work and hence it is in our view important to also consider those factors. In the following, we will focus on discussing the role of organizational structure, strategy and culture in influencing employee innovativeness.

Corporate strategy gives direction to the current activities and development of the organization and its units, departments, teams and individuals. An explicit innovation strategy or a strategy with a clear focus on innovation is commonly seen as an important factor influencing innovativeness in organizations (Cottam, Ensor & Band 2001, Van der Panne, Van der Beers & Kleinknecht 2003).

More specifically, at least three broad aspects of organizational strategy can influence innovation (Van der Panne et al. 2003). First, the general emphasis placed on innovativeness (Christiansen 2000): if innovativeness is high on a corporation's list of priorities, it will affect the amount of resources and attention management allocates to idea generation and R&D activities. Second, a strategy with an emphasis on innovation includes a vision of how the industry will develop and how the company itself will develop. This typically helps the company to shift its focus from short-term benefits to long-term commitment to innovation processes. Sometimes, the viability of innovation activities cannot be judged until much later. This highlights the importance of long-term commitment to innovation processes. Similarly, a risk-tolerant top management that does not abort projects too quickly when first difficulties occur, and that enables employees and managers to reflect and take advantage of learning-by-failing, is important (Van der Panne et al. 2003). An innovation strategy can also allow the organization to take advantage of the synergy between parallel innovation projects within the organization. As organizations typically benefit from ventures that resemble their previous innovative projects (Van der Panne et al. 2003), an innovation strategy should also make use of the previous engagements in innovative projects in order to benefit from learning-by-doing and learning-by-failing effects.

The third aspect of a strategy that is conductive to innovation includes the decision of whom

the company competes with and collaborates with. The latter is particularly crucial. Bringing a customer or a supplier into a development process widens the scope of available information, allows opportunities for learning and simply provides more manpower to work on any given problem. Empirical studies have suggested that co-operation and communication with customers and other companies within and across industries can significantly improve and contribute innovative performance, measured for example by learning (Hasu 2001), by the identification of market needs, and by the number of patents (Länsisalmi 2004).

The question of organizational structure closely follows the strategic direction set for the organization. Although the debate over the most appropriate organizational structure for innovative activities is ongoing, there is a general agreement among both academics and practitioners that a mechanic organizational structure characterized by pronounced levels of bureaucracy, formalization and control are in conflict with the trial-and-error character of innovation processes (Damanpour 1991, Van der Panne et al. 2003). As an alternative, both theoretical observations and empirical evidence favour organic structures such as the matrix structure or the venture structure, characterized by lack of hierarchies, low levels of bureaucracy, a wide span of control, flexibility and adaptability (Staw 1990, Van der Panne et al. 2003).

First, organic structures allow diversity and individual expression, and are therefore better suited to foster employee innovativeness and entrepreneurship within the organization. Second, they are particularly well suited to the initiation phase of innovation processes, in which creativity and free idea-generation are needed. Organic structures are also often more conducive to the open, effective organizational and interdepartmental communication and learning that is crucial for creating a climate and culture that encourages innovation, in smaller organizations in particular (Moenaert, Caeldries, Lievenes & Wauters 2000, Van der Panne et al. 2003). For example, interaction between functional departments (e.g. R&D and marketing) has been shown to influence innovation and new product success (Moanaert et al. 2000).

The issue of structure is not, however, clear-cut. Empirical evidence suggests that successful innovative firms are typically loosely structured during their initiation phase, but evolve into more formal structures as their products and processes become better defined (Van der Panne et al. 2003). Researchers also commonly agree that the older, the larger and the more successful organizations become, the more difficult it is to maintain an organic structure, as some degree of hierarchy is needed to co-ordinate the various activities engaged in by the members of the organization (Salaman & Storey 2002). In large organizations with an organic structure, managers may not have enough time to familiarize themselves with the work of all the employees, co-ordinate their activities, and engage in coaching and identifying training needs. In other words, because of the wide span of control of managers, they have less time and resources to support individual employees. Empirical evidence supports this. For example, Kivimäki et al. (2000) found

that a high number of managers appear to facilitate innovativeness in small and medium-sized organizations. It hence appears that managerial support is crucial for employee innovativeness, in particular in the process of turning creative ideas into commercial innovations.

Similarly, some level of formalization, stability and clarity of responsibilities has been found to contribute to improved communication, by compelling all parties involved to exchange information regularly (Moenaert et al. 2000). If formal mechanisms are absent, communication comes to depend solely on the discretionary and ad hoc effort of the team members, which may not be sufficient, particularly in larger organizations. These findings do indeed suggest that some level of stability, clarity and co-ordination is needed – even when the structure remains organic, and the organization grows, becomes older and geographically dispersed. As Florida (2002) notes, one person may write brilliant software, but it still takes a well-managed organization to consistently produce, upgrade and distribute it.

Organizational culture is undisputedly considered crucial to an organization's ability to innovate (Van der Panne et al. 2003, Miron et al. 2004). A culture conducive to innovativeness fosters a firm-wide recognition of the necessity to innovate. A mission statement that explicitly emphasises the value of innovation and internal entrepreneurship, and the commitment of top management to this value statement can be seen to lie at the core of organizational culture (ibid). More concretely, dimensions such as high autonomy, tolerance of mistakes, continuous learning and low bureaucracy are some of the most prevalent characteristics of innovative culture (Madjar, Oldham & Pratt, 2002, Miron et al 2004). Organizations may institute formal approaches and mechanisms, and provide resources that contribute to a culture conducive to innovativeness. For example, Toyota has institutionalized a practice called Five Whys, wherein employees engaged in problem- solving are encouraged to ask "why" five times before they stop generating solutions (Bharadwaj & Menon 2000). Similarly, Bridgestone Tire has had employees from different groups temporarily joining in problem-solving teams in order to generate fresh alternative approaches and to question the established solutions through their different perspectives (Bharadwaj & Menon 2000). Another way for companies to signal the value and importance of innovation is to allocate specific funds, and devote time and support for its promotion (Kanter 1988).

Researchers of organizational culture increasingly recognize that organizations do not have cultures, but are cultures within themselves. (Salaman & Storey 2002). Cultural resistance to innovativeness may arise from entrenched routines that inhibit people from looking beyond their own duties and ways of how things have always been done, as well as from stress associated with change and uncertainty. Similarly, interdepartmental competition for budgets and competences may result in disharmony, hampering the co-operation necessary for innovativeness (Van der Panne et al. 2003). Therefore, resistance to innovation does not only lie in the external features of the organization that are perceived as anti-innovative, but also in the ways in which organiza-

tional members challenge these organizational obstacles, and in their ability to conceive and create a pro-innovative form of the organization (Salaman & Storey 2002).

Salaman and Storey (2002) highlight the importance of being aware of cultural thinking frames. At times, it is easy to name and identify problem areas that hinder innovativeness. The will and courage to actually do something about them may, however, be lacking, and result in unconscious resistance. This unwillingness and resistance may naturally only be an issue for some individuals, but it runs the risk of spreading and developing into an organizational culture. It is no doubt difficult to break free from previous ways of thinking and established routines. At the same time, every member of the organization should acknowledge that they are not trapped in the existing organizational culture, and can become a producer of that culture, and hence potentially its change agent.

Rather than describing general perceptions of organizational culture, the concept of climate is used to refer to specific facets of organizational/team culture, for example a climate for psychological safety, service, initiative and innovation, either at team or organizational level (Amabile & Gryskiewicz 1989, Patterson et al. 2005). Team/organizational climate for psychological safety refers to a shared belief that a team/organization is a safe environment for taking interpersonal risks without needing to fear negative consequences to self-image, status or career (Edmondson 1999). Empirical studies suggest that organizations with a climate for psychological safety are particularly conducive for innovativeness (Baer & Frese 2003, Thamhain 2003). The mechanism with which this occurs includes reduced risks through presenting new ideas, a higher level of job involvement, and better team learning.

Furthermore, climate research specifically focusing on innovation has suggested that group level perceptions of innovative climate influence levels of employee engagement in innovative behaviour (West & Andersen 1996). Similarly, empirical research suggests that an organizational climate that is considered safe and encourages risk-taking is important in motivating individuals to take initiative (Amabile & Gryskiewicz, 1989; Morrison & Phelps 1999). Initiative itself, in turn, plays an important role in the innovation process: individuals with initiative are more likely to take an active approach to work, to go beyond what is formally required in their jobs and to have the persistence to follow their creative ideas through to implementation (Miron et al. 2004).

To conclude, organizational factors contributing to innovativeness are complex and often directly influenced by uncontrollable outside pressures. They are different to the factors that influence innovativeness at individual, job and team levels. An explicit organizational strategy emphasizing innovativeness, a structure that matches the strategy, context and size of the organization, leadership and culture that foster innovative sub-climates are important yet broad and often difficult-to-change organizational elements, which lay the foundations for an organization's ability to benefit from employees' innovative efforts.

7. DISCUSSION

This review of research has introduced the main organizational, team, job and individual level factors that influence employee innovativeness as identified by recent studies. These factors play a central role in influencing both individual innovativeness and that born through interaction among employees. These factors need to be considered when encouraging and supporting innovativeness in contemporary organizations. It has to be acknowledged that person, job and team -related factors such as personality characteristics, autonomy, goals, and relationships with colleagues and line managers may play a more direct role in influencing the initiation phase of the innovation process characterised by creativity, than organizational level factors such as the structure or culture of the organization (Anderson et al. 2004, Clegg et al. 2004). At the same time, as some researchers have argued, the implementation of creative ideas into marketable products may more directly depend on the broader organizational context, for example of the organization's strategy and structure and ability to organize and manage its innovation processes (Mumford et al. 2002).

While it is important to consider the different factors that influence innovativeness, we highlight the danger of thinking about innovativeness too mechanically: in order to gain a holistic understanding of innovativeness, we need to see the interdependences between different factors and levels. Individuals are members of teams, and teams are nested within organizations (Amabile et al. 1996, Anderson et al. 2004). Thus, they are influenced by, for example, the team climate and organizational culture, in turn influencing these and contributing to their maintenance. Consequently, both an individual's and an organization's innovativeness, is a complex process in which innovativeness can be seen to occur as a result of several interconnected factors. As Bharadwaj and Menon (2000) have shown, support for innovativeness at all levels, from individual to organizational, is likely to lead to the highest level of innovation performance in the organization. Quite simply, the recruitment of certain types of employees or the implementation of particular practices will not guarantee innovativeness. Furthermore, engagement in one innovative activity may simulate new creative activities in the organization, which in turn need attention. Thus, to consider innovativeness as merely an *outcome* caused by certain variables is a too limited view (Anderson et al. 2004). It may well be that the utilization of all creative ideas resting within the individuals and teams rather than the lack of novel ideas presents the key problem. Therefore, administrative and process innovations are needed to improve work processes and teamwork so that creative and innovative ideas can be implemented and followed up.

Although the current knowledge base of factors that influence employee innovativeness is considerable, there are several issues that require further elaboration and research. Innovation studies typically limit themselves to a single-level analysis in their design frameworks (e.g. indi-

vidual or organization), thus ignoring the complex and process-nature of innovativeness (Anderson et al. 2004). This is particularly the case if we want to understand how employee creativity finally materializes as a successful innovation. For example, an organizational culture open to learning, and psychological safety in the team may positively influence an employee's risk-taking and result in innovative work behaviour, which in turn is reflected in team performance, and ultimately in organizational performance. Similar requests have already been made in the 1990s by Slappendel (1996) for studies approaching innovation from a process perspective, which seeks to understand how individual action and the surrounding context interrelate. These types of studies would allow us to investigate innovation not as being caused by individuals or objective organizational characteristics but rather as resulting from their interaction.

In addition, understanding the complex nature of innovativeness may also help to advance our knowledge base on less researched and less tangible processes and administrative innovations. It would be interesting to explore whether different factors may predict employee innovativeness in terms of technical innovations versus administrative process innovation. However, as recognised by Woodman et al. in 1993 and Slappendel in 1996, and repeated by Anderson et al. (2004) some ten years later, the multi-level and process approach to innovativeness combined with the difficulties in assessing it (technical vs. administrative, radical vs. incremental) remains a challenge. Nonetheless, longitudinal studies and qualitative studies on innovativeness would provide a starting point in advancing our understanding of, for example, the relationships between team diversity and dynamics, and innovativeness as a team process. Above all, we need not only to describe what factors correlate with innovativeness, but to come up with practical suggestions as to how organizations and leaders can promote innovativeness, both in terms of technological and administrative innovation.

Creativity and innovativeness are not the characteristics of a few select individuals. Rather, they are capacities inherent to a varying degree in every person, and are based on the talents of everyman to notice, remember, see, speak, hear, understand and recognize analogies between similar concepts or situations (Florida 2002). Therefore, creativity and innovativeness are something that everybody can aspire to and that can be supported (Amabile et al. 1996). However, as we have highlighted, although innovativeness is a complex issue, creative processes and innovation are not random concepts. A better understanding of the organizational, job, team and individual factors and processes assist organizations in supporting employee innovativeness and developing better insights into how organizational performance can be enhanced. In order to produce technical and product innovations, we need processes and administrative human resource management innovations that enable support of employees. As Wesley Cohen and Daniel Levinthal (1994) conclude, using the famous dictum by Louis Pasteur: "Fortune favours only the prepared firm". ■

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