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**Bachelor thesis in Work and Organizational Psychology**

# Direct and indirect effects of transformational leadership on innovative behavior

**Patricia Poppendick**
**s (0157368)**
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1. **Mentor: Drs. Ivy Goedegebure**
2. **Mentor: Prof. Dr. Karin Sanders**

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## Abstract

This study aims at investigating how transformational leaders directly and indirectly (via affective commitment to the organization, the career, the leader, and the team and innovative climate) affect employees' innovative behavior. The hypotheses are tested by applying quantitative analyses to data collected from 39 employees of a multinational high-technology group, specialized in the photo sensor technology in the Netherlands. The results of the analysis do not support the direct link between transformational leadership and innovative employee behavior. Yet, they support the moderator effect of affective commitment to the organization and the moderator effect of innovative climate between transformational leadership and innovative employee behavior. Likewise, a positive relationship between transformational leadership and innovative climate as well as affective commitment towards the leader got supported. Nevertheless, innovative behavior might have been influenced by other factors rather than transformational leadership. The limitations of the findings and recommendations for future research are discussed.

Key words: transformational leadership, innovative behavior, affective commitment towards the organization, the career, the leader, the team, innovative climate

# Introduction

In order to be adaptive and responsive to uncertain, competitive and changing environments, organizations, especially technology-driven organizations, need to be highly creative and innovative in order to maintain a competitive advantage (Gumusluoglu & Ilsev, 2009). In many studies (Gumusluoglu & Ilsev, 2009; Kim & Mauborgne; 1999) it is stated that particularly innovation is the key to success. Moreover, it is considered to add value and supports to go ahead of competitors (Oke, Munshi, & Walumbwa, 2009). Following the definition of Schumpeter (1934), innovation is the "creation and implementation of new ideas, products, processes, and policies." An idea is at the core of innovation and its effective implementation is contributed by the individual employees' knowledge (Scott & Bruce, 1994; Shipton, West, Dawson, Birdi, & Patterson, 2006). Janssen (2000) describes innovative behavior as the creation of valuable new products or services within a work role, a group or an organization, aiming to benefit "the role performance, the group, or the organization". Since innovation is of utmost importance for the long-term economical achievement of an organization, a vast array of research has been conducted upon the factors that facilitate employees' innovative behavior (Mumford, Scott, Gaddis, & Strange, 2002; Scott & Bruce, 1994).

Among the factors that primarily influence employees' innovative behavior, especially transformational leadership has been identified as having a significant impact on innovative behavior (Oke, Munshi, & Walumbwa, 2009; Jung, Chow, & Wu, 2003). According to Bass (1990), transformational leaders stimulate their subordinates to go beyond their self-interest and contribute to the achievement of organizational goals by means of their four unique but interrelated behavioral components: charisma, intellectual stimulation, consideration of the individual, and inspiration. Transformational leaders also indirectly support innovative behavior (Jung, Chow, & Wu, 2003) by influencing employees' organizational commitment (Avolio, Zhu, Koh, & Bhatia, 2004) and establishing an organizational climate that encourages employees to generate novel ideas (Scott & Bruce, 1994).

Meyer and Herscovitch (2001) find that organizational commitment motivates employees to go beyond their self interest to contribute towards the firm's benefit. Therefore, it should be the interest of each organization to maximize the commitment of the individual to reinforce innovative behavior and consequently contribute to an improved organizational

performance. In prior literature, especially the component of affective commitment is found to contribute to the employees' innovative behavior (Meyer, Stanley, Herscovitch, & Topolnytsky, 2002; Mathieu & Zajac, 1990). Reichers (1985) ascertains that employees are not just committed to their organization but are affectively attached to different foci of commitment, allowing a more detailed prediction of behavior outcomes relevant for a given target. Yet, the concept of organizational commitment developed from a one-dimensional model, provided by Porter, Steers, and Mowday (1974) to a multidimensional model, established by Allen and Meyer (1990). Whilst the model of Porter strongly focused on the affective commitment of employees towards their organization, Allen and Meyers (1990) definition of commitment is based on a three-component conceptualization consisting of affective, continuance and normative commitment.

The third factor supporting innovative behavior is the organizational climate (Unsworth & Parker, 2003). Research into the topic of organizational climate has been conducted for a long time, yet controversies exist regarding its definition (Patterson, et al., 2005). The disagreement concerning climate results through the use of a variety of terms, as psychological climate, organizational climate and organizational culture for instance, when referring to individuals' perceptions of their working environment (Burton, Lauridsen, & Obel, 2004; Parker, et al., 2003).

The psychological climate refers to the individual employee's cognitive schema of the organizational structures and its processes as well as events and possible outcomes. Those perceptions assist employees in interpreting the work environment as being either beneficial or detrimental to their own well-being (Jones & James, 1979). In fact, employees' perceptions of the organizational climate, including their perceptions of the organizational interactions and their normative expectations of desirable behavior, have been found to influence innovative behavior (Mumford, Scott, Gaddis, & Strange, 2002). Specifically, innovative climates strongly promote innovative behaviors (Unsworth & Parker, 2003). The innovative climate refers to an employees' perception of the extent to which their innovative behavior will be rewarded, supported and expected in a particular organizational setting (Schneider & Reichers, 1983; Sorra & Sorra, 1996),

In spite of extensive research upon the direct relationship between the individual concepts and innovative behavior, little notion has been given to the transformational leaders'

indirect effect through affective commitment and innovative climate (Jung, Chow, & Wu, 2003) on individuals innovative behavior (Gumusluoglu & Ilsev, 2009). Yet, evidence has been found of the direct relationships between transformational leadership and affective commitment (Bycio, Hackett, & Allen, 1995; Avolio, Zhu, Koh, & Bhatia, 2004) as well as between transformational leadership and innovative climate (Unsworth & Parker, 2003). Transformational leaders are expected to increase their subordinates jobinvolvement, leading to a higher organizational commitment (Walumbwa & Lawler, 2003), which in turn may contribute to an innovative employee behavior. Also, the leader's individual consideration contributes significantly to the employees' organizational commitment (Bycio, Hackett, & Allen, 1995). Since affective commitment is an important antecedent of innovative behavior, it is resonable to assume an interrelationship between those concepts. The link to innovative climate on the other hand has already been considered in the academic literature (Jung, Chow, & Wu, 2003; Gumusluoglu & Ilsev, 2009). Here, the common idea is that via the direct relationship between the individual concepts, transformational leaders can establish an organizational climate that encourages individuals to display innovative behavior without worrying about being punished in the case of negative outcomes. Researchers have revealed that transformational leaders encourage employees to take risks and champion innovative behavior due to reframing problems and approaching old situations in new ways (Jung, Chow, & Wu, 2003). Nevertheless according to Gumusluoglu and Ilsev (2009), the processes through which transformational leaders elicit innovative behavior are not sufficiently studied yet.

This study focuses on the determination of the role of affective commitment towards the organization, the career, the leader and the work team; and innovative climate in either mediating or moderating the relationship between transformational leadership and innovative behavior, in a technological-driven organization in the Dutch service sector. This choice is made on the basis that technology-driven organizations engage in more innovative behavior than firms from other sectors (Kim & Mauborgne, 1999).

Furthermore, the existing knowledge about this topic is largely restricted to non-European firms (Jung, Chow, & Wu, 2003; Avolio, Zhu, Koh, & Bhatia, 2004). This study contributes in two ways to the filling of the gap of the processes through which transformational leaders elicit innovative behavior. First, this study determines the direct relationship between

transformational leadership and innovative behavior in a multinational company in a Western European country and second; all variables are studied on the employee level. This insight can guide organizations how to implement effective leadership in creating an innovative climate and strengthening affective commitment in order to facilitate innovative behavior. That assists organizations to remain competitive in the rapidly changing environment, to optimize their work and likewise to increase their financial performance (Elias, 2009; Shipton, West, Dawson, Birdi, & Patterson, 2006). Besides, a practical gain of this study is the research report for the participating company, making the studies findings obvious to the company and formulating recommendations on the basis of the studies results. Consequently, the research question is formulated as follows:

*What is the influence of transformational leadership on employees' innovative behavior and which role do affective commitment and innovative climate play in this context and how do they influence the innovative behavior?*

The subsequent section (2) will present an overview and definitions of transformational leadership, innovative behavior, affective commitment and innovative climate as the basis for the hypotheses specifications. Section (3) depicts the methods off data analysis employed in this research, followed by the presentation of the results (4). Section (5) will conclude and finally discuss the role of the transformational leader.

# Theoretical framework

## Leadership and innovative behavior

Leadership defines the process of influencing others, guiding structure and facilitating activities for achieving desired outcomes (Jong & Den Hartog, 2007). Among the different types of leadership, researchers particularly studied Leader-Member Exchange theory (LMX) and transformational leadership with regard to innovative behavior (Basu & Green, 1997; Jung, Chow, & Wu, 2003).

LMX theory represents the unique development of different exchange relationships with individual employees. An exchange relationship is characterized as a mutually influencing transaction between the leader and the subordinate (Jong & den Hartog, 2003). In this transaction the leader may receive reverence in the form of status, esteem and loyality, analogically, employees receive rewards such as authority freedom, promotions and bonuses (Basu & Green, 1997). Furthermore, LMX theory suggests that leaders maintain relations of low and high qualities with their employees. Low quality relationships are characterized by formal interactions and routine tasks (Liden & Graen, 1980), whereas high-quality relationships are characterized by informal interactions, providing employees with challenging tasks, support in risky situations and the provision of task-related resources (Jong & Den Hartog, 2007). In various academic studies, the latter has been variefied to facilitate employees innovative behavior (Basu & Green, 1997; Scott & Bruce, 1994).

The transformational leadership style aims at optimizing the development of the individual, the group and the organization to perform beyond expectations (Bass, 1985), leading to the employees motivation to display innovative behavior. Furthermore, Bass (1985) ascertains that transformational leaders stimulate change and innovation and raise the interest of their employees by exhibiting proactive behavior. According to Bass (1990), the transformational leadership style is an extension of the transactional leadership style. The transactional leadership style is based on exchange processes between the leader and the subordinate, referring to the reward according to the subordinate's performance (Hartog, Van Muijen, & Koopman, 1997). Transactional leaders focus on specific work goals, work skills and knowledge required to accomplish the desired goals (Avolio & Bass, 1995). On the whole, the two leadership styles solely differ in the process by which a leader can induce the subordinate and in the type of goals set.

Transformational leadership theory and LMX theory have been found to encourage innovative behavior (Basu & Green, 1997). Referring to Bass' (1990) characteristics of the transformational leadership style, this research will elaborate the effect of transformational leadership on innovative behavior. Transformational leaders provide a common vision to all team members, enabling them to work together to accomplish a set goal, which is in contrary to the LMX theory. Besides, including all organizational members can lead to the enhancement of innovative behavior (Elkins & Keller, 2003). Shamir, House, and Arthur (1993) verify that transformational leaders build personal and social identifications among all employees, leading to a higher commitment in the individuals, which in turn can lead to innovative behavior (Meyer, Stanley, Herscovitch, & Topolnytsky, 2002). Furthermore, by means of intellectually stimulating subordinates to see problems from different vantage points and helping individual employees to develop to their full potential, transformational leaders can facilitate innovative behavior in all group members (Reuvers, van Engen, Vinkenburg, & Wilson-Evered, 2008). Besides, several recent studies supported the link between transformational leadership and innovative behavior (Elkins & Keller, 2003). For instance, the research of Jung, Chow, and Wu (2003) among 32 Taiwanese electronics and telecommunications supports the direct relationship between transformational leadership innovative behavior. Based on these findings it will be shown how transformational leadership accounts for innovative behavior.

## Transformational leadership and innovative behavior

An organization's staff is the essential ingredient to initiate innovation (Woodman, Sawyer, & Griffin, 1993; Jong & Den Hartog, 2007). Employees' innovative behavior is referred to the subordinates' devotion to seek better ways to improve the level of productivity in order to enhance the organizations efficiency and effectiveness (West & Farr, 1989). Innovation has been found to play a vital role for the long-term survival of the firm and its success (Unsworth & Parker, 2003; West & Farr, 1989; Janssen, 2003). Innovative behavior also has a positive social psychological effect on employees, including an increased job satisfaction, and better interpersonal communication (Janssen, 2000). Janssen (2000) also refers innovative behavior to organizational citizenship behavior. Scott and Bruce (1994) for instance considered innovative behavior as a multidimensional model which states, that individual innovation consists of three steps: idea generation, idea promotion, and idea realization. The first is related to the formulation of new ideas benefiting the organizational success

(Woodman, Sawyer, & Griffin, 1993). After this stage the employee needs to promote the idea in order to receive support from coworkers to capitalize the idea. The last stage of the innovation process is the completed realization of the initial idea, composed of the realization through producing a prototype that after a test phase turns into an institutionalized form (Kanter, 1988). The study of Janssen (2000) on the other hand treated employees' innovative behavior as a one-dimensional construct that encompasses idea generation, idea promotion and idea realization.

Managers need to possess certain skills to induce innovative behavior in individuals (Mumford, Scott, Gaddis, & Strange, 2002). Recently, research on employees' innovative behavior has identified a relationship to the transformational leadership style (Oke, Munshi, & Walumbwa, 2009; Jung, Chow, & Wu, 2003; Basu & Green, 1997). In fact, those leaders have been suggested to directly motivate their followers' innovative behavior via the four components of transformational leadership. First, by means of *individual consideration*, transformational leaders motivate employees to go further than the job description to achieve desired performance (Bass, 1985). To achieve the latter, they engage in the individuals value system, providing explanations which are of real value to the employee and aligning them with the collective identity (Shamir, House, & Arthur, 1993). Furthermore, they highlight individual qualities of followers, thereby emphasizing the diversity of talent, instigating innovative behavior (Reuvers, van Engen, Vinkenburg, & Wilson-Evered, 2008). Besides, transformational leaders are concerned with the individual achievement and development of the subordinates, for instance via mentoring programs (Bass & Avolio, 1989). This application leads to new learning opportunities for individuals resulting in new knowledge for idea generation (Gumusluoglu & Ilsev, 2009). Those approaches induce the employees intrinsic motivation causing them to look for novel approaches to problem solving (Zhou, 1998).

Through the component of *charism* transformational leaders serve as role models employees want to identify with, motivating employees to achieve the organizational goals (Bass, 1990; Jung, Chow, & Wu, 2003). However, for the greatest part transformational leaders evoke innovative behavior through the components of *intellectual stimulation* and *inspiration* (Gumusluoglu & Ilsev, 2009). Specifically, they have been found to inspire and excite employees by identifying new opportunities and articulating an important vision and

mission for the future (Oke, Munshi, & Walumbwa, 2009). That enhances employees' understanding of the importance and the values associated with the desired outcomes. Yet, transformational leaders also have the competence to enhance followers' confidence in their own capabilities to meet high expectations that contribute to the accomplishment of the fundamental organizational goals (Mumford, Scott, Gaddis, & Strange, 2002). In addition, those leaders inspire and encourage employees to get involved into the generation of novel ideas and in extra effort to perform beyond expectations.

Next, the transformational leader's *intellectual stimulation* of the employee motivates organizational members through problem reformulation, imagination, intellectual curiosity, and novel approaches (Oke, Munshi, & Walumbwa, 2009) Besides, it motivates members to think critically about issues and examine solutions from different perspectives (Bass, 1990). Those leaders characteristically increase the subordinates' confidence to generate alternative solutions and finally implement it (Mumford, Scott, Gaddis, & Strange, 2002). Together the four components intensify the impact of the transformational leader on employees' innovative behavior (Jung, Chow, & Wu, 2003). Hence, prior studies provide the basis for the first hypothesis:

Hypothesis 1: Transformational leadership is positively related to innovative behavior of employees

## The mediating role of affective commitment between transformational leadership and innovative behavior

Meyer and Herscovitch (2001) identify commitment to be "a force that binds an individual to a course of action of relevance to one or more targets". Several studies in the past, aiming to predict the individual employees' behavior focused on organizational commitment as a crucial psychological factor (Ellemers, de Gilder, & van den Heuvel, 1998). Although various concepts have been used to study organizational commitment (Mowday, 1998; Reichers, 1985), the three component model by Meyer and Allen (1990) is frequently employed as a basis for research on organizational commitment, thereby aiming at the organization as a whole.

Reichers (1985) states that employees are not only committed to their organization as a whole but also are emotionally attached to different foci of the organization, such as the supervisor, the work group or team, the form of employment, and the own career (Carson &

Bedeian, 1994). As well as Reichers (1985) Allen and Meyer (1996) ascertain that affective commitment correlates with measures reflecting affective reactions towards different entities of the organization. Furthermore, the different types of affective commitment allow for a more detailed description of employees' motivation to display organizational behavior such as attendance, organizational citizenship behavior and innovative behavior (Reichers, 1985). Therefore, affective commitment is most relevant to predict employees' behavior (Allen & Meyer, 1990).

The most prevalent approach to organizational commitment in the literature is the affective commitment towards the organization as a whole. That refers to an employee's emotional attachment to the organization, as well as to the identification with the organization, involvement and enjoyment of the membership within the organization (Allen & Meyer, 1990). The affective commitment towards the career on the other hand is defined as people's drive to their individual goal to advance in their career (Cho & Lee, 2007). Moreover, it refers to the importance of work and a career in the individual's total life (Morrow, 1983). The affective commitment towards the leader is defined as the emotional attachment towards the latter (Becker & Kernan, 2003). Finally, the affective team commitment characterizes the commitment to the goals of the work-team (Ellemers, de Gilder, & van den Heuvel, 1998). Some academic studies results displayed that those different foci of commitment can be reliably distinguished (Vandenberghe, Bentein, & Stinglhamber, 2004; Ellemers, de Gilder, & van den Heuvel, 1998).

Several researchers state that leadership style influences organizational commitment (Aviolio, Zhu, Koh, & Bhatia, 2004; Herold, Fedor, Liu, & Caldwell, 2008; Mowday, Porter, & Steers, 1982). Specifically, the transformational leadership style has been linked theoretically and empirically to affective commitment to the organization (Meyer & Herscovitch, 2001). The latter in turn has been found to have a high positive relationship with innovative behavior (Meyer, Stanley, Herscovitch, & Topolnytsky, 2002) Both, innovative behavior as well as affective commitment, are influenced by the four characteristics of the transformational leader who has the ability to alter employees' needs, values and ambitions (Bass, 1985). Transformational leaders influence the employees' affective commitment to the organization by aligning the organizational goals with each individual's values, and by enhancing their follower's affective commitment towards themselves to follow their vision,

mission and the organizational goals (Shamir, House, & Arthur, 1993). Prior research has shown that employees develop distinctive affective attachments to the organization and to the leader (Ellemers, de Gilder, & van den Heuvel, 1998).

Transformational leaders influence followers' affective commitment by considering the individual needs of each employee to develop them according to their individual potential, so that the project becomes meaningful to the employee (Bass, 1990; Bass & Avolio, 1989). Moreover, this knowledge of the individual characteristics in turn enables the manager to *inspire* the subordinate in alignment with his or her interests and abilities (Avolio & Bass, 1995). Similarly, the understandings of the individual characteristics are contributing to the *intellectual stimulation* of each subordinate to think critically by using novel approaches. Thereby, the manager motivates subordinates to increase their involvement in the task, causing an increase in the employees' commitment (Walumbwa & Lawler, 2003). Also, the transformational leader boosts the employees' affective commitment by rewarding the individual employees' efforts that contribute to the organizational goals (Bass, 1990). Hence, leader's support, involvement and individual consideration could be expected to give rise to employees' affective commitment to the organization and to the leader.

Transformational leaders are able to align individuals' goals with group goals, leading to the internalization of the group goals (Shamir, House, & Arthur, 1993). Furthermore, that makes it plausible that transformational leaders instigate employees' affective commitment towards the team. Employees are therefore expected to have a desire to perform their own tasks and engage in behavior that is relevant to the work group (Ellemers, de Gilder, & van den Heuvel, 1998). Furthermore, Ellemers, de Gilder and van den Heuvel (1998) argue that employees, who feel highly committed to the organization, are motivated to build up good relationships with co-workers and feel emotionally attached to the team.

The affective commitment to the organization and the career has been found to correlate (Ellemers, de Gilder, & van den Heuvel, 1998). Therefore, one could infer that transformational leaders have an effect on organizational commitment and occupational commitment. Based on the transformational leader's ambition to develop the employees' skills (Bass & Avolio, 1989), the employee could be expected to feel committed to their own career, resulting in favorable behaviors that enhance their career opportunities. Considering the fact that the different concepts of the affective commitment are modestly interrelated,

leads to the expectation that transformational leaders have an effect not just on affective organizational commitment but also on the other types of commitment due to the components of transformational leadership.

Researchers have stated that especially affectively committed employees do more than originally expected and perform at maximum level, so it is likely that they also engage in innovative behavior (Hartog, Van Muijen, & Koopman, 1997; Meyer, Stanley, Herscovitch, & Topolnytsky, 2002; Hannah, 1995). Furthermore, employees who are affectively committed towards the career feel responsible for their career and are willing to work hard to improve products, processes and policies (Cho & Lee, 2007). Hannah (1995) states that employee's affective commitment towards their job leads to innovative behavior, as they perceive their job to be important to the welfare of the society. Furthermore, Ellemers et al. (1998) state that individuals' commitment towards their career also refers to the personal advancement in their profession. According to that, an employee's affective commitment to the own career is expected to increase innovative behavior which may lead to further career opportunities. The other way around, they might be more likely to develop their skills and to put effort in the development of their own career, which in turn contributes to their ability to exert innovative behavior.

As stated above, an empirical support of the assumption that affective commitment to the leader and affective commitment to the team are distinguishable is given by Vandenberghe, Bentein, and Stinglhamber (2004) as well as Becker (1993). Their researches proved that employees engage in separate exchange relationships with their supervisor and their work-team. According to Shamir et al. (1993) employees are intrinsically motivated to follow the leader's vision, mission and goals. Hence, through to means of the affective commitment towards the leader employees have an ambition to engage in behavior that results in the achievement of the leaders' future vision, evoking innovative behavior. Additionally, Ellemers et al. (1998), state that especially employees who feel emotionally attached to their work team are driven to achieve a high team performance.

This study assumes that employees - feeling affectively committed to the organization, the career, the leader, and the team - are intrinsically motivated to display innovative behavior. That is why the second hypothesis is:

Hypothesis 2: The affective commitment towards (a) the organization (b) the career, (c) the leader, and (d) the team mediates the relationship between the transformational leadership style and innovative behavior.

## The mediating role of innovative climate between transformational leadership and innovative behavior

Climate characterizes the meanings that employees develop concerning their work environments (Choi, 2007). At the individual level, climate is referred to the psychological climate, characterized by an individual's cognitive appraisal of the organizational context, attributing meaning to organizational structures, events and processes as well as possible outcomes for individual employees in organizations (Jones & James, 1979). Yet, the organizational climate can be seen as an extension of the psychological climate, being measured on the organizational level (James, et al., 2008). Moreover, the organizational climate is the shared perception employees have about the events, practices, and procedures within the organization. It also includes the employees' behaviors that are expected and thus get rewarded and supported, in a particular organizational setting (Schneider & Reichers, 1983). According to Burton, Lauridsen and Obel (2004) organizational climate "is the attitude of the individuals concerning the organization - its degree of trust, conflict , morale, rewards equity, leader credibility, resistance to change, and scapegoating as seen by the individuals". Furthermore, their research supposes organizational climate to be the same as psychological climate.

The organizational culture, on the other hand relates to shared values, common assumptions, norms and patterns of beliefs held by organizational members. Hence, organizational climate can be interpreted as the visible sphere of the underlying organizational culture. The organizational culture shapes organizational processes; consequently it influences the development of the organizational climate (Patterson, et al., 2005). Since climates offer a framework for appropriate behavior, employees' perceiving an innovative climate that supports new ideas and change, and supplies resources for innovative initiatives are motivated to engage in innovative behavior more frequently (Scott & Bruce, 1994). Those innovative climates make up their psychological concept about innovation and in turn positively influence their innovative work behavior (Patterson, et al., 2005).

The psychological climate is a quantitative measure (Denison, 1996), which is measured along different dimensions (Burton, Lauridsen, & Obel, 2004). Those dimensions provide a basis for four different climate types: group climate, developmental climate, rational goal climate, internal process climate. The study of climate is (a) a perceptual measure of individual attributes, (b) the perceptual measurement of organizational attributes, and (c) a multiple measurement of organizational attributes combining perceptual and more objective measurements. The first is a characteristic of the psychological climate, whereas the second and third perspectives are features of the organizational climate (James & Jones, 1974). To capture the psychological climate, this study will make use of the competing values framework, initially developed by Quinn and Rohrbaugh (1983). This framework is insusceptible across many applications and reliable as a measurement instrument (Burton, Lauridsen, & Obel, 2004).

Climates are not shaped in a vacuum; they are formed by organizational policies and structures, leaders and organizational culture and cite certain behaviors (Jung, Chow, & Wu, 2003; Mumford, Scott, Gaddis, & Strange, 2002). According to Schein (1992) leaders' vision for the future and their beliefs about which behaviors are desired and which not, become part of the organizational culture and organizational climate. As stated earlier, transformational leaders stimulate change and innovation (Bass, 1985). Thus, they establish an innovative climate through intellectually stimulating employees', questioning their assumptions, reframing problems and approaching old situations in new ways. Once a transformational leader has established such a climate that values creativity, risk-taking approaches, and innovative work behavior, it serves as sense-making principle for innovative work behavior.

Several studies offer empirical support for the innovative climate's effect on organizational innovation (Mumford, Scott, Gaddis, & Strange, 2002; Scott & Bruce, 1994). However, Scott and Bruce (1994) are one of the few researchers identifying innovative climates to enhance individual innovative behavior. Researches of Quinn and Rohrbaugh (1983) ascertain that on employee level individual subordinates, perceiving the organizational climate as open to change and providing sufficient resources as time, personal and financial support recognize the climate as being supportive for change and innovation and take more calculated risks

and accept challenging assignments. Their study, for instance, has provided evidence for the organization's group climate and developmental climate to blossom innovative behavior.

Following the model of Quinn and Rohrbaugh (1983) the *group climate* has norms and values allied with trust, morale and cohesion. This climate is established by emphasizing training and development of the individual as well as the application of human resource practices. The organization can coordinate and control its employees using empowerment and letting organizational members participate in decision processes. Besides, the organization sets high values on supportive, cooperative and trusting interpersonal relationships (Quinn & Rohrbaugh, 1983). Furthermore, to accomplish goals in the long run, the group climate relies on planned and organized changes by a top down approach (Hakonsson, Obel, & Burton, 2008). The *developmental climate* on the other hand stresses readiness, change and innovation and has norms and values that are related to growth, resource acquisition, creativity and adaption. The developmental climate is characterized by a low resistance to change allowing employees to think about problems from different points of perspectives which in turn result in innovative behavior (Patterson, et al., 2005). This organizational climate alleviates to carry out changes and is characterized by an extraordinarily dynamic and creative work environment where employees have access to knowledge and are willing to exchange it amongst each other. Above all, the organization is implementing a bottom-up, flexible and generative style which results in a higher sense of responsibility and more innovative behavior of employees (Hakonsson, Obel, & Burton, 2008).

The analysis of Burton et al. (2004) demonstrates that the group climate and the developmental climate show nearly alike scores on the different dimensions. The only exception is the resistance to change; in fact the group climate shows a high resistance to change and the developmental group climate shows a low resistance to change. Therefore, Burton et al. (2004) reasoned that the two climate types could be described along two dimensions, tension and resistance to change. It could be argued that the two climate types can be combined to an innovative climate for the following three reasons.

First, the group and the developmental climate share an emphasis upon low tension (Quinn & Rohrbaugh, 1983), being characterized by pleasant emotions (Hakonsson, Obel, & Burton, 2008). Furthermore, both climate types have been proved to enhance innovative work behavior (Quinn & Rohrbaugh, 1983). Third, Quinn and Rohrbaugh's (1983) state that,

innovative organizations often show characteristic of both types of climate. Hence, it is reasonable to elide the only distinguishable variable *resistance to change* and introduce a climate that shares the same measures on the dimension of low tension. According to the results of Burton et al. (2004) study, high scores on trust, morale, rewards equitability, leader credibility and scapegoating and a low score on conflict indicate an innovative climate. Therefore, the third hypothesis is:

Hypothesis 3: The innovative climate mediates the relationship between transformational leader and innovative behavior.

## The moderating role of affective commitment between transformational leadership and employees' innovative behavior

The relationships between transformational leadership and innovative behavior and between affective commitment and innovative behavior have been discusses until this point. While many studies exist tracing the relationships between transformational leadership and innovative behavior (Jung, Chow, & Wu, 2003), few studies have considered the moderating role of affective commitment on the relationship.

In the context of this study the focus will be on the moderating role of different foci of commitment that have either been linked with organizational citizenship behavior (Ellemers, de Gilder, & van den Heuvel, 1998; Tsui & Wang, 2002) or are relevant to it. The role of affective commitment as a moderator of leadership on innovative behavior has been highlighted by Hannah (1995). She states that innovation in public organizations is directed by employees who have a strong commitment towards the services they are delivering. Yet, the focus of this study will be on different foci of affective commitment, namely affective commitment towards the organization, the career, the leader and the team, which are likely to predict the outcome related to the target more precisely (Meyer & Herscovitch, 2001). Defintions of the different foci of commitment are already given in paragraph about the mediating role of affective commitment and will therefore not be elaborated further. It would be resonable to assume that people with a high affective commitment towards a given target are already more susceptible to engage in innovative behavior. Furthermore, some studies have investigated the role of different variables for understanding leadership processes that enhance innovative employee behavior (Jung, Chow, & Wu, 2003). In alignment with the aforementioned and the direct relationships between transformational

leadership, affective commitment (Avolio, Zhu, Koh, & Bhatia, 2004), and innovative behavior (Mathieu & Zajac, 1990), it could be assumed that the effectiveness of the transformational leadership style on innovative behavior will depend on the employees' degree of affective commitment towards the aforementioned targets. Therefore, the fourth hypothesis is:

Hypothesis 4: The affective commitment towards the (a) organization, (b) career, (c) leader, (d) team moderates the relationship between transformational leaders and innovative behavior such that the relationship will be stronger when affective commitment to the different foci is high rather than low.

## The moderating role of innovative climate between transformational leadership and employees' innovative behavior

The transformational leadership style has been determined to influence the innovative behavior directly and to create work environments that employees perceive to be supporting of innovative behavior. Yet, the study of Scott and Bruce (1994) does not support the mediating role of innovative climate. From this point of view, it can be assumed that the perceptions of an innovative climate moderate the relationship between transformational leadership and innovative behavior. Elkins and Kellers (2003) state that various contextual variables moderate the relationship between transformational leadership and innovative behavior.

The elaboration of the literature makes the direct relationship between innovative climate and innovative work behavior evident. It has been found that the organization's environment might support innovative behavior by encouraging and recognizing innovative behavior, as well as by providing adequate amounts of resources, personnel, funding, and time (Scott & Bruce, 1994). Considering the notion of Burton et al. (2004) who state that psychological and organizational climate can be used interchangeably, employees' perceptions of such innovative climates can impact their innovative behavior. However, it might be expected that the perceptions of such climates are established through a variety of organizational factors, industry type and environmental demands that support innovative behavior, influencing the actual innovative behavior of employees (Gumusluoglu & Ilsev, 2009). Furthermore, employees' creativity has been verified to be enhanced through contextual factors that create a supportive innovative climate (Woodman, Sawyer, & Griffin,

1993). Bass (1985) ascertains that transformational leaders promote higher performance in organizational units that are flexible and open to change. Furthermore, the transformational leadership is characterized as stimulating change and innovation. Due to this fact it might be assumed that employees who perceive an innovative climate respond better to transformational leaders, leading to an increased innovative behavior. Hence, an innovative climate facilitates the employees' innovative behavior. Thus, the fifth hypothesis is:

Hypothesis 5: The innovative climate moderates the impact of transformational leadership on innovative behavior such that the relationship will be stronger when employees perceive the innovative climate to be high rather than low.

These hypothesized relationships are combined in the research model used in the study. The model is depicted in Figure 1.

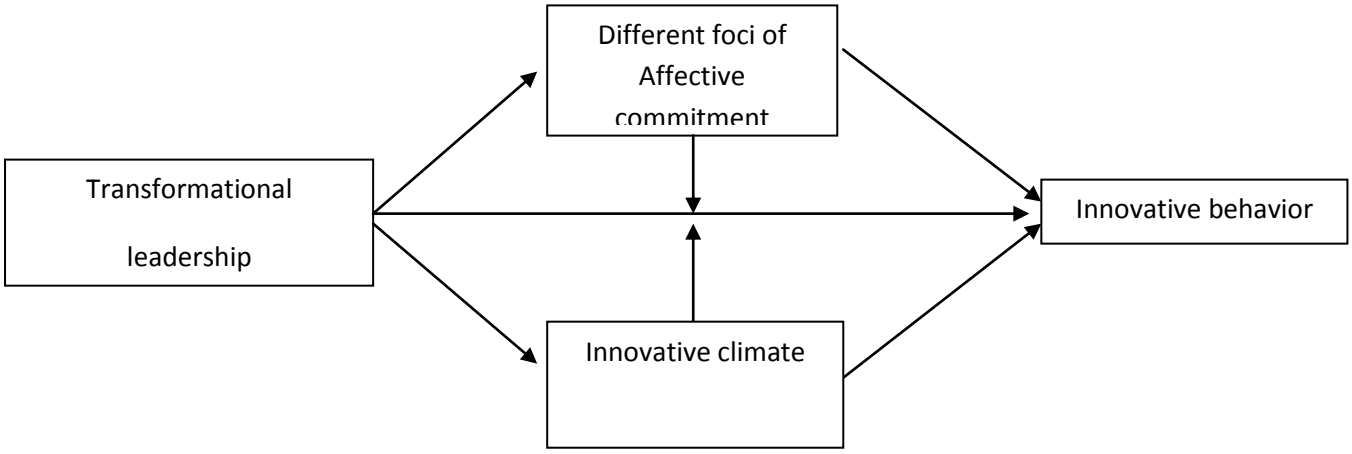


Figure 1: Research model

# Methods

## Participants and Procedure

Data for the present study was collected from one technology-driven business in the Dutch sector in the province of Drenthe. The participating organization is a multinational high-technology group, with over 40 years experience in sales and innovation, specialized in the

photo sensor technology. This group operates internationally in the Night Vision industrial, scientific and Medical Imaging markets, employing 1100 people across more than 50 countries. A multinational corporation is defined as an enterprise that manages production establishments or delivers services in at least two countries.

The industry was chosen for study since especially organizational innovation has been a critical factor for the company survival due to the industries rapid technological advances and highly competitive markets (Gumusluoglu & Ilsev, 2009). The selection of companies took place through calling companies in the technical branch in the Netherlands and Germany. Furthermore, the researcher made use of her personal networks to contact several companies. The response rate was rather low. In total 43 companies were approached, leading to only one participating organization. This response is really low and can lead to limitations in the generalizability of conclusions drawn from this study. The main reasons of the firms' refusal were: the economical crisis, no time, not taking part in such research in general, or already doing research in this area.

At the participating organization a number of 250 employees are working. Due to reasons of clarity only a number of 71 employees that hold a college degree or higher and perform predominantly administrative and professional duties, got selected. The survey was distributed via email to the employees at one point in time. In addition, an email from the HR-manager and the investigator assured participants that their responses remain confidential and would be used strictly for research purposes. Furthermore, a reminder email was sent to the sample once a week and the researcher personally approached the employees twice to heighten the response rate. Completed questionnaires were sent directly via email to the researcher or got collected by the researcher at two time points at the organization. Across the selected employees 39 completed the questionnaire, leading to a response rate of 55%. The age of the respondents varies; for example, 44% are in the category of 36 to 45 years, 87% were male and respectively 13% female, all holding the Dutch nationality. More than half of the respondents have a "HBO" level education (54%). The average organizational tenure of the employees falls in the category of 0 to 2 years (49%). More than half of the employees hold a permanent employment contract (74%) and nearly everyone is working fulltime (85%).

## Measures

For the analysis of the different variables the researcher used a standardized questionnaire. This questionnaire consists of a number of scales that are described in detail below. The scales are translated from English into Dutch.

*Control variables.* The questionnaire measures control variables that can have a potential influence on the results. The items consist of nine different aspects on employee level such as: gender, age, job tenure, work unit, nationality, educational background, marital status and two questions about the type of contract. Besides, the questionnaire consists of four control variables on the organizational level such as: size of the organization, number of employees with a permanent contract, age of the organization, and reorganizations in the last two years regarding the staff reduction.

*Transformational leadership.* Transformational leadership was measured using a 15-items dutch version of the Multifactor Leadership Questionnaire (Stuart, 2005). This survey was developed by Bass and Avolio (1989). All four theoretically distinctive behavioral components of transformational leadership were operationalized in the MLQ. A sample item measuring the leader's charisma was " My leader gives off an air of power and confidence". The transformational leaders inspirational motivation role was gauged with an item like: "My leader acts as an role model for me". An item relating to intellectual stimulation was: " My leader ask me questions that encourage me to think about the way I'm doing things". Finally, items like: " My leader is interessted in developing his/her employees" were used to tap the individual consideration aspect of the transformational leadership. All items were rated on a five-point Likert scale with 1= strongly disagree and 5 = strongly agree. The 15 items were expected to capture four dimensions of transformational leadership, accordingly a factor analysis was done on the 15 items. Notwithstanding, the results indicated that a single factor with an internal consistency of .92 formed a reliable scale.

*Innovative climate.* The innovative climate was measured on the basis of the „ framework of competing values" (Quinn & Rohrbaugh, 1983) and the four climate types by Burton et al. (2004). Those climates can be described on the degree of trust, conflict, morale, rewards equitability, resistance to change, leader credibility and scapegoating (Zammuto & Krakower,1991 in Burton, Lauridsen, & Obel, 2004). For reasons mentioned in the theoretical framework the innovative climate was measured only with six items, excluding

the item “resistance to change”. Employees responded to a five-point Likert scale ranging from 1 = totally agree to 5 = totally disagree. Sample items are: “ Our employees can always trust each other” and “Employees consider leadeship to be credible”. After removing the variable conflict the internal consistancy was enhanced from .54 to .71.

*Organizational Commitment.* The affective commitment of the employees was measured with four different subscales, discriminating different kind of affective commitment.

The *affective organizational commitment* items were selected from the “Affective, continuance and normative commitment scales” developed by Allen and Meyer (1990). This scale captures organizational commitment using 24 items. Given the focus of the current study on affective commitment, the eight-item affective commitment scale (ACS) was included as a measure for affective organizational commitment. A sample item measuring organizational commitment is: “The organization has a great deal of personal meaning for me”. Through to the removal of item 5 (“I do not feel like “part of the family” at my organization”) and 8 (“I do not feel a sense of “belonging” to my organization”) the internal consistency of the scale is enhanced from .45 to .72.

The *affective commitment towards the career* consists of six items, basing on Meyer, Allen and Smith (1993) six item affective commitment scale. A typical item is: I’m proud of my career”. Item 1 (“My career is one of the most important things in my life”) and 6 (“I am enthusiast about my career”) were excluded in this study resulting in an increase of the reliability coefficient from .33 to .70.

The *affective commitment towards the leader* is measured with five items derived from Vandenberghe et al. (2004). A sample item measuring affective leader commitment is: “My supervisor means a lot to me”. The internal consistency of this scale is .87.

Finally, the *affective team commitment* is measured with five items taken from Ellemers et al. (1998). An item relating to affective team commitment is: “I feel at home among my colleagues at work”. The internal consistency of this scale was .68, through elimination of item 4 (“In my work, I let myself be guided by the goals of my team”) and 5 (“When there is social activity with my team, I usually help to organize it”) it was raised to .75.

Responses for all subscales were made on a five-point Likert scale ranging from 1= totally agree to 5= totally disagree.

*Innovative Behavior.* The innovative behavior was measured by nine items based on Scott and Bruce's (1994) scale for individual innovative behavior in the workplace. The nine items are divided in three items about idea generation, three items about idea promotion, and three items about idea realization. This division is based on Kanter's (1988) work on the stages of innovation. Even though Jansen (2000) applied a seven-point Likert scale, in this research employees gave responses on a five-point Likert scale ranging from 1 = never to 5 = always. Sample items are: "Creating new ideas for difficult issues" (idea generation), "Mobilizing support for innovative ideas" (idea promotion), and "Transforming innovative ideas into useful applications" (idea realization). Nevertheless, given the high inter-correlations in this analysis and in Janssen's (2000) analysis between the idea generation, idea promotion, and idea realization subscales (all above 0.35) these subscales were conceived to combine additively to create an overall scale of innovative behavior. Cronbach's α for the combined scale was .86.

## Data analysis

Negatively formulated questions will be rescaled to achieve positively related items for each subscale. Next, the internal consistency of the (sub-) scales were determined with Cronbach's alpha.

The innovative climate is measured on the individual level and was composed of each individual employee's score on the climate dimension. An individual subordinate was thus considered to perceive the climate to be innovative, if their scores were high on the dimensions trust, morale, rewards equitability, leader creditability and scapegoating and low on the dimension of conflict.

To test hypothesis 1, which is formulated on employee level, regression was determined in order to see if a positive relationship exists and then tested for significance.

To test hypothesis 2 the recommendations of Baron and Kelly (1986) were followed. First of all, the following three regression equations were determined, all on employee level:

1. The regression of transformational leadership on affective commitment
2. The regression of transformational leadership on innovative behavior

3. The regression of transformational leadership on both affective commitment and innovative behavior

Hypothesis 3 was tested analogous to the aforementioned, using the following three equations:

1. The regression of transformational leadership on innovative climate
2. The regression of transformational leadership on innovative behavior
3. The regression of transformational leadership on innovative climate and innovative behavior

The separate coefficients for each equation were estimated and tested. To establish mediation, the following three conditions must be hold:

1. The independent variable (transformational leadership) must affect the mediator (affective commitment and innovative climate) in the first equation.
2. The independent variable must be shown to affect the dependent variable (innovative behavior) in the second equation
3. The mediator must affect the dependent variable in the third equation

In the case that all three conditions are met the effect of the independent variable on the dependent variable must be less in the third equation than in the second.

A two-stage hierarchical regression analysis was used to test for the hypothesized moderating effects of hypothesis 4 and 5. Therefore, the interaction of transformational leadership with affective commitment and respectively innovative climate will be tested for significance. In the case of significance the variables can be classified as moderator variables.

# Results

## Descriptive statistics and scales

Table 1 presents the number of items, means, standard deviations, and the reliability coefficient Cronbach's alpha for the variables investigated in this study. Responses on the items were made on a five-point Likert scale. The mean scores of the variables were relatively high (M=3. 33 to M=4. 22), indicating the employees' tendency to give positive

answers. The reliability of the scales was discussed in the methods section above and will not be elaborated here.

## Correlation analysis

Table 2 displays the Spearman rho correlations among the variables. The Spearman rho correlation has been chosen above the Pearson correlation for the following three reasons. First, it is appropriate for a small sample size, second, it is used for variables measured on an ordinal level and third, it does not assume a normal distribution of the variables as the Pearson correlation coefficient does (Baarda, de Goede, & van Dijkum, 2003). The Table presents some control variables, the predictor variables and the dependent variable. The control variables got selected on the basis of high significant correlations with the predictor variables and the dependent variable in prior research as shown in Mathieu and Zajac's (1990) analysis for instance. The control variables 'department', 'nationality', 'education', and 'marital status' are not included. The control variable 'department' was not included for the reason that the majority of the respondents worked in the same department. Furthermore, 'nationality' and 'educational background' were excluded as all participants hold the Dutch nationality and that the educational background was controlled for. In addition, the 'marital status' was excluded for the reason that there is no high significant correlation between marital status and affective commitment as shown in Mathieu and Zajac's (1990) analysis. They argue that marital status may be more related to the calculative commitment, relating to financial reasons. Accordingly, a correlation with these variables would not measure differences between the employees.

The expected significant correlation between 'transformational leadership' and 'innovative behavior' could not be confirmed ($r_s$= .11, ns). Yet, some other significant correlations have been found. First of all, the correlation analysis shows that some control variables are significantly correlated with each other. It is salient that especially the variable 'temporary and permanent contract' correlates significantly with other control variables. It shows a positive correlation with 'gender' ($r_s$= .48, $p \leq .01$), and, yet a negative correlation with 'age' ($r_s$= -.48, $p \leq .01$) and 'organizational tenure' ($r_s$= -.56, $p \leq .01$). Similarly, the 'organizational tenure' correlates significantly with the 'age' of the employee ($r_s$= .54, $p \leq .01$). Second, the correlation analysis presents some significant positive as well as negative correlations with the control and predictor variables. It is noticeable that the

'transformational leader' has a significant negative correlation with 'gender' ($r_s$= -.38, p ≤ .05). Furthermore, the 'innovative climate' displays a negative correlation with 'age' ($r_s$= -. 27, p ≤ .05) and a positive correlation with 'temporary and permanent contract' ($r_s$= .38, p ≤ .05). Of the scales, measuring different foci of affective commitment a significant positive relationship between 'organizational tenure' and 'affective commitment to the organization' was found ($r_s$= .34, p ≤ .05). Mathieu and Zajac's (1990) meta-analysis showed the same positive correlation between organizational tenure and commitment. Likewise, the correlation analysis displays a negative correlation between 'affective commitment to the team' and 'part-time and full-time employment' ($r_s$= -.32, p ≤ .05). Also, this correlation was found in Mathieu and Zajac's (1990) research. Third, some significant correlations between the predictor variables have been found. 'Transformational leadership' correlates significantly with 'innovative climate' ($r_s$= .51, p ≤.01) and 'affective commitment towards the leader' ($r_s$= .73, p ≤ .01). Furthermore, 'innovative climate' displays significant correlations with 'affective commitment towards the leader' ($r_s$= .51, p ≤ .01) and 'affective commitment towards the team' ($r_s$= .34, p ≤ .05). Aside from the correlations among the different variables the correlation analysis shows a significant correlation between the two affective commitment scales 'affective commitment towards the career' and 'affective commitment towards the team' ($r_s$= .38, p ≤ .05). The same correlation was found by Ellemers et al.'s (1998) analysis.

## Testing hypothesis

Considering the small sample size of 39 employees of a single company a lenient criterion of 10% for statistical significance was used in the current study. The primary objective of the current study was to provide some initial information regarding the relationship between 'transformational leadership' and 'innovative behavior'. Hypothesis 1 predicted a positive impact of 'transformational leadership' on employees' 'innovative behavior'. Yet, the results of the regression analysis (Table 3) revealed that 'transformational leadership' had no significant positive effect on employees' 'innovative behavior' (β=-.05, ns). Therefore, H1 could not be supported.

A secondary objective of the research was to assess if the variables 'affective commitment to the organization', 'the career', 'the leader', and 'the team' and 'innovative climate' have a mediating effect on the relationship between 'transformational leadership' and employee

‘innovative behavior’. Hence, the absence of the direct effect of the independent variable ‘transformational leadership’ on the dependent variable ‘innovative behavior’ precludes the mediating effects (Baron & Kenny, 1986). Consequently, H2 and H3 are not supported.

The third objective of this study was to assess the moderating effect of ‘affective commitment towards the organization’, ‘the career’, ‘the leader’ and ‘the team’ and ‘innovative climate’ (H4 and H5). Table 4 to 8 present the results of the regression analysis testing for the moderator effects of the different foci of ‘affective commitment’ and ‘innovative climate’. Model 1 introduces the main effect of ‘transformational leadership’ on ‘innovative behavior’ and the direct effect of the moderator variable, ‘affective commitment’ and respectively ‘innovative climate’. Next, model 2 examines the potential moderating effect of ‘affective commitment’ and respectively ‘innovative climate’. Hypothesis 4a is related to the moderating effect of ‘affective commitment to the organization’ on the relationship between ‘transformational leadership’ and employee ‘innovative behavior’. Consistent with the hypothesis, Table 4 shows a significant interaction effect between ‘affective commitment towards the organization’ and ‘transformational leadership’ ($\beta$=.46, $p \leq .01$). Figure 1 shows the moderating effect of the ‘affective commitment to the organization’. The figure displays that a high affective commitment strengthens the relationship between a leader low as well as high on the characteristics of transformational leadership and innovative behavior to nearly the same degree. Furthermore, the figure presents that a low affective commitment strengthens the relationship between a leader low on the characteristics of transformational leadership and innovative behavior. Hence, hypotheses 4a could only partly be supported. Hypothesis 4b predicted a moderating effect of ‘affective commitment towards the career’ on the relationship between ‘transformational leadership’ and ‘innovative behavior’. According to the results in Table 5, the interaction term was not statistically significant ($\beta$ =-.05, ns). Thus, hypothesis 4b did not get confirmed. The other two hypotheses 4c and 4d, relating to the moderator effect of ‘affective commitment towards the leader’ and ‘affective commitment towards the team’ could not be supported either. The results of the regression analysis are displayed in Table 6 and respectively Table 7 and show no significant interaction effects for ‘affective commitment towards the leader’ ($\beta$ =-.15, ns) and to ‘the team’ vice versa ($\beta$=-.15, ns).

Concerning the moderator effect of the 'innovative climate' between 'transformational leadership' and 'innovative behavior', Table 8 does provide a significant interaction effect ($\beta$=-.31, $p \leq .10$), supporting hypothesis 5. Though, this relationship is negative. The moderating effect is shown in figure 2. The figure shows that in contrary to the hypothesis an employees' perception of a strong innovative climate strengthens the relationship between a manager with a low degree of transformational leadership and innovative behavior. Under a leader high on transformational leadership this relationship got weakened. Thus, hypothesis 5 could partly be confirmed.

## Discussion

Prior research made clear that transformational leadership can significantly impact employees' innovative behavior (Mumford, Scott, Gaddis, & Strange, 2002). Since only few studies investigated the processes between that relationship, little is known about the variables that indirectly enhance innovative behavior. Accordingly, this study seeks to broaden the insight of the existing literature about these processes.

Yet, the results of this study cannot reveal a significant positive influence of transformational leadership on innovative behavior. Due to the lacking effect of transformational leadership on innovative behavior the mediating effects of different foci of affective commitment and innovative climate cannot be supported (Baron & Kenny, 1986). Yet, the affective commitment towards the organization had a significant moderating effect on the relationship between transformational leadership and innovative behavior, while the other foci of affective commitment do not prove to be significant moderators in this relationship. Furthermore, the analysis shows results opposite to the expected. Yet, the moderating effect of innovative climate between transformational leadership and innovative behavior gets supported. Though, the results are not confirming the hypothesis expectations. In addition, the expected correlation between the transformational leader and innovative climate as well as the correlation between transformational leadership and affective commitment towards the leader gets supported. The last two findings are in line with prior literature on the effects of transformational leadership (Shamir, House, & Arthur, 1993; Scott & Bruce, 1994).

Subsequently, the findings of the correlation analysis will be discussed to identify factors that could have influenced the relationships. A negative relationship between

transformational leadership and gender of the employees has been identified. Those findings suggest that female employees exhibit a greater response to transformational leadership. Though, due to the fact that the data consists of a relatively homogenous sample, with nearly 90% of the subjects being male, no valid conclusions can be drawn from this sample. Another negative correlation was found between age and innovative climate, showing that younger employees are more likely to perceive an innovative climate. Hakonsson et al. (2008) ascertain that subjects' perceptions of situations are based on the constructs about situations that are important in organizational environments. On that account it could be expected that younger employees are more susceptible to innovative climates. Since the variable age is not evenly distributed within the organization the negative correlation could have influenced the moderating effect of the innovative climate. Furthermore, the correlation analysis displays a positive correlation between employees holding a permanent working contract and innovative climate. It might be expected that employees holding a permanent contract have established an adequate construct, relating to the organization's unique structures, processes and events, which in turn lead to the perceptions of an innovative climate.

The variable of affective commitment towards the organization correlates positively with organizational tenure, which is consistent with the findings of Mathieu and Zajac (1990). Moreover, years in an organization have been found to be the best predictor for organizational commitment (Stevens, Beyer, & Trice, 1978). Also, a negative correlation between part-time/full-time and affective commitment towards the team has been supported in previous researches (Mathieu & Zajac, 1990). In line with the results it is reasonable to expect that employees with a part-time contract ascribe work to be a subordinated part in their lives, consequently they may not get highly involved in the work team. Besides, the correlation analysis displays that the foci of affective commitment correlate with other predictor variables, e.g. the subscale affective commitment towards the team and the career are related to each other. This is in line with the study of Ellemers et al. (1998) which corroborates a slight positive correlation between the two forms of affective commitment. According to their conclusions, employees who are highly committed towards their career are not necessarily less committed towards their work team.

The results of this study cannot support the positive impact of transformational leadership on innovative behavior. That is in contradiction with the results of Jung et al. (2003), showing a significant positive influence of transformational leadership on innovative behavior. The findings could hint at the fact that transformational leaders do not discourage employees to show innovative behavior, but do not motivate them either. However, the study of Basu and Green (1997) even found a negative correlation between transformational leadership and innovative behavior. In other words, they spotted transformational leaders to be detrimental to employees' innovative behavior. Furthermore, Howell and Avolio (1992) state that some charismatic leaders control and manipulate their followers' behavior to forward their own personal interest. That in turn does not give leeway to creative thinking, thence deterring employees from innovative behavior. Moreover, transformational leaders may excessively stress organizational goals, leading to prolonged stress in subordinates (Harrison, 1987). From this perspective it is reasonable to assume that employees who experience a high level of stress do not develop innovative behavior. Furthermore, according to Basu and Green (1997), transformational leaders could be extremely innovative themselves and not recognizing their subordinates' behavior as innovative. Therefore, employees whose innovative behavior goes unnoticed by the leader could be discouraged from displaying innovative behavior.

Another possible explanation for the differences between the current and previous studies results may be the cultural differences. The study of Jung et al. (2003) for instance surveys employees of organizations in Taiwan employing more than 500 employees, while Gumusluoglu and Ilsev (2009) studied employees in a micro- and small- sized organization in Turkey. The current study analyzed the direct and indirect effects of transformational leadership on innovative behavior in a multinational organization in the Netherlands. In western cultures the power distance is perhaps not as high as in the Taiwanese or Turkish culture (Hofstede, 1983). In a high-power distance culture, the leader might have a higher impact on the employees' behavior leading to a significant positive influence on innovative behavior. In a low power distance culture, people relate to one another more as equals regardless of the formal position. That might cause leaders to have a less sound direct impact on employees' organizational behaviors. Furthermore, Hofstede (1983) ascertains that employees in low power distance cultures do not wait for their managers' permission to perform the work, but rather work as individuals or in a group to implement change. In line

with that it might be assumed that other contextual factors rather than the transformational leader influence the employees' innovative behavior.

In consequence of the absent direct effect of transformational leadership on the innovative behavior, the mediating effects of different foci of affective commitment and innovative climate could not be supported. Still, some studies support the view of the mediating effect of innovative climate (Gumusluoglu & Ilsev, 2009; Jung, Chow, & Wu, 2003), whereas Scott and Bruce (1994) deny the role of climate as a mediator.

Yet, the analysis finds that the affective commitment to the organization strengthens the relationship between leaders low as well as high on the characteristics of transformational leadership and the employees' innovative behavior. That leads to the following conclusions:

Individuals who are highly committed to the organization display innovative work behavior notwithstanding of a leader low or high on the characteristics of transformational leadership. A reason could be that employees, feeling affectively committed towards their organization are motivated to achieve the organizational goals (Hartog, Van Muijen, & Koopman, 1997). Besides, employees who are less committed to the organization strengthen the relationship between a less transformational leader and innovative behavior. It is plausible that they are motivated by other factors rather than emotional attachment and transformational leadership style.

The moderating effect of innovative climate between transformational leadership style and innovative behavior gets supported. That is in congruence with recent studies, revealing innovative climate as a moderator (Oke, Munshi, & Walumbwa, 2009; Jung, Chow, & Wu, 2003). Yet, the analysis shows results opposite of the expected. In the participating organization especially employees perceiving a high innovative climate and a less transformational leader engage in more innovative behavior. That contrasts the expectation that employees would display more innovative behavior under a high degree of transformational leadership and innovative climate. Thence, in line with the above mentioned detrimental effects of the transformational leader (Scott & Bruce, 1994), it might be assumed that especially employees, who do not feel the pressure of engaging in leader dependent behavior but perceive a climate that is supporting their innovativeness engage in innovative behavior. Another explanation could be that the innovative climate works as a

compensation for leadership. The innovative climate is also defined by resources as time, personnel and financial support an employee perceives (Quinn & Rohrbaugh, 1983). Hence, an employee might be more likely to engage in innovative behavior in the case of extrinsic rewards.

## Limitations and recommendations

The results of the analysis do not corroborate the hypotheses with the exception for the moderator effect of affective commitment to the organization and innovative climate between transformational leadership and innovative behavior. Still, on the base of the studies limitations, it might be assumed that transformational leadership has an influence on the innovative employee behavior. However, it could be surmised that a major reason for the analysis' poor results can be found in the insufficiently small sample size of one single organization exhibiting 39 respondents to the survey. The very small sample size, comprising mostly male participants is not adequate to conduct a detailed analysis for detecting significant results. Moreover, the fact that only one high technology organization was studied restricts the validity and generalizability of the conclusions. It would have been better to test the hypotheses with data from additional Dutch or Western European organizations. Yet, a greater number of similar organizations in the technology-driven sector need to be selected, in order to limit the potential variation due to different industry types and to increase the validity of the questionnaire.

Furthermore the low response rate might have distorted the results. Survey participants may be susceptible to certain response biases due to the fact that the attendance took place on a voluntary basis. Therefore, the data might not be a representative. Furthermore, eventually the presence of the researcher could have biased the responses of the employees into a "favorable" direction, meaning that they responded in line with the expectations of the researcher.

The analysis presents a relatively high mean score on all measured variables. That creates a picture of highly satisfied employees, yet another motive for positive answers could be that employees wanted to simply feign support for their leader. A further explanation could be the Halo-effect. A halo-effect occurs when ratings are assigned on the basis of global impressions instead of distinguishing among different dimensions. Employees who have a positive perception of one aspect respond in the same manner to the other aspects (Nisbett

& Wilson, 1977). On the other hand, they could have been afraid of the unrestricted usage of the data, expecting unfavorable consequences when giving negative responses. Taking that into account, it is advisable to provide an experimental situation preventing subtle communication, causing them to alter their answers to conform to those expectations.

While the study used a questionnaire with just one underlying factor to measure the transformational leadership, it might be advisable to apply a questionnaire that measures the four dimensions of transformational leadership, testing whether some characteristics of leadership are related to innovative behavior. Furthermore, the degree of transformational leadership style was measured on the basis of the employees' perceptions of the leaders' characteristics. In fact, individual subordinates have different perceptions about the leader, which could lead to a distortion of the true picture of the leader. To measure the degree of transformational leadership more precisely it is recommended to consider all employees across the organization.

The innovative climate is referred to be a measure on the organizational level (Patterson, et al., 2005), whereas transformational leadership, innovative behavior and affective commitment are measures on the employee level. For study purposes the organizational climate was converted to the employee level. In line with that, the questionnaire used in this study assessed climate on the organizational level. Therefore, employees may have responded from the perspective of people in the organization, leading to a misinterpretation of the psychological climate (Glick, 1985). Furthermore, the whole analysis is conducted on employee level. In the case of an analysis on different levels it is most appropriate to apply a multilevel analysis, being an advanced form of the linear regression analysis and allowing for an examination at multiple hierarchical levels. That is on the contrary to the linear regression analysis which occurs at a single level, possibly leading to results that differ from those of a multilevel analysis. According to Patterson et al. (2005), the organizational climate is a characteristic of an entire organization. Thus, it is important to measure the organizational climate at the organizational level, as it is a psychological measure of the organization and not a characteristic of the individuals in the organization (Glick, 1985).

Furthermore, for this study only employees holding a college level degree or higher were selected. Hence, it is possible that perceptions of higher educated employees differ from a wider sample of employees, leading to misinterpretations of the results. Clearly, to

determine the organizational climate employees across all departments need to be included to give an impression of the organizational climate of the entire organization. Therefore, the questionnaire needs to be customized to be comprehensible to all employee members (Shipton, West, Dawson, Birdi, & Patterson, 2006). Thus, an analysis of different employees' perceptions of innovative behavior might lead to significant results.

Besides, all variables should measure the experiences of an adequate sample of employees throughout the whole workforce. The content and wording of the measures should therefore be comprehensible to all organizational members. Considering the length of the questionnaire, it is suggested to split the questionnaire and let an adequate sample of employees complete this questionnaire. Employees should then respond to two or three variables in order to avoid "favorable" answers that distort the results and to increase the validity of the questionnaire.

## Directions for future research

First, future research may use a longitudinal design to adequately examine the causal status of the moderating effects of affective commitment to the organization and innovative climate studied in this research. Second, it might be recommended to study the positive correlation between transformational leadership and innovative climate in order to establish an innovative climate, moderating the relationship between transformational leadership and innovative behavior. Third, future research might test the relationships on the group level.

Next, it could be assumed that many additional factors in the complex organizational environment form the employees' affective commitment and their perceptions of the innovative climate. In line with that it would be useful to study the factors that positively influence employees' affective commitment to the organization and the innovative climate with a considerably greater sample size to enhance the affective organizational commitment and strengthen the innovative climate. Furthermore, future research could consider the influence of gender and stress as control variables to test for the impact of transformational leadership style on innovative behavior.

Additionally, it is suggested to study the effects of other leadership styles, such as transactional leadership or passive/avoidant behavior on innovative behavior. Overall, the

findings suggest that it might be more effective in future research to search for other direct antecedents to innovative behavior.

## Practical implications

The study's findings may inform organizations about the conditions under which affective commitment to the organization and innovative climate strengthen the relationship between transformational leadership and innovative behavior. As organizations need to be highly innovative to maintain a competitive advantage it is crucial for the organizations survival to promote innovative behavior.

First, the findings point to the importance of the fim's overall orientation in shaping employees' towards strong feelings of affective organizational commitment to obtain innovative behavior. Second, it is advisable to establish an organizational climate an individual employee perceives to be innovative.

It would be advisable to coach transformational leaders to respond in alignment with the employees' affective commitment and their perceptions of the innovative climate, to elicit innovative behavior.

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# Appendix

## Tables

Table 1: Descriptive Statistics

| Composed variables | I | M | SD | α before | α after |
|---|---|---|---|---|---|
| 1. Transformational leader | 15 | 3.55 | 0.54 | 0.92 | - |
| 2. Innovative behavior | 9 | 3.52 | 0.54 | 0.86 | - |
| 3. Affective commitment (Organization) | 6 | 3.39 | 0.10 | 0.45 | 0.72 |
| 4. Affective commitment (Career) | 4 | 4.10 | 0.09 | 0.33 | 0.70 |
| 5. Affective commitment (Leader) | 5 | 3.33 | 0.10 | 0.89 | - |
| 6. Affective commitment (Team) | 3 | 4.22 | 0.08 | 0.68 | 0.75 |
| 7. Innovative climate | 5 | 3.75 | 0.45 | 0.43 | 0.71 |

N=39

Table 2: Correlations among the different variables

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Gender | - | -.22 | -.29 | .48** | .26 | -.38* | -.13 | -.09 | -.22 | -.19 | -.28 | -.13 |
| 2. Age | | - | .54** | -.48** | .07 | -.19 | .15 | -.27* | .27 | .22 | -.09 | -.09 |
| 3. Organizational tenure | | | - | -.56** | -.23 | -.18 | .28 | -.29 | .34* | .05 | -.20 | .09 |
| 4. Temporary / Permanent | | | | - | .24 | .17 | -.21 | .38* | -.29 | .03 | .10 | -.03 |
| 5. Part-time / Full-time | | | | | - | -.17 | -.22 | -.03 | -.29 | -.10 | -.28 | -.32* |
| 6. Transformational leadership | | | | | | - | .11 | .51** | .10 | .04 | .73** | .15 |
| 7. Innovative behavior | | | | | | | - | .13 | .30 | .04 | .04 | .24 |
| 8. Innovative climate | | | | | | | | - | .06 | .19 | .51** | .34* |
| 9. Affective commitment (Organization) | | | | | | | | | - | .20 | .24 | .31 |
| 10. Affective commitment (Career) | | | | | | | | | | - | .23 | .38* |
| 11. Affective commitment (Leader) | | | | | | | | | | | - | .26 |
| 12. Affective commitment (Team) | | | | | | | | | | | | - |

*p<0.05, **p<0.01
N=39

Table 3: Results of the Moderated Regression Analysis for innovative behavior

| | Model 1 |
|---|---|
| *Leadership style* | |
| Transformational leadership | -.05 |
| $R^2$ | .00 |
| $\Delta R^2$ | .00 |

*p<0.05, **p<0.01
N=39

Table 4: Results of the Moderated Regression Analysis for affective commitment (organization)

| | Model 1 | Model 2 |
|---|---|---|
| *Leadership style* | | |
| Transformational leadership | -.03 | -.08 |
| *Moderator variable* | | |
| Affective commitment (organization) | .42 | .43 |
| *Interaction effect* | | |
| Transformational leadership x Affective commitment (organization) | | .46** |
| $R^2$ | .13 | .22 |
| $\Delta R^2$ | .13 | .22 |

*p<0.05, **p<0.01
N=39

Table 5: Results of the Moderated Regression Analysis for affective commitment (career)

| | Model 1 | Model 2 |
|---|---|---|
| *Leadership style* | | |
| Transformational leadership | -.05 | -.04 |
| *Moderator variable* | | |
| Affective commitment (career) | .09 | .10 |
| *Interaction effect* | | |
| Transformational leadership x Affective commitment (career) | | -.05 |
| $R^2$ | .01 | .01 |
| $\Delta R^2$ | .01 | .00 |

*p<0.05, **p<0.01
N=39

Table 6: Results of the Moderated Regression Analysis for affective commitment (leader)

| | Model 1 | Model 2 |
|---|---|---|
| *Leadership style* | | |
| Transformational leadership | -.18 | -.20 |
| *Moderator variable* | | |
| Affective commitment (leader) | ..17 | .17 |
| *Interaction effect* | | |
| Transformational leadership x Affective commitment (leader) | | -.15 |
| $R^2$ | .01 | .04 |
| $\Delta R^2$ | .01 | .02 |

*p<0.05, **p<0.01
N=39

Table 7: Results of the Moderated Regression Analysis for affective commitment (team)

| | Model 1 | Model 2 |
|---|---|---|
| *Leadership style* | | |
| Transformational leadership | -.08 | -.03 |
| *Moderator variable* | | |
| Affective commitment (team) | .16 | .18 |
| *Interaction effect* | | |
| Transformational leadership x Affective commitment (team) | | -.15 |
| $R^2$ | .03 | .05 |
| $\Delta R^2$ | .03 | .02 |

*p<0.05, **p<0.01
N=39

Table 8: Results of the Moderated Regression Analysis for innovative climate

| | Model 1 | Model 2 |
|---|---|---|
| *Leadership style* | | |
| Transformational leadership | -.06 | -.04 |
| *Moderator variable* | | |
| Innovative climate | .01 | .01 |
| *Interaction effect* | | |
| Transformational leadership x Innovative climate | | -.31# |
| $R^2$ | .13 | .22 |
| $\Delta R^2$ | .13 | .22 |

#p<0.10, *p<0.05, **p<0.01
N=39

## Figures

Figure 1: The moderating effect of affective commitment to the organization on transformational leadership and innovative behavior

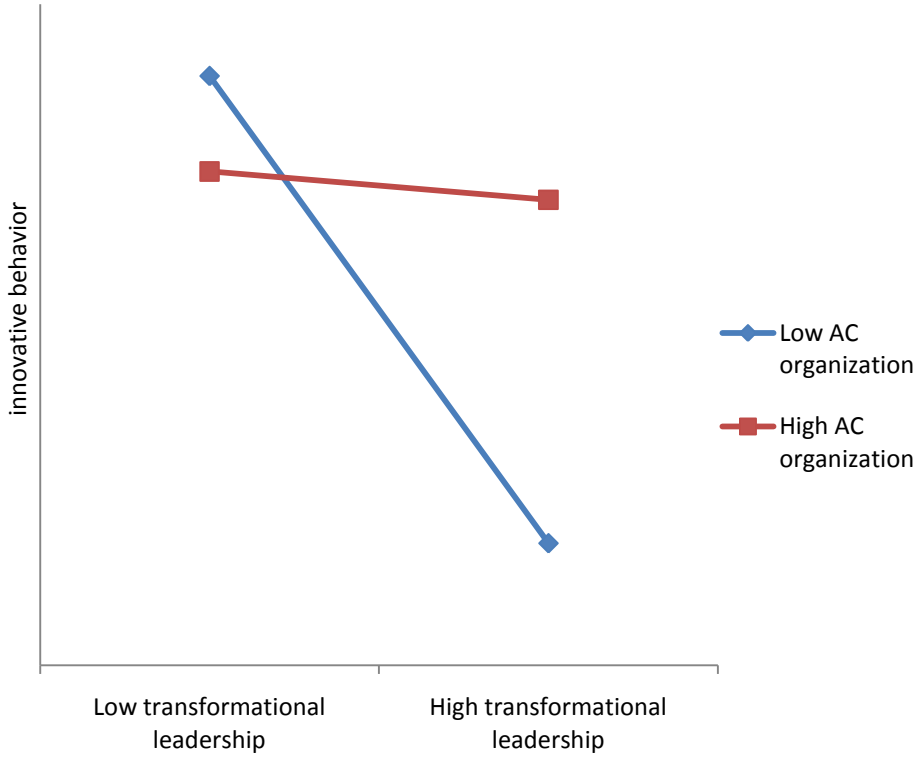
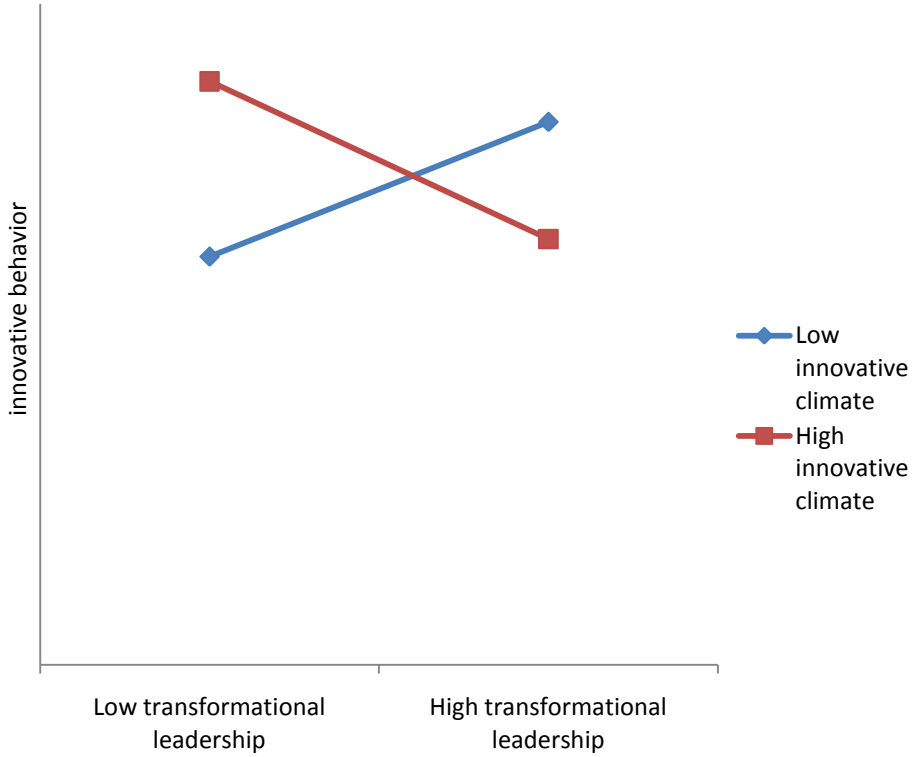



Figure 2: The moderating effect of innovative climate on transformational leadership and innovative behavior




# Bedrijfsrapport Photonis Netherland BV

In het kader van de bachelorafstudeeropdracht Arbeids- en Organisatie Psychologie

Patricia Poppendick

28.07.2009

| | |
|---|---|
| Eerste Begeleider: | Drs. Ivy Goedegebure |
| Tweede Begeleider: | Prof. Dr. Karin Sanders |

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## Inleiding

In het kader van een bachelorafstudeeropdracht van de opleiding Psychologie is een onderzoek bij vijf technisch toegepaste bedrijven uit de dienstverlenende sector uitgevoerd. In dit onderzoeksrapport worden de resultaten van de Photonis medewerkers enquête over transformationeell leiderschap, innovatief klimaat en de strategische gedragingen affectieve betrokkenheid en innovatief gedrag gepresenteerd.

In het begin van het rapport wordt er algemene informatie over de opzet en de generaliseerbaarheid van het onderzoek gegeven. Daarna worden de verschillende aspecten apart van elkaar uitgelegd en vervolgens op de samenhang tussen deze variabelen ingegaan. De resultaten van het onderzoek geven een beeld van de invloed van transformationeel leiderschap op innovatieve gedragingen van medewerkers. Daarnaast werd er gekeken of het innovatief klimaat en de affectieve betrokkenheid de relatie tussen deze beinvloed. De aspecten innovatief gedrag, innovatief klimaat en affectieve betrokkenheid worden met de resulaten van andere bedrijven vergeleken.

## Algemene Informatie

De vragenlijst is uitgedeeld onder alle medewerkers met een HBO of hogere opleiding. Met deze vragenlijst worden transformationeel leiderschap, innovatief gedrag, affectieve betrokkenheid en innovatief klimaat gemeten. De variabelen zijn gemeten op een vijf-puntschaal, waarbij 1 de laagste scoore is en 5 de hoogste is. Voor elk aspect geldt: hoe hoger de score, hoe tevredener medewerkers over een bepaald aspect zijn oftewel hoe meer transformationeel leiderschap wordt gebruikt.

Van de 71 medewerkers aan wie de vragenlijst is uitgedeeld hebben 39 de enquete ingevuld. Daarmee heeft 55% van de medewerkers aan het onderzoek deelgenomen. Dat is een redelijke percentage en de uitkomsten kunnen daarom gegeneraliseerd worden voor deze groep van medewerkers binnen Photonis Netherlands BV.

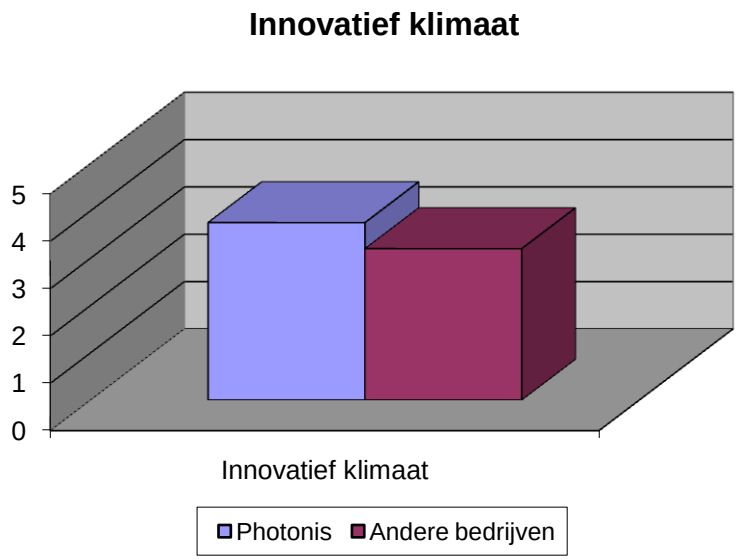
## Transformationeel leiderschap

De mate van transformationeel leiderschap van de leidinggevende binnen Photonis Netherlands BV werd vastgesteld aan de hand van de vragenlijst die door de medewerkers werd ingevuld. De uitkomsten van de vragenlijst tonen aan dat medewerkers hun

leidingevende over het allgemeen als transformationeel ervaren. *Er is sprake van transformationeel leiderschap als een leider in staat is de behoeften van medewerkers te verbreden en te versterken, en deze mede te richten op de doelen van de groep en de organisatie. De enthousiasmerende visie van de leider neemt bij transformationeel leiderschap een centrale plaats in. Een transformationeel leider toont vertrouwen in zichzelf en zijn ondergeschikten, stelt hoge eisen aan eigen en andermans prestatie, gedraagt zich creatief en innovatief, formuleert doelen en taken in ideologische termen en toont een sterke betrokkenheid en overtuiging*' (Bass en Koopman. In: Den Hartog et. al.,1997). Dit type leider heeft het vermogen om innovatiefe gedragingen in medewerkers teweeg te brengen.

## Innovatief gedrag

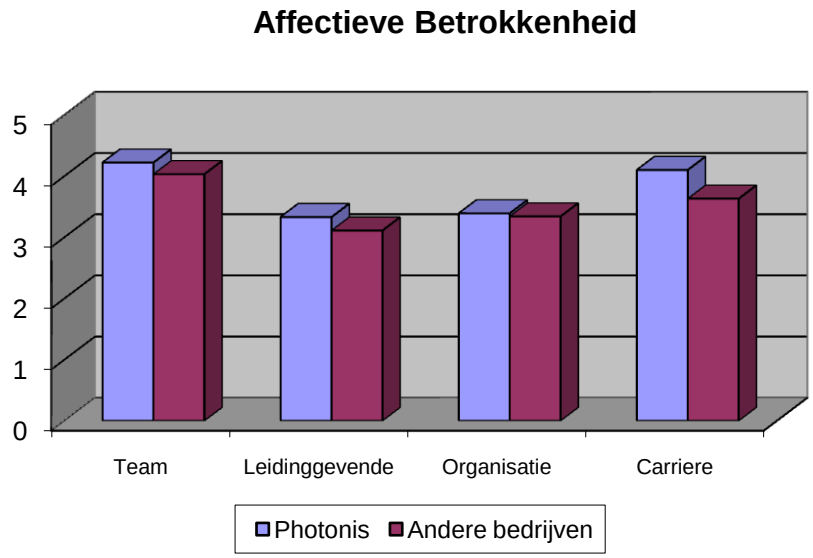
Innovatief gedrag is het creëren, introduceren en toepassen van nieuwe ideeën, processen of producten binnen een bepaald groep of bedrijf. De resultaten laten zien dat Photonis Netherlands BV ten opzicht van andere bedrijven meer innovatief gedrag vertont. Figuur 1 laat zien dat Photonis 17,2 % beter scoort dan andere bedrijven.




Figuur 1: Innovatief gedrag

## Affectieve Betrokkenheid

De affectieve betrokkenheid is de mate van identificatie van een persoon binnen een organisatie. Medewerkers kunnen zich betrokken voelen bij verschillende eenheden, zoals bij de organisatie, de carriere, de leidinggevende en het team. Figuur 2 laat zien dat medewerkers binnen Photonis Netherlands BV zich over het algemeen betrokkener voelen bij de verschillende eenheiden in vergelijking met andere bedrijven.

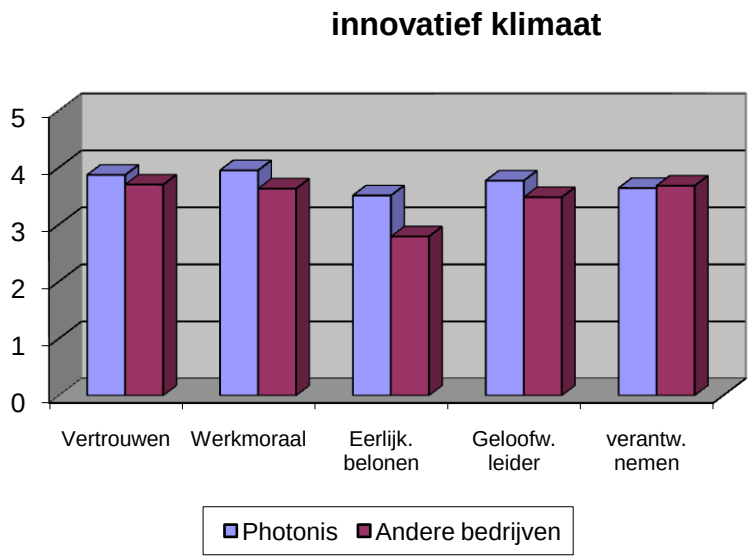



Figuur 2: Affectieve Betrokkenheid

## Innovatief klimaat

Met behulp van de vragenlijst wordt het psychologisch klimaat van de medewerkers vastgesteld. In dit kader wordt gekeken hoe hoog er wordt gescoord op de vijf verschillende factoren die het klimaat bepalen. Deze factoren zijn vertrouwen, werkmoraal, eerlijkheid van belonen, geloofwaardigheid van de leidinggevende en het nemen van verantwoordelijkheid. De uitkomsten in Figuur 3 laten zien dat medewerkers binnen Photonis Netherlands BV elkaar vertrouwen, een hoge werkmoraal hebben , het gevoel hebben om eerlijk beloond te worden, hun leidinggevende als geloofwaardig inschatten en veraantwordelijkheid overnemen voor hun taken en mogelijke fouten. In vergelijking met de scores van andere bedrijven valt op dat er redelijk hoog wordt gescoord op alle dimensies. Bij Photonis Netherlands BV is mitsdien sprake van een innovatief klimaat. Een innovatief klimaat wordt

door medewerkers ervaren wanneer innovatieve ideeën opgemerkt, ondersteund en waardeerd worden. Verder is het belangrijk dat de organisatie toereikende financiële middelen en tijd ter beschikking stelt.




Figuur 3: Innovatief klimaat

## Invloed van de affectieve betrokkenheid en innovatief klimaat op de relatie tussen leiderschap en innovatief gedrag

De analyse van de vragenlijst liet geen directe relatie zien tussen de transformationele leider en innovatief gedrag van medewerkers. Dat is in tegenstrijd met onderzoeken die bij bedrijven in dezelfde sector werden uitgevoerd. Maar de affectieve betrokkenheid van medewerkers bij de organisatie en het innovatief klimaat beïnvloeden deze relatie voorzoveer dat het de innovativiteit van medewerkers desnoods kan bevorderen. Dat betekent dat, bij Photonis Netherlands BV medewerkers die zich sterk betrokken voelen bij de organisatie innovatief gedrag vertonen onafhanlelijk van de mate van transformationeel leiderschap. Deze effekt is net omgekeerd in relatie tot het innovatief klimaat. Een medewerker die een sterk innovatief klimaat ervart is het innovatievst met een leider die in mindere mate transformationeel leider is.

## Conclusie en aanbevelingen

Uit het onderzoek is gebleken dat er binnen Photonis Netherlands BV redelijk hoog op alle factoren wordt gescoord. Dat is zeer positief omdat het bedrijf een voordeel heeft ten opzichte van andere bedrijven in dezelfde branche. Maar er zijn altijd mogelijkheden om een competitief voordeel te behouden. Hoewel de relatie tussen de transformationeel leiderschap en innovatieve gedragingen binnen het bedrijf niet kon worden aangetoond, bleken andere faktoren deze relatie positief te beïnvloeden. Gegeven de resultaten is het aan te bevelen om vooral de betrokkenheid van medewerkers hoog te houden. Aangezien een innovatief klimaat de relatie tussen de transformationeel leider en innovatief gedrag verhindert, is het aan te raden om de leider te coachen. Daarmee wordt bedoeld dat de leider het innovatief klimaat van medewerkers zal kunnen achterhalen en zijn gedragingen hier aansluit. Verder is het aan te bevelen dat er binnen Phontonis Netherlands BV wordt onderzocht of er andere faktoren van invloed zijn op de innovatieve gedragingen, om een flinke voorsprong tegenover andere bedrijven te behouden.