Ambidexterity of employees: The role of empowerment and knowledge sharing

Introduction

Firms are constantly pressured to think beyond satisfying the existing customers. They have to focus on identifying and anticipating potential changes in customer desires. This requires balancing between exploitation of what is done well, and exploration of new fields that may generate profitability in the future (Kang and Snell, 2009). The ability to do both is referred to as ambidexterity and consists of pursuing explorative as well as exploitative activities (March, 1991). Explorative activities are related to risk-taking, experimentation and innovation, while exploitative activities are associated with refinement, selection and improving existing products, services, organizational routines and procedures (March, 1991).

Several studies have investigated various organizational outcomes of ambidexterity (Donate and Guadamillas, 2011; Darroch, 2005), or antecedents of organizational ambidexterity, such as organizational structure (Gibson and Birkinshaw, 2004), team hierarchy (Peretti and Negro, 2006), knowledge transfer and integration (Gibson and Birkinshaw, 2004), and managerial leadership and commitment (Smith and Tushman, 2005). While ambidexterity at the organizational level has been widely explored and debated, much less studies focus on ambidexterity at the employee level. Yet, the firm's employees are the ones who generate new knowledge and perform explorative and exploitative activities (Minbaeva, Mäkelä and Rabbiosi, 2012). Authors have coined the term "employee ambidexterity" in this respect. Employee ambidexterity is defined as the behavioural orientation of employees towards combining exploitation and exploration related activities within a certain period of time (Mom, Van Den Bosch, & Volberda, 2009; Caniëls & Veld, 2016). Employee ambidexterity has received remarkably little attention from a theoretical and empirical perspective. Several studies have called for a more focused analysis of employee ambidexterity and its antecedents (e.g. Prieto and Santana, 2012; Junni, Sarala, Taras and Tarba, 2013; Caniëls and Veld, 2016).

Organizational level studies have indicated that a culture of employee empowerment and knowledge sharing are crucial for organizational ambidexterity (O'Reilly and Tushman, 2008; Gumusluoglu and Ilsev, 2009; Wong Humborstad, Nerstad and Dysvik, 2014). At an individual level, a theoretical underpinning of these relationships can be found in Social Exchange Theory (Blau, 1964), which implies that a relationship between the organization and the employee is two-sided, mutually dependent, and mutually rewarding. In line with this theory, when leaders stimulate, motivate and empower employees, they develop an organizational culture focused on challenging and improving existing routines and procedures and generating innovation. Hence, it is likely that a culture of employee empowerment will

also enhance ambidexterity at the level of the individual employee. Furthermore, employees who perceive a knowledge sharing culture are more likely to disseminate and exchange existing knowledge about routines. In the resulting interactions they may spot new problems and innovate by providing solutions to these. A knowledge sharing culture may therefore also be a factor that is connected to employee ambidexterity. Currently, little is known about how a culture of employee empowerment or knowledge sharing enables employee ambidexterity. There is a lack in thorough understanding of how these processes work, and whether other factors are at play as well. Insights in these processes are of key importance to organizations to encourage and facilitate ambidexterity at the employee level.

Various studies have shown that motivation is a key psychological determinant of employee behaviour (e.g. Tremblay, Blanchard, Taylor, Pelletier and Villenueve, 2009; Ryan and Deci, 2000). Motivation is therefore expected to determine how strongly employees engage in ambidextrous behaviour. Current literature about motivation distinguishes between extrinsic and intrinsic motivation (e.g. Minbaeva et al., 2012; Ryan and Deci, 2000). Extrinsic motivation is associated with external rewards, such as high bonus systems, or job promotions. Intrinsic motivation refers to motivation that comes from inside an individual (Minbaeva et al., 2012). Intrinsic and extrinsic motivation is related to the overall knowledge exchange within a firm (Minbaeva et al., 2012), but whether it stimulates ambidextrous behaviour has remained unexplored. Prieto and Santana (2012) investigated the effect of motivation enhancing human resource practices, but only found a small effect on ambidexterity, as human resource practices are mostly based on extrinsic motivation. Hence, the effect of employee motivation may be complex and merits closer attention. Following Self Determination Theory (Ryan and Deci, 2000), it is argued that individual motivation plays a central role in determining the exact functioning of the relationships between ambidexterity and organizational factors, such as the perceived culture of employee empowerment and knowledge sharing.

This study aims to shed light on the impact of a perceived supportive organizational context on employee ambidexterity. By a survey among 136 managers, the study tests the link between perceived culture of employee empowerment and knowledge sharing and self-reported ambidextrous behaviour. Furthermore, the study explores the complex effect of extrinsic and intrinsic motivation on these relationships. By doing this, the study increases current understanding on what drives employee ambidexterity. In this way, it contributes to studies that advocate the importance of an individual level of analysis as compared to the organizational level (Prieto and Santana, 2012). Also, it adds to the contemporary debate on

how to stimulate employee explorative and exploitative activities that make up ambidexterity (Donate and Guadamillas, 2011).

Theoretical background and hypotheses

Ambidexterity at the Employee Level

Organizational ambidexterity consists of exploitative activities, which occur within the existing mental models, norms and policies of organizations; and explorative activities, which are aimed at changing the existing models and radically impacting organizational routines (March, 1991). At the employee level, undertaking explorative activities consist of behaviours such as new idea generation and implementation, searching for competitive solutions, and innovative thinking (Gibson and Birkinshaw, 2004; Kang and Snell, 2009). While explorative activities are beneficial for the firm, they are also a costly and risky endeavour. In contrast, undertaking exploitative activities consist of leveraging existing knowledge bases to make improvements in terms of efficiency and efficacy (Gibson and Birkinshaw, 2004; Kang and Snell, 2009). This type of activity seems less important, yet is critical to firms that constantly need to tweak their processes, as any improvement can increase efficiency, impact customer satisfaction, and drive firm profits.

The ambidexterity literature, and especially empirical studies in this line, focuses on organizational ambidexterity (Junni et al., 2013). Broadly, two main conceptualizations of ambidexterity are distinguished. First, structural ambidexterity, which poses that explorative and exploitative activities should be undertaken independently (e.g. Smith and Tushman, 2005). Scholars who adopt this view claim that organizational ambidexterity is difficult to achieve because exploration and exploitation are competing goals, fighting for the same resources and requiring different capabilities (e.g. March, 1991; Tushman and O'Reilly, 1996). In this view explorative and exploitative activities require different and incompatible organizational structures (Benner and Tushman, 2003). Other studies in this line propose a temporal sequencing of explorative and exploitative activities (e.g. Puranam et al., 2006). Typically, the idea is that longer periods of exploitation are interrupted by short bursts of exploration (Levinthal and March, 1993). Organizational structures should adapt over time to accommodate exploitative and explorative activities in turn (Nickerson and Zenger, 2002).

Second, contextual ambidexterity is distinguished, which poses that the organizational context should allow individuals to do explorative as well as exploitative activities simultaneously (e.g. Gibson and Birkinshaw, 2004). In this view, firms can pursue ambidexterity by designing a context that facilitates the development of ambidexterity on the

individual level, i.e. allows employees to pursue both goals at the same time (Prieto and Santana, 2012). This conceptualisation of ambidexterity implies that high levels of both explorative and exploitative activities are needed for being highly ambidextrous (Cao, Gedajlovik and Zhang, 2009; Lubatkin, Simsek, Ling and Vega, 2006). Organizational context variables would ideally improve exploitative as well as explorative activities, but ambidexterity would increase from an improvement in at least one type of activity (conform the additive view, see Lubatkin et al., 2006).

The contextual conceptualization of ambidexterity implies a focus on individual organization members, as employees are the ones who have to perform explorative or exploitative activities (Kang and Snell, 2009; Gibson and Birkinshaw, 2008). Nevertheless, currently, knowledge is lacking about the way in which certain organizational context variables enable employees to pursue both goals simultaneously (Raisch and Birkinshaw, 2008; Donate and Guadamillas, 2011). Therefore, researchers have recently called for analyses of ambidexterity that are more focused at the individual, i.e. employee level (e.g. Prieto and Santana, 2012; Junni et al., 2013).

Employee empowerment culture

Empowering leadership is "the process of enhancing an individual's or group's capacity to make purposive choices and to transform those choices into desired actions and outcomes" (Alsop et al., 2005: 1). In firms with high levels of employee empowerment, employees believe in their own capabilities and feel able to act autonomously (Arnold et al., 2000; Ahearne, Mathieu and Rapp, 2005; Wong Humborstad et al., 2014). In such organizations, conditions that induce a sense of powerlessness (e.g. bureaucracy) are limited (Arnold et al., 2000). The resulting organizations are characterized by self-regulating teams and flat management structures, creating an innovation inducing social climate.

Empowerment is a rich concept that spans giving power to employees in disadvantaged positions in the organization, giving decision-making autonomy, as well as providing access to strategic organizational resources. The underlying study focuses explicitly on the set of behaviours and attributions of leaders that induce a culture of employee empowerment. This leadership style consists of articulating an inspirational vision, providing intellectual stimulation and challenge, charismatic role modelling and coaching and mentoring (Arnold et al., 2000; Vera and Crossan, 2004; Ahearne et al., 2005; Zhang and Bartol, 2010). Empowering leadership affects employee performance by increasing employee self-efficacy and self-esteem (Van Knippenberg et al., 2004; Zhang and Bartol, 2010). Employees who

perceive empowering leadership are likely to be self-assured and feel free to undertake risks (Bass, 1985). These employees are likely to have an open attitude towards errors, seeing them not as failures but as opportunities for learning and further improvements. A culture of empowerment refers to an organizational climate of trust and learning, characterized by feedback seeking, openness to criticisms and admitting mistakes (Goh and Richards, 1997; Zhang and Bartol, 2010).

In a culture of empowerment, employees experience autonomy in choosing their working methods, which increases their internal drive to achieve a goal in the most efficient way. Such employees feel safe and trust their leaders to support and reward them for creative initiatives, even when these initiatives fail to meet their expected goals (Wong Humborstad et al., 2014). Studies found that individuals who experience much freedom in daily work are more likely to use their creative potential, which is typically associated with exploring new directions (Amabile et al., 1996). Moreover, empowered employees enhance their compatibility with organizational expectations (Parker and Collins, 2010) via learning oriented behaviours such as feedback seeking (De Stobbeleir, Ashford and Buyens, 2011), and active search for career development (Parker and Collins 2010). This suggests that a culture of empowerment stimulates employee level explorative activities.

Furthermore, empowered employees aim to actively create, shape and alter their working environments (Parker and Collins, 2010). They want to develop and grow and are eager to revise and improve work methods to increase their own efficiency (Staw and Boettger, 1990). An empowerment culture encourages and stimulates employees to tease out the best of themselves and supports them to be their best self. In such an environment managers and employees share a common vision of what should be accomplished in the work. Hence, such an environment stimulates employee level exploitative activities. Therefore, as both explorative and exploitative activities can be connected to perceiving a culture of empowerment, it is reasonable to argue that an empowering organization culture is linked to ambidextrous behaviour. Accordingly, it is proposed:

H1. A perceived culture of empowerment is positively related to employee ambidexterity

Knowledge Sharing Culture

Knowledge resides within individuals (Nonaka and Takeuchi, 1995) and, more specifically, within employees who apply knowledge in carrying out their tasks (Bock et al., 2005, p.88).

A knowledge sharing culture within an organization is characterized by free-flowing information (Jarvenpaa and Staples 2000), trust among employees (Bock et al., 2005), and pro-social behavioural norms (Wasko and Faraj 2000).

The importance of a knowledge sharing culture in organizations has been stressed throughout the literature (Jackson et al., 2006). A knowledge sharing culture among employees across departmental boundaries is essential for learning to occur (Goh and Richards, 1997). Effective knowledge sharing among employees creates efficient use of resources, as it is impossible for one single person to know everything and keep up with all relevant information all the time. Knowledge sharing among employees allows fast and easy access to important information (Jackson et al., 2006). A culture of knowledge sharing will therefore induce exploration as employees inspire each other with ideas. Easy access to essential information ensures that exploration is facilitated. Furthermore, knowledge sharing leads to knowledge application. Radaelli et al. (2014) observed that at the employee level knowledge sharing is positively related to innovative work behaviour. When employees articulate what they know, it is possible for other employees to apply it to solve problems, improve efficiency in work routines, or create new products (Von Krogh, Ichijo and Nonaka, 2000; Jackson et al., 2006).

In a conceptual paper, Grinsven and Visser (2011) argue the higher the degree of employee alignment with company policies, the higher their level of exploitative activities. When employees are profoundly aware that the organization is committed to knowledge sharing (and hence experience a knowledge sharing culture), they will be able to refine and enhance their exploitative activities. A knowledge sharing culture induces exchange of information among employees about, for instance, efficient ways of working, which will increase exploitation. The above arguments suggest that knowledge sharing among employees within an organization is likely to be associated with explorative and exploitative capabilities of employees. Hence, it is inferred that a knowledge sharing culture is expected to be related to employee ambidextrous behaviour.

H2. A perceived knowledge sharing culture is positively related to employee ambidexterity

The Role of Motivation

Motivation is a key factor impacting employee performance (Ambrose, 1999). Intrinsic motivation refers to having interest in, and perceiving enjoyment in, the task itself (e.g.

Caniëls, Lenaerts and Gelderman, 2015). It encourages persistence, and builds energy for sustained effort, increasing the amount of time that employees will spend on a certain task. Extrinsic motivation is associated with doing a task because of an expectation of reward (Ryan and Deci, 2000). There is interplay between intrinsic and extrinsic motivation, which is generally referred to as crowding in and crowding out (Osterloh and Frey, 2000). Individuals who feel forced by extrinsic interventions to behave in a certain way, may shift their internal locus of control to outside themselves, leading to crowding out effects between intrinsic and extrinsic motivation (Osterloh and Frey, 2000; Deci, 1975). Contrastingly, they may also feel strengthened in the perception of their own competence, and their internal locus of control may be fortified. This latter phenomena leads to crowding in effects between intrinsic and extrinsic motivation (Osterloh and Frey, 2000).

Intrinsic motivation increases the time spent on a task or technique, which in turn generates skill and therefore high quality output (Starbuck and Webster, 1991), as well as creativity (Amabile and Kramer, 2007). Several studies describe intrinsic motivation as essential for discovering new solutions and theories, i.e., explorative activities (e.g., Gupta, Smith and Shalley, 2006). When the task is considered important by the organization, employees consider themselves valuable to the organization, which positively impacts their work outcomes in terms of efficiency as well as creativity (Amabile and Kramer, 2007). Hence, there is a natural link from intrinsic motivation to exploration and exploitation.

Employees with leaders, who encourage them to be autonomous, trust them and stimulate them to take risks while not punishing them when they make mistakes, are likely to show increased levels of explorative activities, as they are not afraid to fail and have the possibilities and means to engage in trial and error. Oldham and Cummings (1996) suggest that managing creative people and fuelling their intrinsic motivation requires leaders who intellectually stimulate employees, create involvement, support them and provide freedom and autonomy. This stimulating environment intrinsically motivates employees, who become interested in solving a problem or inventing an improved service. Hence, it is expected that the positive effect of perceiving a culture of empowerment increases intrinsic motivation and in turn enhances explorative behaviour. In addition, in a culture of empowerment team members evaluate their own work and make suggestions about performance improvements (Arnold et al., 2000). Hence, not only explorative activities are stimulated, but also exploitative activities are being improved in efficiency. Again this process is expected to be mediated by intrinsic motivation, as sharing and discussing suggestions about performance improvements and more efficient work procedures are expected to motivate employees in

putting their words into action and giving their best. This reasoning is in line with Social Exchange Theory (Blau, 1964). Hence, a culture of empowerment spurs on the intrinsic motivation of employees for improving efficiency and efficacy of current processes, i.e. exploitative activities.

In sum, intrinsic motivation is expected to be associated to explorative as well as exploitative activities. In other words:

H3. Intrinsic motivation mediates the relationship between a perceived culture of empowerment and employee ambidexterity

Employees who perceive a culture of employee empowerment are not likely to be encouraged by extrinsic rewards, as these rewards may be perceived as a way in which a leader tries to exercise control over the employee (Amabile et al., 2004). This is in line with Cognitive Evaluation Theory (Ryan and Deci, 2000). It is expected that intrinsically motivated employees freely and willingly undertake exploring and exploiting tasks autonomously. For instance, when employees are explicitly rewarded for exploration and invention of new products and services, this is likely to reduce the intrinsic enthusiasm for the task and may even create an aversion to it. At least two mechanisms are creating this effect. First, employees may perceive a pressure to perform and be inventive and efficient. Such pressure to perform may be destructive to an employee's actual performance. For many people it is extremely difficult to increase performance on command. In such situations, people get self-conscious (Bern, 1972), which draws away their attention from improving performance on the task at hand to worrying about how they are doing and whether others think that they are doing well (Amabile, 1979). Second, studies in psychology have shown that extrinsic motivation may corrupt good behaviour (Deci, 1975). Extrinsic rewards may undermine the pre-existing interest in performing the activity. In the long run, employees may expect to receive monetary rewards for being ambidextrous.

A culture of empowerment generally fortifies the commitment of employees to the activities of the organization for instance by involving them in decision making. In the presence of extrinsic rewards, the positive effect of this commitment-generating and energy-creating culture on employee activities is undermined. Hence, extrinsic motivation in the form of rewards is expected to dampen the positive relationship between a culture of employee empowerment and employee ambidextrous behaviour.

H4 Extrinsic motivation negatively moderates the relationship between a perceived culture of empowerment and employee ambidexterity

Knowledge sharing among employees cannot be enforced. It can only be facilitated and encouraged (Bock et al, 2006). Sharing knowledge with other employees entails a potential risk of losing your unique value to the firm (Husted and Michailova, 2002). Knowledge is often perceived as a source of bargaining power, and hence employees are reluctant to share their knowledge (Husted and Michailova, 2002; Ray et al., 2013). Furthermore, articulating what you know gives others a possibility to assess and judge the value and relevance of your knowledge. A negative judgement may damage your reputation. Consequently, employees protect themselves by avoiding sharing their knowledge (Husted and Michailova, 2002).

In contrast, in a knowledge sharing culture, employees trust each other (Bock et al., 2005), act pro-socially (Wasko and Faraj 2000), and feel encouraged to freely share knowledge information (Jarvenpaa and Staples 2000). Employees are less reluctant to share knowledge when they receive knowledge in return (Webster et al., 2008). Minbaeva et al. (2012) observed that if firms are committed to knowledge sharing, their employees will engage in knowledge sharing activities at a higher rate than otherwise would be the case.

Studies about knowledge transfer (Martin, Martin, and Trevilla, 2009; Martin and Martin, 2012) indicate that intrinsic and extrinsic motivations are related to knowledge sharing. Employees may feel an intrinsic motivation to share their knowledge with co-workers because they want to share their own experiences and their own learning processes (Martin et al., 2009; Huysman and de Wit, 2004). Employees may also expect or hope that co-workers will share their experiences with them, so that they have the opportunity to learn from the learning process of others (Martin et al., 2009; Hendriks, 1999). We argue, that when employees share knowledge by showing colleagues how they do certain tasks and what they have discovered, this interaction will, in turn, fuel enthusiasm and is likely to further stimulate exploitative and explorative activities from all employees engaged in the interaction. A knowledge sharing culture propels sharing of individual learning experiences among colleagues, which is expected to inspire and encourage enthusiasm for their work. As the risk of losing reputation or bargaining power is mitigated, employees are likely to encourage each other to provide feedback and exchange ideas, because they enjoy the interaction and inspiration. The joy that is experienced by exchanging knowledge with other employees in turn propels employees to improve performance and efficiency of current processes, i.e. exploitative activities, as well as

exchange ideas and engage in exploratory activities. Hence, a knowledge sharing culture spurs on the intrinsic motivation of employees to engage in ambidextrous activities.

H5. Intrinsic motivation mediates the relationship between knowledge sharing culture and employee ambidexterity

Prior research in the field of human resource practices has shown that human resource systems that incorporate multiple practices (including external reward systems) can provide a guide to employee learning behaviour and therefore can stimulate and encourage ambidextrous learning (Prieto & Martin, 2015; Prieto & Perez, 2014). Studies about high-performance work systems (Patel et al., 2013; Caniëls & Veld, 2016) have found that a constellation of various human resource practices contributes to firm performance by motivating employees to adopt desired behaviours (e.g. O'Neill et al., 2012), including innovative work behaviour (Caniëls & Veld, 2016; Prieto & Perez, 2014). However, employees who are susceptible to extrinsic rewards may feel less intrinsic enthusiasm for tasks. Sharing knowledge and participating in a knowledge sharing culture is then not perceived as something that should be done freely (Frey and Oberholzer-Gee, 1997), thus decreasing the amount of knowledge shared. In addition, as the sharing is not done with inherent enthusiasm, it is not likely that there will be a positive stimulating effect on ambidexterity.

H6. Extrinsic motivation negatively moderates the relationship between knowledge sharing culture and employee ambidexterity

Figure 1 summarizes the relationships in this study's model.

[INSERT FIGURE 1 ABOUT HERE]

Method

Sample and procedures

Data for this study was collected using an online survey among 220 professional level employees, typically general office workers and managers, from five Belgian service sectors (one respondent per organisation). A follow-up email was sent four weeks after the initial invitation to increase the response rate. A total of 144 responses were received (122 in the

first round, 22 in the second round). Eight cases were removed (two due to incomplete values, six for showing strong outliers on reverse coded questions), leaving 136 responses for analysis (62% response rate). The data covers five main Belgium industries: telecom (13%), tourism (19%), public sector (27%), consultancy (24%) and finance (10%). Respondents are predominantly male (63%) and have tenure for over ten years (59%), indicating they are knowledgeable about their firm. The study tested for non-response bias in the sample using the procedure recommended by Armstrong and Overton (1977). T-tests indicated that no statistical significant differences existed with respect to any of the variables between first and second wave respondents.

Prior to the distribution of the survey, a pilot study was conducted among eight participants who were asked to provide comments and suggestions on the clarity and readability of the questionnaire's items. Based on their feedback, the content of the cover letter and the design of the questionnaire were slightly adapted. These procedures also reduce social desirability (Podsakoff et al., 2003).

As ambidextrous behaviour and motivation can best be measured using self-assessment (Frese and Fay, 2001), and the objective of this study is to know the employee perception about the culture of empowerment and knowledge sharing, this study measures independent and dependent variables with self-reports. Following the advice of Conway and Lance (2010) and Podsakoff et al. (2003) several procedural remedies were undertaken to mitigate potential risk from mono-method design. In addition, the potential for common method variance was examined via Harman's one-factor test recommended by Podsakoff and Organ (1986). Specifically, an unrotated, principal components factor analysis was performed with all manifest variables, which resulted in six factors with eigenvalues larger than 1 that accounted for 65.99% of the variance in the data (the most influential factor accounted for 28.96 % of variance). If common method variance existed, a single factor would have emerged in the analysis, or one general factor would have accounted for most of the covariance in the independent and criterion variables. Overall, the threat of common method variance in the sample can be considered to be low.

Measures

Construct variables were measured on seven-point Likert scales ranging from 1 (totally disagree) to 7 (totally agree). To evaluate *ambidexterity*, the eleven-item measure of Mom et al. (2007) was used, which assesses the extent to which individual respondents have performed explorative and exploitative activities within the past year (α=.88). A sample item

of an explorative activity is "In the last year I was engaged in focusing on strong renewal of products/services or processes". A sample item of an exploitative activity is "In the last year I was engaged in activities of which it is clear to me how to conduct them". One item was left out from our construct ("Activities of which it is clear to you how to conduct them") as our analyses showed that this item caused a decrease in scale reliability. Also a confirmatory factor analysis (CFA) identified this item as untrustworthy. Ambidexterity was constructed by adding the weighted averages of exploration and exploitation and dividing the result by two. By this operationalization, studies are followed that have adopted a contextual approach to ambidexterity (e.g., Lavie et al., 2010). Contextual ambidexterity suggests that the organisational context should allow for undertaking explorative as well as exploitative activities simultaneously. This view on organisational ambidexterity implies a need for high levels of both exploration and exploitation. The higher the level of both activities, i.e., the higher the level of ambidexterity, the better it is for organisational performance. Rather than managing trade-offs to find the most appropriate balance between exploration and exploitation, our operationalisation of ambidexterity pertains to the capacity of employees to pursue high levels of exploration and exploitation concurrently (Cao el al, 2009, p. 781). Lubatkin et al. (2006) showed that this additive operationalization of ambidexterity is superior compared to a operationalization in which ambidexterity is measured by multiplying exploitation and exploration (Gibson and Birkinshaw, 2004), or an operationalization in which ambidexterity is measured by subtracting exploitation from exploration (He and Wong, 2004).

For *culture of employee empowerment* a five-item scale (α=.82) developed by Goh and Richards (1997) was used. It assesses whether the general climate of the organization, as perceived by the employee, is one in which people are approachable, and employees are allowed to take risks, as failures are seen as part of the learning process. A sample item is: "Managers in this organization can accept criticism without becoming overly defensive".

For *knowledge sharing culture* a four-item scale (α=.78) developed by Goh and Richards (1997) was used, assessing the degree to which knowledge about the firm's failure and success is openly discussed within the firm. A sample items: "I often have an opportunity to talk to other staff about successful programs or work activities in order to understand why they succeed".

Intrinsic and *extrinsic motivations* were assessed with a scale developed by Tremblay et al. (2009). These scales are frequently used in the literature. For an overview of the value of these scales for organizational psychology research, see Tremblay et al. (2009). Recently, the

intrinsic motivation scale has been validated in seven languages and nine countries by Gagné and colleagues (2015). Employee *intrinsic motivation* at work was measured with three items (α=.85), including "I am involved in my current work because of the satisfaction I experience from taking on interesting challenges". Extrinsic motivation was measured by three items (α=.80), including "I am involved in my current work because it allows me to earn money".

Control variables. Age group was coded as 1 for 18-30 years, 2 for 31-40 years, 3 for 40-50 years, and 4 for >50 years. Gender was measured as a dichotomous variable coded as 1 for male and 0 for female. Tenure group denotes the number of years that an employee had been in his current function, and was coded as 1 for 0-3 year, 2 for 3-5 year, 3 for 5-10 year and 4 for more than 10 years. Job type was measured by a dummy variables coded as 1 for non-management and 2 for management employee. The study also controlled for the service sector of employment.

Results

The analysis started by evaluating the robustness of the model. To assess multicollinearity, the variance inflation factors (VIF) and condition index was calculated. All VIF values were below 10 (highest VIF 1.51), and the condition index was below 30 (highest condition index 18.27), indicating that the measures do not suffer from multicollinearity (Hair et al., 1998). Then, a CFA was conducted to examine the distinctiveness of scales for the six key variables used in this study. This analysis showed acceptable fit ($\chi 2/df = 1.38$; CFI = .94, TLI = .93, RMSEA = .05).

Table 1 reports the means, standard deviations, and correlations between variables.

[INSERT TABLE 1 ABOUT HERE]

It was assessed whether control variables structurally associate with the main variables. Because the final results did not change when the controls were included in the regressions, they were left out of the final analyses to increase the power of our tests (cf. Becker, 2005).. Linear multiple regression analysis was used to examine the hypothesized effects of a supportive organizational culture, via intrinsic motivation, on ambidexterity. In addition, we used bootstrapping techniques to examine the hypothesized interaction effect of extrinsic motivation on the direct effects of organizational culture on ambidexterity. Table 2 shows that a culture of empowerment is directly and positively related to employee ambidexterity, which

is in keeping with hypothesis 1. No support was found for a positive relationship between knowledge sharing culture and ambidexterity (hypothesis 2).

[INSERT TABLE 2 ABOUT HERE]

Using the moderated-mediation macro PROCESS for SPSS developed by Hayes (2013), a series of linear regressions was conducted that simultaneously examine the mediating effect of intrinsic motivation, and the moderating effect of extrinsic motivation (template 7 within PROCESS). This allowed us to test two models. In the first model it was tested whether intrinsic motivation mediated the link between a culture of empowerment and ambidexterity, while the direct effect of a culture of empowerment was moderated by extrinsic motivation. In the second model it was tested whether intrinsic motivation mediated the link between knowledge sharing culture and ambidexterity, while the direct effect of knowledge sharing culture was moderated by extrinsic motivation. Note that Hayes PROCESS eliminates the need for a Baron and Kenny (1986) causal steps approach in which a direct path is compared with a mediated path. The causal steps approach has many drawbacks (Hayes, 2009). The Hayes PROCESS approach uses bootstrapping to overcome these drawbacks. For details see Hayes (2009).

Model 1. A culture of empowerment was entered as the independent variable (X) and ambidexterity was entered as the outcome variable (Y). Intrinsic motivation was entered as the mediator variable (M) and extrinsic motivation as moderator variable (W). Knowledge sharing culture was taken as covariate. A significant positive relationship emerged between a culture of empowerment and intrinsic motivation ($b = .37$, $p < .001$). The analysis also showed a significant positive relationship between intrinsic motivation and ambidexterity ($b = .40$, $p < .001$). The 95% bias-corrected confidence interval (CI) for the indirect effect (derived from 5,000 bootstrap samples) did not contain zero, 95% CI = [.07, 0.26]. This pattern of results demonstrates that intrinsic motivation mediates the relationship between a culture of empowerment and ambidexterity, supporting hypothesis 3. Furthermore, in contrast with what was hypothesized, a significant positive moderation effect was found of extrinsic motivation ($b = .20$, $p < .001$).

Model 2. Model 2 examines the effects of a knowledge sharing culture (X) on ambidexterity (Y), mediated by intrinsic motivation (M) and moderated by extrinsic motivation (W). A culture of empowerment was included as a covariate. The mediating effect of intrinsic motivation was tested by calculating bias-corrected 95% confidence intervals

using bootstrapping with n = 5,000 resamples via the PROCESS procedure for SPSS (Hayes, 2013; Preacher and Hayes, 2008). The indirect effect was found to be not significant within knowledge sharing conditions, 95% CI = [-.08, 0.10]. Hence, hypothesis 5 was not supported. Apparently, the mediation of intrinsic motivation is unique to the culture of empowerment conditions. Furthermore, the moderation effect of extrinsic motivation was insignificant as well, thereby opposing hypothesis 6.

Simple slopes analyses were conducted for the significant interaction of extrinsic motivation in Model 1. Figure 2 was made for one standard deviation above and below the mean. The above-mean value was taken as high extrinsic motivation and the below-mean value was treated as a low level of extrinsic motivation. Figure 2 shows that a culture of empowerment had a stronger positive effect on ambidextrous behaviour for employees who are highly susceptible to extrinsic motivation than for employees who are not extrinsically motivated.

[INSERT FIGURE 2 ABOUT HERE]

Additional testing

An assumption of our study is that the number of tasks that an individual can fulfil throughout the day may be increased when employees experience a knowledge sharing culture or an empowering culture. In other words, following Lubatkin et al. (2006), we assume that there is room for efficiency gains (from perceiving a beneficial organizational culture). Prior research has pointed out the possible crowding out or crowding in effects between explorative and exploitative activities (e.g. Cao et al., 2003; Gibson and Birkenshaw, 2004). When efficiency gains are ruled out and employees have a limited amount of time to spend on either exploration or exploitation, it is likely that one activity may crowd out the other. To investigate the way in which organizational culture is related to either activity (exploration and exploitation) we have conducted an additional test. To test the model more comprehensively, Structural Equation Modeling was adopted to assess the roles of a culture of empowerment and knowledge sharing, mediated by intrinsic motivation, and moderated by extrinsic motivation, on explorative and exploitative activities as two separate components that make up employee ambidexterity. The mediation analysis was done by adopting a 95% bias-corrected confidence interval for the indirect effect (derived from 5,000 bootstrap samples). Figure 2 shows the model and the results ($\chi 2/df=1.13$; CFI=.99,TLI=.98; RMSEA=.03).

The analysis showed that a culture of empowerment is positively and significantly related to explorative activities (b=.57, p<0.001), but not to exploitative activities (b=.03, ns), suggesting that when employees experience a culture of empowerment, then this encourages them in exploration activities, but it has no encouraging (or discouraging) effect on their exploitative activities. A culture of knowledge sharing is negatively and significantly related to explorative activities (b=-.29, p=0.002), but not to exploitative activities (b=-.00, ns). This finding indicates that also a knowledge sharing culture enhances exploration, but has no effect on exploitation. The analyses showed a positive and significant moderation effect of extrinsic motivation on the relationship between a culture of empowerment and explorative activities (b=.13, p=0.034), but not on other relationships between the two organizational culture variables and the two types of activities. Hence, the positive relationship between a culture of empowerment and exploration is strengthened for employees who perceive a high level of extrinsic motivation.

Testing for the mediating effect of intrinsic motivation it was found that the relationship between a culture for empowerment with explorative activities is partially mediated by intrinsic motivation (direct effect without mediation b=0.78, p<0.001; direct effect with mediation b=0.57, p<0.001; indirect effect b=0.22, p<0.001). This result suggests that intrinsic motivation underlies the relationship between a culture for empowerment and explorative activities. Although intrinsic motivation is conducive to the empowerment-exploration relationship, it may be the case that part of this effect is crowded out by extrinsic motivators, such as monetary incentives (Frey and Jegen, 2001; Deci et al., 1999). The relationships between a culture for empowerment with explorative activities, a knowledge sharing culture with exploitative activities, and a knowledge sharing culture with explorative activities, were not significantly mediated by intrinsic motivation.

[INSERT FIGURE 3 ABOUT HERE]

Discussion and conclusion

Theoretical implications

This study has investigated the effects of particular organizational cultures on employee ambidexterity. Specifically, it investigated the role of a perceived culture of empowerment and a knowledge sharing culture. The study addressed the extent and mechanisms through which these supportive organizational cultures work to enable employees to engage in ambidextrous behaviour. In doing so, it has contributed to research that advocates the

importance of individual level of analysis as compared to the organizational level (Prieto and Santana, 2012; Junni et al., 2013). Furthermore, the study extended the ambidexterity literature by linking supportive organizational cultures to the contemporary debate on employee explorative and exploitative activities that make up ambidexterity, and delving into the relationship with intrinsic and extrinsic motivation.

In our study we started out with the idea that the organizational context should allow individuals to conduct explorative as well as exploitative activities simultaneously (e.g. Gibson and Birkinshaw, 2004). This conceptualisation of ambidexterity, which is closely connected to contextual ambidexterity, implies that high levels of both explorative and exploitative activities are needed for being highly ambidextrous. Our operationalisation of ambidexterity captures the degree in which employees pursue high levels of exploration and exploitation simultaneously (in an additive fashion, conform Lubatkin et al., 2006). Findings indicate that a supportive organizational culture may influence ambidexterity. In particular, it was found that a culture of empowerment is positively related to ambidexterity (H1). These results offer support for conceptual studies such as Vera and Crossan (2004) by suggesting that an open attitude of senior management, which encourages employee contributions to decision making, is likely to help employees to overcome their innate hesitation to express radically new ideas. Furthermore, it stimulates employees to bring forward incremental improvements of products, services and production processes. In other words, in such a supportive organizational climate employees are empowered to experiment, improve work methods, and undertake ambidextrous activities. The additional analysis showed that particularly explorative activities are related to a culture of empowerment.

No support was found for the hypothesis that a knowledge sharing culture is positively related to ambidexterity (H2). In fact, the additional analysis showed that a knowledge sharing culture is significantly and negatively related to explorative activities, and no significant relationship was found between a knowledge sharing culture and exploitative activities. A possible explanation could be that a knowledge sharing culture only contributes to either exploitative or explorative activities. For instance, it could be the case that a knowledge sharing culture is foremost aimed at an exchange of ideas. New ideas that come forward from the exchange may not be executed and therefore they may not make it into the explorative (or exploitative) activities. A possible reason for this is that explorative ideas have an inherent risk associated with them. Because of their potentially disruptive nature, these explorative ideas may not be encouraged by the social climate of organizations (Dougherty & Hardy, 1996; March, 1991). Leaders and management are generally risk averse. Often explorative

ideas are rejected because they are considered to be too radically new and therefore too risky (Staw, 1995). Explorative ideas often get rejected in favour of conformity and uniformity (Müller, Melwani and Goncalo, 2012; Staw, 1995). Organizational culture and pressures strongly push efforts towards less risky, immediate reward, highly predictable projects (McDermott & O'Connor, 2002; Rice, Leifer & O'Connor, 2002). Many vested interests manifest themselves in existing organizational culture, structure and strategy, which hamper leaders to endorse explorative ideas (McDermott and O'Connor, 2002; Sheaffer et al., 2011). As a result, ideas that are brought forward in a knowledge sharing culture may not be translated into explorative (or exploitative) activities. Similarly, in climates where knowledge sharing is encouraged, experimentation and disruptive ideas may be limited in order to preserve social cohesion (March, 1991). The Grinsven and Visser (2012) study proposed a similar idea, suggesting that that knowledge sharing within an organization may have a negative impact on explorative activities. When the employees are focused on the current routines, new opportunities will be missed. Consequently, a knowledge sharing culture may be negatively related to explorative activities (and more focussed on exploitative activities).

With regard to the mediation effects, a culture of empowerment increased intrinsic motivation, which in turn increased employee ambidexterity (H3). Hence, an empowering culture indirectly affects ambidexterity through intrinsic motivation. In contrast, the relationship between knowledge sharing and ambidexterity is not mediated by intrinsic motivation (H5). This finding adds to current knowledge about managing creative employees. Creative employees typically generate exploitative as well as explorative ideas. They possess an inner drive to pursue these ideas. Intrinsically motivated individuals will put more time and effort in tasks and are therefore able to learn more without having learning as an explicit goal (Ryan and Deci, 2000). Studies have shown that leaders cannot actively stimulate creative people to engage in innovative and creative behaviour (O'Reilly and Tushman, 2008). People are either intrinsically motivated to do so or not. However, leaders can create an organization culture that encourages experimentation, learning, does not punish for mistakes, and is aimed at empowering employees to take chances. This idea is in line with findings from studies about 'engaging leadership' (Schaufeli, 2015; Alban-Metcalfe et al., 2008) and 'transformational leadership' (Bass and Avolio, 1993). A general conclusion from these studies seems to be that an engaging leadership style enhances job engagement, also resulting in better job performance and organizational innovation (Carasco-Saul et al., 2015). Hence, a culture of employee empowerment may lead to the desired ambidextrous behaviour. In contrast, a knowledge sharing culture may be too explicitly aimed at forcing employees to

exchange ideas and be committed to the status quo. Intrinsic motivation will not be fuelled in such an environment.

While intrinsic motivation plays a key role in driving ambidexterity at the employee level, the role of extrinsic motivation was found to moderate the relationship between an empowering culture and ambidexterity (H4), but not the relationship between knowledge sharing and ambidexterity (H6). It was found that an empowering culture leads to more ambidextrous behaviour for employees that are highly susceptible to extrinsic motivation than for employees that are not extrinsically motivated. These findings suggest that financial rewards and bonuses strengthen the effect of a culture of empowerment on ambidexterity.

In our additional analysis we explore the role of specific organizational contexts (culture of empowerment or culture of knowledge sharing) for explorative activities and exploitative activities separately. The rational being that it is interesting to find out the conditions under which a specific organizational context is particularly beneficial for explorative activities, or exploitative activities, both or either one. The additional analysis indicated that extrinsic motivation strengthens the effect of a culture of empowerment on explorative activities. When employees perceive a supportive empowering environment and are being financially rewarded for taking initiative and behave proactively, they are more likely to engage in ambidextrous activities. A possible explanation for this effect is that rewards can also be perceived as conveying the information that the employee did well, and hence signal appreciation. In these cases, a reward will increase motivation and learning (Ryan and Deci, 2000). Hence, a supportive empowering environment is more likely to lead to explorative activities for employees who feel appreciation for their proactivity in terms of extrinsic motivation, than for employees who do not feel appreciation in terms of extrinsic motivation. At the same time, extrinsic motivation plays no role in the link between knowledge sharing and ambidexterity, indicating that financial rewards do not increase (or decrease) the rate at which employees will propose improvement ideas, even when the social climate supports communication. This is in line with earlier research by Frey and Oberholzer-Gee (1997).

Managerial implications

The findings of this study have managerial implications. Encouraging and managing explorative as well as exploitative activities by adopting supportive organizational cultures is challenging for most firms. The results of this study imply that a culture of empowerment enables employees to engage in ambidextrous activities. These findings are especially relevant for service firms that want to be ambidextrous via their employees rather than by

investing in large RandD departments. Service firms typically want to cater to existing customers by continuously improving their processes and services, while at the same time seek to remain competitive by encouraging their employees to find creative solutions, anticipate future customer needs and search for new opportunities.

This study has shown that an organizational culture that is characterized by openness to new and diverse ideas, and non-judgmental assessment of contributions of employees, is likely to encourage ambidexterity (Donate and Guadamillas, 2011; Du Plessis, 2007). The data indicates that when merely knowledge sharing is promoted, for instance by training programs, then this is has no effect on generating ambidextrous behaviour. In order to have an effect on ambidexterity and therefore on the innovative performance of the firm, supportive cultures should be designed in a way that they empower employees to take initiative and not be afraid of failing and making mistakes by suggesting radically new solutions and ways of working. Novel ideas carry a certain level of risk within them. Ideas might fail to work out in practice (Simonton, 1984). Therefore, it is of critical importance that employees perceive senior management to be supportive in the form of providing a fair and constructive judgment of new ideas, no severe punishment in the case of failure, and recognizing and rewarding creative work. Furthermore, ideas should be put to the test and be translated into explorative (or exploitative) activities. If management does not allow room for trial and error, and implementation of ideas, a supportive organizational culture will not generate ambidextrous employee behaviour.

It was found that a supportive social climate not only directly contributes to more employee ambidextrous behaviour, but also increases the employees' levels of intrinsic motivation, which in turn is also a catalyst for ambidexterity. Initial research has indicated the power of leadership in setting examples (Mumford et al., 2002; Donate and Guadamillas, 2011). Having leaders that show empowerment, and sharing it with fellow employees builds the environment needed for ambidexterity to thrive. For instance, by sharing experiences of their own failures, managers could create an environment in which people feel secure and safe to take risks. Failures are then seen as part of a learning process. Furthermore, leaders can involve employees in defining the problems to be pursued and the approach to be used to address those, thereby stimulating involvement, engagement and commitment of employees (Mumford et al., 2002).

Limitations and avenues for further research

This study is subject to several limitations. First, a cross-sectional study was performed, thereby eliciting caution in interpreting causal findings. However, literature supports the causal reasoning of ambidexterity being affected by a culture of empowerment, knowledge sharing, and motivation (Gibson and Birkinshaw, 2004; Jansen, van den Bosch and Volberda, 2006). Future longitudinal research may add a significant contribution in this respect. Studies providing a dynamic perspective on employee explorative and exploitative behaviour are still scarce. Future studies that adopting a longitudinal research design can contribute to the understanding of the development of employee ambidexterity over time and the direction of causality between motivation, a supportive work environment and ambidexterity (see e.g. Prieto and Martin, 2015; Prieto and Perez, 2014).

A second possible limitation is the use of self-reports. Although this procedure has been known to have limitations, in the case of ambidextrous behaviour research it has been shown that self-assessment is preferred (Frese and Zapf, 1994). Ambidextrous behaviour can be seen negatively by other parties, such as supervisors or colleagues, since it may involve challenging the status quo, especially in the case of explorative activities. As such, other-party-ratings can be rendered potentially less reliable than self-ratings (Frese and Fay, 2001). Furthermore, Conway and Lance (2010) indicated the misconceptions about common method bias in self-report measures, and the proactive designs steps that can be reasonably expected from studies to minimize common method bias. Following the advice of Conway and Lance (2010) and Podsakoff et al. (2003) several procedural remedies were undertaken to mitigate potential risk from mono-method design, including (1) protecting respondents' anonymity; (2) assuring respondents that honesty is valued and that there are no desired answers; (3) reverse coding of several questions, reducing the threat of respondent "guessing"; (4) adopting a complex research model with mediation and moderation, thereby reducing the chance that the hypothesized relationships are part of respondents' cognitive map; and (5) employing a short survey, containing only 43 items, to avoid boredom and fatigue which would make the last items of the survey vulnerable to biases in the direction of consistency with previous responses, and stereotypical responding, such as all midrange responses or all extreme responses (Lindell and Whitney, 2001).

Third, our sample consists of employees at the managerial level from various Belgian service organizations. Having one respondent per organization does have advantages (observations are independent), but it has disadvantages too as there may be organizational factors that are different for each respondent and that could have an influence on ambidexterity. Our study included two specific contextual variables. As employee

ambidextrous behaviour is conceptualized as a micro-level task carried out by individuals, is likely to be stimulated, facilitated, and enhanced – or inhibited – by a set of macro-level conditions (Hirst, van Dick and van Knippenberg, 2009). In this perspective also other contextual variables could play a role. For example, organizational structure and organizational culture have been proven to facilitate employee creativity (e.g., Amabile et al., 1996; Shalley, Gilson and Blum, 2000). It would be interesting in future research to add data on other organizational context variables in order to shed further light on how employee ambidexterity is affected.

Fourth, our operationalisation of ambidexterity as well as culture of empowerment provides insights that should be seen in the light of the operationalisation we used. For instance, Cao et al. (2009) distinguished two alternative operationalizations of ambidexterity, namely (1) a balance dimension (|exploration – exploitation|) and (2) a combined dimension (exploration x exploitation). These operationalisations rely on different ways in which they expect ambidexterity to work. The balance dimension is more beneficial to resource constrained firms, because it shows how to manage the balance between exploration and exploitation. The combined dimension works better for firms without immediate resource constraints as it allows you to manage the interplay between exploration and exploitation. Future research may benefit from analysing different operationalisations of ambidexterity and identify differences in conclusions based on the results with each of these operationalisations. Furthermore, the validated scale from Goh and Richards (1997) was used to measure a culture of empowerment. Alternatively, the Empowering Leadership Questionnaire from Arnold et al. (2000) could have been used, or the empowering leadership scale by Ahearne et al. (2005). These alternative scales capture other, arguably more, dimensions of an empowering organization culture. It will be interesting to see whether future studies that use a broad operationalization of empowering leadership will come to conclusions about the relationship with employee ambidexterity that are similar to the ones found in this study.

Finally, the findings leave open the possibility that a knowledge sharing culture may influence exploration and exploitation in different ways. This idea adds to studies that have indicated that explorative and exploitative learning have different antecedents each of which can enhance a certain type of activities while hindering the other (e.g. Birkinshaw and Gibson, 2004; O'Reilly and Tushman, 2008). Further research should investigate whether a knowledge sharing culture has a different effect on exploitative and explorative activities.

References

Ahearne, M., Mathieu, J., and Rapp, A. (2005). To empower or not to empower your sales force? *Journal of Applied Psychology*, 90: 945–955.

Alimo-Metcalfe, B., Alban-Metcalfe, J., Bradley, M., Mariathasan, J., and Samele, C. (2008). The impact of engaging leadership on performance, attitudes to work and wellbeing at work. *Journal of Health Organization and Management*, 22: 586–598.

Alsop, R., Bertelsen, M.and Holland, J. (2005). *Empowerment in practice: From analysis to implementation*. Washington, DC: The World Bank.

Amabile, T. M. (1979). Effects of external evaluation on artistic creativity. *Journal of Personality and Social Psychology*, 37: 221-233.

Amabile, T. M. and Kramer, S. J. (2007). Inner work life: understanding the subtext of business performance. *Harvard Business Review*, 85(5): 418-431.

Amabile, T. M., Conti, R., Coon, H., Lazenby, J. and Herron, M. (1996). Assessing the work environment for creativity. *Academy of Management Journal*, 39(5): 1154-1184.

Amabile, T. M., Schatzel, E. A., Moneta, G. B. and Kramer, S.J. (2004). Leader behaviours and the work environment for creativity: Perceived leader support. *Leadership Quarterly*,15: 5–32.

Ambrose, M. L. (1999). Old Friends, New Faces: Motivation Research in the 1990s. *Journal of Management*, 25(3): 231-292.

Armstrong, J. S. and Overton, T. S. (1977). Estimating nonresponse bias in mail surveys. *Journal of Marketing Research*, 14: 396-402.

Arnold, J. A., Arad, S., Rhoades, J. A. and Drasgow, F. (2000). The empowering leadership questionnaire. *Journal of Organizational Behavior*, 21: 249–269.

Bass, B. M. (1985). Leadership and performance beyond expectations. New York: The Free Press.

Bass, B.M. and Avolio, B.J. (1993). Transformational leadership and organizational culture. *Public Administration Quarterly*, 17(3/4): 112-21.

Becker, T.E. (2005). Potential problems in statistical control of variables in organizational research. *Organizational Research Methods*, 8, 274–289.

Benner, M. J. and Tushman, M. L. (2003). Exploitation, exploration, and process management. *Academy of Management Review*, 28(2), 238-256.

Bern, D. (1972). Self-perception theory. In L. Berkowtiz (Ed.), Advances in experimental social psychology (Vol. 6, pp. 1-62). New York: Academic Press.

Birkinshaw, J. and Gibson, C. (2004). Building ambidexterity into an organization. *MIT Sloan Management Review*, 45(4): 47-55.

Blau, P. M. 1964.Exchange and power in social life. New York: John Wiley.

Bock G.-W., Zmud, R.W., Kim, Y.-G. and Lee, J.-N. (2005). Behavioral intention formation in knowledge sharing. *MIS Quarterly,* 29(1): 87-111.

Caniëls, M.C.J. and Veld M. (early view 2016). Employee ambidexterity, High Performance Work Systems and Innovative Work Behaviour. *International Journal of Human Resource Management*. Doi: 10.1080/09585192.2016.1216881.

Caniëls, M.C.J., Lenaerts, H. and Gelderman, C. J. (2015). Explaining the Internet usage of SMEs. *Internet Research*, 25(3), 358-377.

Cao, Q, Gedajlovic, E., and Zhang, H. (2009). Unpacking organizational ambidexterity: Dimensions, contingencies, and synergistic effects. *Organization Science,* 20(4): 781-796.

Carasco-Saul, M., Kim, W., and Kim, T. (2015). Leadership and employee engagement: Proposing research agendas through a review of literature. *Human Resource Development Review*, 14(1): 38–63.

Conway, J. M. and Lance, C. E. (2010). What reviewers should expect from authors regarding common method bias in organizational research. *Journal of Business Psychology*, 25(3): 325-334.

Darroch, J. (2005). Knowledge management, innovation and firm performance. *Journal of Knowledge Management*, 9(3): 101-115.

De Stobbeleir, K. E. M., Ashford, S. J. and Buyens, D. (2011). Self-regulation of creativity at work. *Academy of Management Journal*, 54(4): 811-831.

Deci, E. L., Koestner, R., and Ryan, R. M. (1999). A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin*, 125: 627–668.

Deci, E.L. (1975). *Intrinsic Motivation*. Plenum Press, New York

Donate, M.J. and Guadamillas, F. (2011). Organizational factors to support knowledge management and innovation. *Journal of Knowledge Management*, 15(6): 890 – 914.

Dougherty, D., & Hardy, C. (1996). Sustained product innovation in large, mature organizations: Overcoming innovation-to-organization problems. *Academy of Management Journal*, 39: 1120–1153.

Du Plessis, M. (2007). The role of knowledge management in innovation. *Journal of Knowledge Management*, 11(4): 20-29.

Frese, M. and Fay, D. (2001). Personal initiative (PI): An active performance concept for work in the 21st century. *Research in Organizational Behaviour*, 23: 133-187.

Frese, M., and Zapf, D. (1994). Action as the core of work psychology: A German approach. In H.C. Triandis, M. D. Dunnette, & J. M. Hough (Eds), *Handbook of industrial and organizational psychology* (Vol. 4, 2nd ed., pp. 271–340). Palo Alto, CA: Consulting Psychology Press.

Frey, B. S. and Oberholzer-Gee, F. (1997). The cost of price incentives: An empirical analysis of motivation crowding-out. *The American Economic Review*, 87(4): 746-755.

Frey, B. S., and Jegen, R. (2001). Motivation crowding theory. *Journal of Economic Surveys*, 15: 589–611.

Gagné, M., Forest, J., Vansteenkiste, M., Crevier-Braud, L., Broeck, A. V. D., Aspeli, A. K., … Westbye, C. (2015). The multidimensional work motivation scale: Validation evidence in seven languages and nine countries. *European Journal of Work and Organizational Psychology*, 24:178–196.

Gibson, C. B. and Birkinshaw, J. (2004). The antecedents, consequences, and mediating role of organizational ambidexterity. *Academy of Management Journal*, 47(2): 209-226.

Grinsven, M. and Visser, M. (2011). Empowerment, knowledge conversion and dimensions of organizational learning. *The Learning Organization*, 18(5): 378-391.

Goh, S. and Richards, G. (1997). Benchmarking the learning capability of organizations. *European Management Journal*, 15(5): 575-583.

Gumusluoglu, L. and Ilsev, A. (2009). Transformational leadership, creativity and organizational innovation. *Journal of Business Research*, 62(4): 461-473.

Gupta, A. K., Smith, K.G. and Shalley, C. E. (2006). The interplay between exploration and exploitation. *Academy of Management Journal*, 4, 693–706.

Hair Jr., JF, Tatham, RL, Anderson, RE and Black, W (1998). Multivariate Data. Englewood Cliffs: Prentice-Hall.

Hayes A. F. (2013). Introduction to mediation, moderation, and conditional process analysis. The Guilford Press: New York.

He, Z., and Wong, P.-K. (2004). Exploration and exploitation: An empirical test of the ambidextrous hypothesis. *Organization Science*, 15: 481-496.

Hendriks, P. (1999). Why share knowledge? The influence of ICT on the motivation for knowledge sharing. *Knowledge and Process Management*, 6(2): 91-100.

Hirst, G., van Dick, R. and van Knippenberg, D. (2009). A social identity perspective on leadership and employee creativity. *Journal of Organizational Behaviour*, 30(7): 963-982.

Husted, K. and Michailova, S. (2002). Diagnosing and fighting knowledge-sharing hostility. *Organizational Dynamics*, 31(1): 60-73.

Huysman, M. and de Wit, D. (2004). Practices of managing knowledge sharing: towards a second wave of knowledge management. *Knowledge and Process Management*, 11(2): 81-92.

Jackson, S.E., Chuang, C.-H., Harden, E.H. and Jiang, Y. (2006). Toward developing human resource management systems for knowledge-intensive teamwork. *Research in Personnel and Human Resources Management*, 25:27-70.

Jansen, J. J. P., Van den Bosch, F. A. J. and Volberda, H. W. (2006). Exploratory innovation, exploitative innovation, and performance. *Management Science*, 52(11): 1661-1674.

Jarvenpaa, S. L. and Staples, D. S. (2000). The use of collaborative electronic media for information sharing. *Journal of Strategic Information Systems,* 9: 129-154

Junni, P., Sarala, R.M., Taras, V. and Tarba, S.Y. (2013). Organizational ambidexterity: A meta-analysis. *Academy of Management Perspectives*, 27(4): 299-312.

Kang, S. and Snell, S. (2009). Intellectual capital architectures and ambidextrous learning, *Journal of Management Studies*, 46(1): 65-92.

Lavie D., Stettner, U., Tushman, M.L. (2010). Exploration and exploitation within and across organizations. Academy of Management Annals 4(1):109–155.

Levinthal, D. A. and March, J. G. (1993). The myopia of learning. *Strategic Management Journal*, 14(S2), 95–112.

Lindell, M. K. and Whitney, D. J. (2006). Accounting for common method variance in cross-sectional research designs. *Journal of Applied Psychology*, 86(1): 114-121.

Lubatkin, M. H., Z. Simsek, Y. Ling, and Veiga, J.F. (2006). Ambidexterity and performance in small- tomedium-sized firms. Journal of Management, 32:1-17.

March, J. G. (1991). Exploration and exploitation in organizational learning. *Organization Science*, 2(1): 71-87.

Martín-Cruz, N., Martín-Pérez, V. and Trevilla-Cantero, C. (2009). The influence of employee motivation on knowledge transfer. *Journal of Knowledge Management*, 13(6): 478-490.

Martín-Perez, V., and Martín-Cruz, N. (2015). The mediating role of affective commitment in the rewards–knowledge transfer relation. *Journal of Knowledge Management*, 19(6): 1167-1185.

McDermott, C. M. and O'Connor, G. C. (2002). Managing radical innovation: An overview of emergent strategy issues. *Journal of Product Innovation Management*, 19(6): 424-438.

Minbaeva, D. B., Mäkelä, K. and Rabbiosi, L. (2012). Linking HRM and knowledge transfer via individual level mechanisms. *Human Resource Management*, 51(3): 387-405.

Mom, T. J. M., Bosch, F. A. J. V. D. and Volberda, H. W. (2007). Investigating managers' exploration and exploitation activities: The influence of top-down, bottom-up, and horizontal knowledge inflows. *Journal of Management Studies*, 44(6): 910-931.

Müller, J. S., Melwani, S. and Goncalo, A. (2012). The bias against creativity: Why people desire but reject creative ideas. *Psychological Science*, 23(1): 13-17.

Mumford, M.D. Scott, G.M. Gaddis, B. and Strange, J.M. (2002). Leading creative people: Orchestrating expertise and relationships. *The Leadership Quarterly*, 13: 705-750.

Nickerson J.A. and Zenger T.R., (2002). Being efficiently fickle: A dynamic theory of organizational choice. *Organization Science*, 13: 547-566.

Nonaka, J. and Takeuchi. H. (1995). The knowledge creating company. New York: Oxford University Press.

O'Neill, O., Feldman, D. C., Vandenberg, R. J., Dejoy, D. M., and Wilson, M. G. (2012). Organizational achievement values, high-involvement work practices, and business unit performance. *Human Resource Management*, 50, 541–558.

O'Reilly, C.A. and Tushman, M.L. (2008). Ambidexterity as a dynamic capability. *Research in Organizational Behaviour*, 28: 185-206.

Oldham, G. R. and Cummings, A. (1996). Employee creativity: personal and contextual factors at work. *Academy of Management Journal*, 39(3): 607–634.

Osterloh, M., and Frey, B. S. (2000). Motivation, knowledge transfer, and organizational forms. *Organization Science*, 11: 538–550.

Parker, S. K. and Collins, C. G. (2010). Taking stock: Integrating and differentiating multiple proactive behaviours. *Journal of Management*, 36(3): 633–662.

Patel, P. C., Messersmith, J. G., and Lepak, D. P. (2013). Walking the tightrope: An assessment of the relationship between high-performance work systems and organizational ambidexterity. *Academy of Management Journal*, 56, 1420–1442.

Peretti, F. and Negro, C. (2006). Filling empty seats: How status and organizational hierarchies affect exploration versus exploitation in team design. *Academy of Management Journal*, 49(4): 759-777.

Podsakoff, P. M. and Organ, D. W. (1986). Self-reports in organizational research: Problems and prospects. *Journal of Management*, 12(4): 531-544.

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y. and Podsakoff, N. P. (2003). Common method biases in behavioural research. *Journal of Applied Psychology*, 88(5): 879-903.

Preacher K.J. and Hayes, A.F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavioural Research Methods,* 40: 879–891.

Prieto, I.M., and P. Pérez-Santana (2012). Building ambidexterity: the role of human resource practices in the performance of firms from Spain. *Human Resource Management*, 51(2): 189–212.

Prieto-Pastor, I. and Martin-Perez, V. (2015). Does HRM generate ambidextrous employees for ambidextrous learning? *The International Journal of Human Resource Management*, 26(5): 589–615.

Puranam, P., H. Singh and Zollo, M. (2006). Organizing for innovation. *Academy of Management Journal*, 49(2): 263–280.

Radaelli, G., Lettieri, E., Mura, M. and Spiller, N. (2014). Knowledge sharing and innovative work behaviour in healthcare. *Creativity and Innovation Management*, 23(4), 400-414.

Raisch, S.and Birkinshaw, J. (2008). Organizational ambidexterity: Antecedents, outcomes, and moderators. *Journal of Management*, 34(3): 375-409.

Ray, D. G., Neugebauer, J., Sassenberg, K., Buder, J. and Hesse, F.W. (2013). Motivated shortcomings in explanation. *Journal of Experimental Psychology*, 142(2): 445-457.

Rice, M. P., Leifer, R., and O'Connor, G. C. (2002). Commercializing discontinuous innovations: Bridging the gap from discontinuous innovation project to operations. *IEEE Transactions on Engineering Management*, 49(4): 330-340.

Ryan, R. M. and Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1): 68-78.

Schaufeli, W.B. (2015). Engaging leadership in the job demands-resources model. *Career Development International*, 20(5): 446–463.

Shalley, C. E., Gilson, L. L. and Blum, T. C. (2000). Matching creativity requirements and the work environment. *Academy of Management Journal*, 43(2): 215-223.

Sheaffer, Z., Honig, B., Zionit, S. and Yeheskel, O. (2011). Radical changes, ideology, dwindling membership and financial distress. *European Management Journal*, 29(4): 291– 305.

Simonton, D. K. (1984). *Genius, creativity, and leadership: Histriometric inquiries*. Boston, MA: Harvard University Press.

Smith, W. K. and Tushman, M. L. (2005). Managing strategic contradictions: A top management model for managing innovation streams. *Organization Science*, 16(5): 522-536.

Starbuck, W.H. and Webster, J. (1991). When is play productive? *Accounting, Management, and Information Technology*, 1(1): 71-90.

Staw, B. M. (1995. Why no one really wants creativity. In C. Ford and D. A. Gioia (Eds.), *Creative action in organizations: Ivory tower visions and real world voices*: 161–166. Thousand Oaks, CA: Sage Publications, Inc.

Staw, B. M. and Boettger, R. D. (1990). Task revision: A neglected form of work performance. *Academy of Management Journal*, 33(3): 534-559.

Tremblay, M. A., Blanchard, C. M., Taylor, S., Pelletier, L. G. and Villeneuve, M. (2009). Work extrinsic and intrinsic motivation scale. *Canadian Journal of Behavioural Science*, 41(4): 213-226.

Tushman, M. L. and O'Reilly, C. A. (1996). Ambidextrous organizations: managing evolutionary and revolutionary change. *California Management Review*, 38(4), 8-30.

Van Knippenberg, D., van Knippenberg, B., De Cermer, D. and Hogg, M. A. (2004). Leadership, self, and identity. *The Leadership Quarterly*, 15(6): 825−856.

Vera, D. and Crossan, M. (2004). Strategic leadership and organizational learning. *Academy of Management Review*, 29(2): 222−240.

Von Krogh. G,. Ichijo. K. and Nonaka. J. (2000). Enabling knowledge creation. New York: Oxford University Press.

Wasko, M. and Faraj, S. (2000). "It is what one does": why people participate and help others in electronic communities of practice. *Journal of Strategic Information Systems*, 9(2-3): 155–173.

Webster, J., Brown, G., Zweig, D., Connelly, C.E., Brodt, S. and Sitkin, S. (2008). Beyond knowledge sharing. *Research in personnel and human resources management*, 27: 1-7.

Wong Humborstad, S.I., Nerstad, C.G.L. and Dysvik, A. (2014). Empowering leadership, employee goal orientations and work performance. *Personnel Review*, 43(2): 246 – 271.

Zhang, X. and Bartol, K.M. (2010). Linking empowering leadership and employee creativity. *Academy of Management Journal*, 53(1): 107-128.

Table 1. Descriptives

	Variables	Mean	s.d.	1	2	3	4	5	6	7
1.	Ambidexterity	4.64	1.03	(.88)						
2.	A culture of empowerment	3.86	1.07	.44**	(.82)					
3.	Knowledge sharing culture	4.45	1.07	.28**	.52**	(.78)				
4.	Intrinsic motivation	5.16	1.10	.56**	.37**	.20*	(.85)			
5.	Extrinsic motivation	4.87	1.13	-.06	.01	.16	-.05	(.80)		
6.	Age group	1.97	0.88	-.21*	-.23**	-.03	-.03	-.10		
7.	Gender	0.63	0.48	.20*	.07	.04	.18*	-.09	.11	
8.	Tenure group	3.40	0.82	-.03	-.11	-.01	.02	-.10	.67**	.15

n = 136. Internal reliabilities (alpha coefficients) are given in parentheses on the diagonal. *p < .05, **p< .01

Table 2. Regression summary for the mediating role of intrinsic motivation and the moderating role of extrinsic motivation on the relationship between supportive organizational culture variables and ambidexterity

Independent variables (centralized)	Linear regression model	Moderated mediation Model 1: Empowerment culture vs Employee ambidexterity	Moderated mediation Model 2: Knowledge sharing culture vs Employee ambidexterity
Direct effects			
Empowerment culture	.52**		
Knowledge sharing culture	-.24**		
Intrinsic motivation	.29**		
Extrinsic motivation	-.02		
Partial effects towards intrinsic motivation			
Constant		3.64**	3.64**
Empowerment culture		.37**	.37**
Knowledge sharing		.02	.02
Partial effects from intrinsic motivation to ambidexterity			
Constant		5.00**	2.42
Empowerment culture		-.73*	.25**
Knowledge sharing culture		.10	-.16
Intrinsic motivation (mediator)		.40**	.42**
Extrinsic motivation		-.78**	-.23
Moderator			
Extrinsic motivation (interaction term)		.20**	.04

Mediation			
95% bias-corrected CI		[.07, 0.26]	[-.08, 0.10]
Intercept	1.75		
Adjusted R^2	.46	.43	.39
F-value	29.21	19.62	16.28
N	136	136	136

Notes. Unstandardized coefficients are reported, independent variables were centered, *p*-values are reported between brackets, * $p<.05$, ** $p<.01$

Figure 1. Research framework

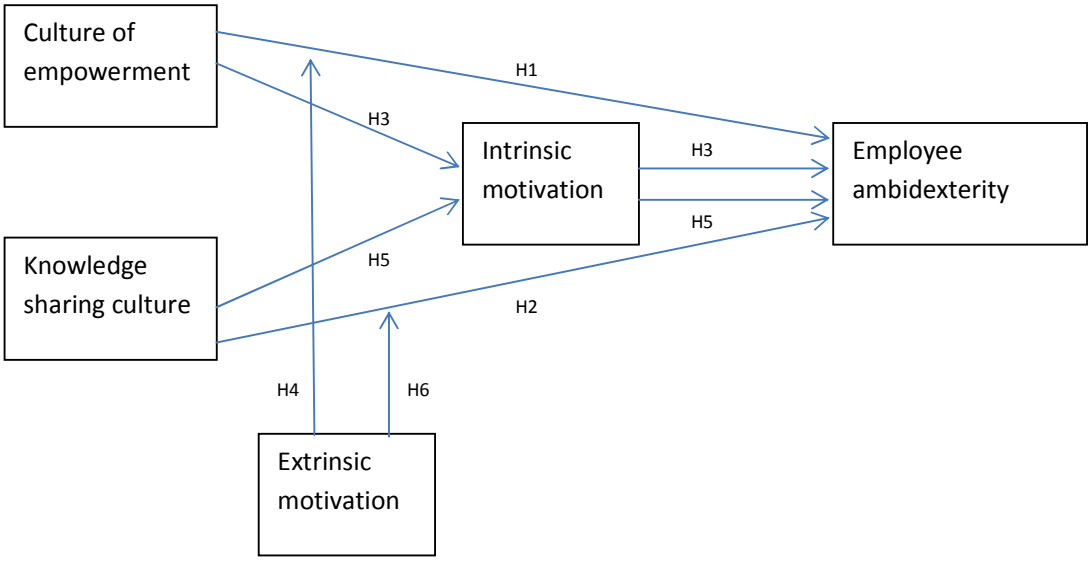


Figure 2. The moderating effect of extrinsic motivation on the relationship between a culture of empowerment and ambidexterity

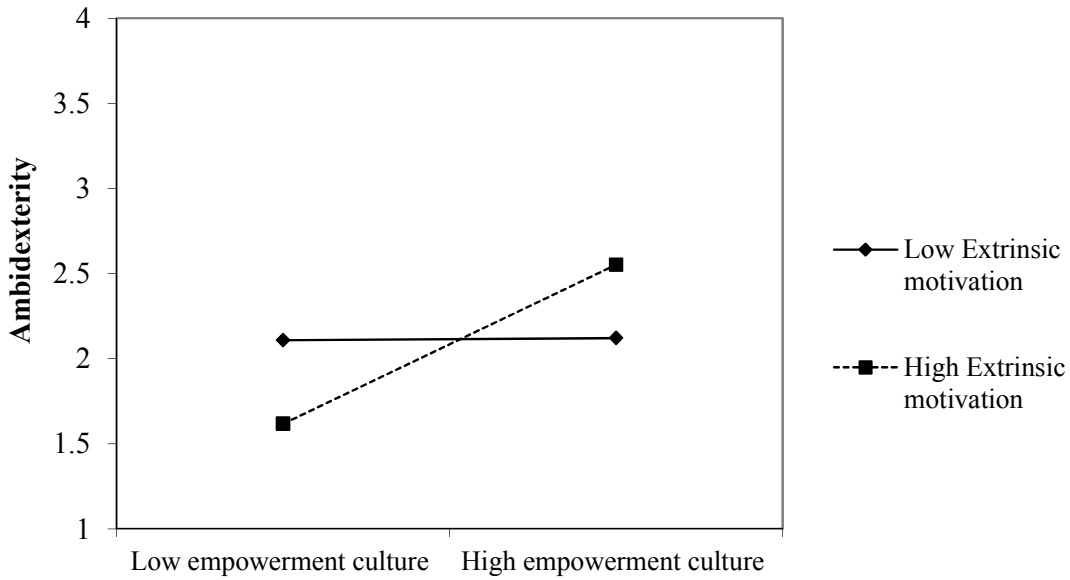
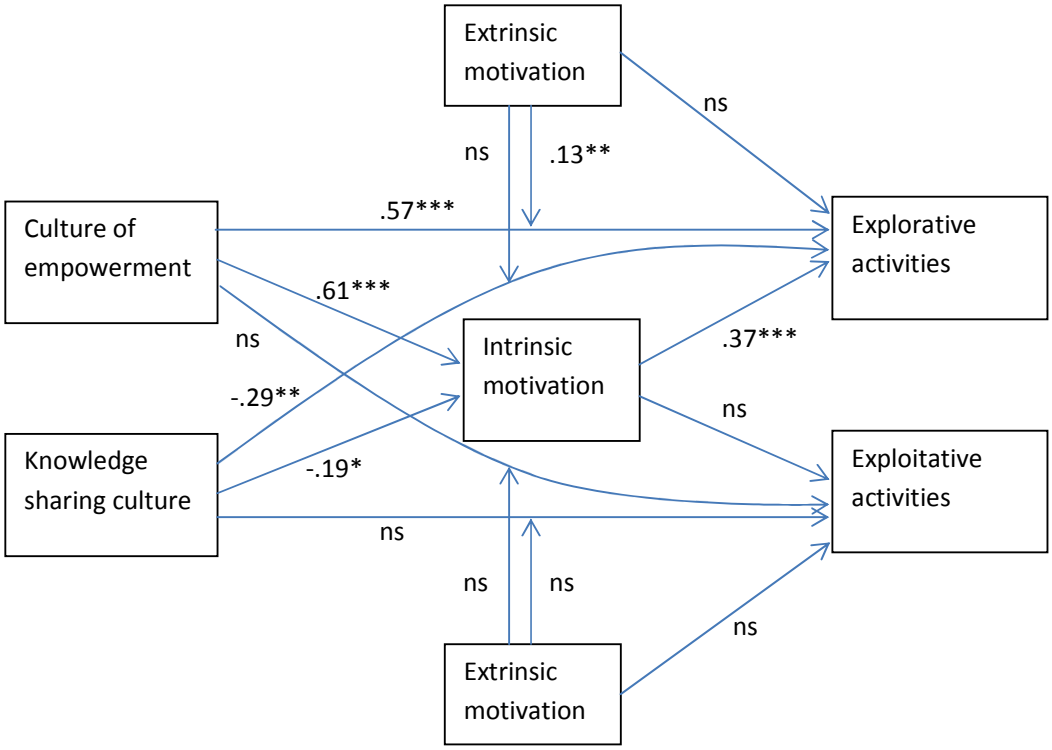


Figure 3. Standardized parameter estimates



Note: *** p<0.001; ** p<0.05; * p<0.10; ns=non-significant