

# INNOVATIVE BEHAVIOUR, TRUST AND PERCEIVED WORKPLACE PERFORMANCE

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## **ABSTRACT**

Building on theories of social exchange, enactment, and trust, we provide a theorization of innovative work behaviour at the individual (IB) and team (IB<sub>T</sub>) levels and explain how desirable performance returns occur for individuals and teams. We further propose that horizontal (between team members) and vertical (between teams and their supervisor) team trust moderate the relationship between IB<sub>T</sub> and team performance. The results based on surveys conducted at two points in time in a large insurance company in the Netherlands show that employees' IB is positively associated with perceived workplace performance at the individual and team levels and that the effects vary based on the forms of trust at play. Our findings offer important new knowledge about the consequences of entrepreneurship and innovation in the workplace and the significant role that trust plays in enabling such behaviour to promote perceived workplace performance, particularly in the vital financial services sector.

## **Keywords**

Innovative behaviour, corporate entrepreneurship, innovation, innovativeness, trust, perceived workplace performance, social exchange theory, enactment theory, teams, multi-level model

## INTRODUCTION

Conditions in the global business environment demand that established firms pursue growth via innovation and entrepreneurship. Such a strategy denotes a continuous and consistent reliance on innovative behaviour across organizational levels (Bednall et al., 2018; Ireland, Covin and Kuratko, 2009). However, most studies of firm entrepreneurship focus only on the entrepreneurial and innovative behaviours and dispositions of top managers or firm owners (e.g., Covin and Slevin, 1989; Sieger, Zellweger and Aquino, 2013), neglecting that organizational members across all organizational levels can potentially contribute to entrepreneurship and innovation within a firm (Ireland et al., 2009; Mustafa, Martin and Hughes, 2016; Wales, Monsen and McKelvie, 2011). Innovative behaviour<sup>1</sup> (IB) by employees is considered to be of crucial importance for continuous innovation, improvement and corporate entrepreneurship (De Jong and Den Hartog, 2010; Sharma and Chrisman, 1999; Van de Ven, 1986; Van de Ven and Engelman, 2004). Yet, innovation is a risky endeavour (Farr and Ford, 1990; Van de Ven, 1986; Yuan and Woodman, 2010) meaning that the performance benefits resulting from IB in terms of personal and career success are often unclear to the employee. Exhibiting innovative behaviour therefore represents a form of entrepreneurial risk-taking on the part of the individual employee.

Job characteristics are an important antecedent of IB as higher level employees, managers, and R&D workers have different opportunities to exhibit IB, are expected to behave in more innovative ways, and have more opportunities to diversify the risks associated with IB (Hornsby et al., 2009; Jansen, 2000; Oldham and Cummings, 1996). Still, within the confines of their defined roles, lower-level employees and non-R&D workers can deploy IB in such a way that it *may* manifest in improved workplace performance. Regrettably, we know little of the manner in which IB impacts an employees' perception of their own or their team's workplace performance.

Addressing this knowledge gap will lend insight regarding factors that condition the outcomes of

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<sup>1</sup> Following Yuan and Woodman (2010), we define innovative behaviour as an employee's intentional introduction or application of new ideas, products, processes and procedures to his or her work role, work unit or organization.

individuals' use of IB separately and in team settings (Hornsby et al., 2009; Mustafa et al., 2016; Scott and Bruce, 1994; Yuan and Woodman, 2010).

We use social exchange theory (Blau, 1964; Emerson, 1976; Homans, 1958, 1974) to explain under which conditions non-managerial employees will deploy IB in pursuit of perceived workplace performance. Perceived workplace performance captures an individual's *perception* of the level of exhibited workplace performance, which is affected by the prevailing performance standards within a firm (Bommer et al., 1995; Lance et al., 2010; Lance et al., 2008). Such perceptions of work performance are important as employees will only deploy IB when they intuitively expect that favourable performance outcomes will occur (Drazin, Glynn and Kazanjian, 1999; Van Eerde and Thierry, 1996; Vroom, 1964; Yuan and Woodman, 2010), and, under social exchange theory, when IB is valued by their managers (Emerson, 1976; Homans, 1958, 1974). Employees are not expected to automatically use IB as its use, due to the risks associated with innovative and entrepreneurial actions, creates uncertainty about whether performance will greatly improve. We use enactment theory (Weick, 1988, 1995, 2001) to resolve this contradiction, to anticipate how performance might come about, and to anticipate how trust strengthens the IB–perceived performance relationship when employees operate within teams. We address two questions: (1) To what extent does IB at the individual and team levels affect perceived individual and team workplace performance? (2) Does trust moderate the effects of IB within teams on their perceived team workplace performance?

We contribute to innovative work behaviour, management and entrepreneurship research in three ways. First, we focus on the IB of lower-level employees and the work teams in which they participate, giving primacy to under-represented groups in research on innovative and entrepreneurial organizations. Scant empirical research is dedicated to whether first-level managers and non-managerial employees contribute to innovation within firms. This is despite

several calls to better understand, theoretically and empirically, the manner in which individuals might contribute to innovation and the entrepreneurship of firms (De Clercq, Dimov and Thongpapanl, 2010; Wales et al., 2011).

Second, current empirical work at the employee level focuses on how organizations can stimulate innovative behaviour amongst their personnel (e.g., De Jong, Parker, Wennekers and Wu, 2015; Scott and Bruce, 1994), taking for granted that a strong focus on IB at all organizational levels is desirable. At the firm level, meta-analytical results (Rauch et al., 2009) and comparative research (Rigtering et al., 2013) indeed suggest that innovativeness and firm level entrepreneurship generate superior returns regardless of the industry in which a firm operates. However, whether favourable performance returns occur at other organizational levels and in departments in which IB is *not* automatically called upon is unknown.

Third, our empirical research was conducted within the front office and operations department of a major insurance company in the Netherlands. This setting enables us to study IB when perceived (team) performance does not necessitate an innovative approach. In such settings, trust gains in importance as team members rely on co-workers and supervisors to mitigate the uncertainty stemming from the deployment of IB. We offer a theoretical contribution by locating IB in this debate and reveal the complex interaction effect between two forms of trust that are absent from theoretical and conceptual treatments to date. The financial service sector is an interesting case for management, entrepreneurship and innovation researchers because it has been confronted by complex events that blur industry boundaries and by the entry of new competitors using a raft of new technologies previously unseen in the industry, both of which are causing rapid change (Jansen, Van Den Bosch and Volberda, 2006; Setia, Venkatesh and Joglekar, 2013). Innovation in financial services firms is increasingly required to develop better and more trustful customer relations (Nüesch, Puschmann and Alt, 2012) and improve firm

performance (Richard, Barnett, Dwyer and Chadwick, 2004). The front office and operations department are central to the customer experience.

## **THEORETICAL FRAMEWORK**

### **Social exchange theory and individual behaviour**

Workplace interactions generate implied (but not prespecified) obligations (Emerson, 1976; Saxton, Wesley and Saxton, 2016). When two or more actors exhibit behaviours, each is reinforced by the behaviour of the other(s) (Homans, 1958). It is these manifest behaviours that create obligations for performance (Emerson, 1976), but on the understanding that the initiation of the behaviour and its performance effects are interdependent and contingent on the actions of another (Blau, 1964). Within an organization then, social exchange theory (SET) can explain behaviour and performance within employee–manager relationships and between individuals and team members (Cropanzano and Mitchell, 2005).

Under SET, individuals engage in behaviours based on five propositions (Emerson, 1976; Homans, 1974):

- (1) The success proposition: the more an action is rewarded, the more it is repeated.
- (2) The stimulus proposition: if a stimulus has led to a person's actions to be rewarded, the person will likely repeat the action.
- (3) The deprivation-satiation proposition: if a person has received a particular reward often in the recent past, any further unit of that reward will be less valuable.
- (4) The value proposition: if the result of an action is valuable to a person, the more likely the action will be performed.
- (5) The rationality proposition: in choosing between alternative actions, a person will choose the one perceived to be of highest value based on the result and its probability.

Propositions 1-4 specify that an individual employee must carry out some form of action prior to receiving a reward. This would be the initial forming of the relationship between the individual and an important other (e.g., a first-line manager or team member). No voluntary action would follow without such a relationship (Blau, 1964). The rationality proposition (5) describes the “voluntary actions of individuals that are motivated by the returns they are expected to bring” (Blau, 1964, p. 91). Returns (or rewards) are not solely economic but socioemotional as well (Emerson, 1976). The level or frequency of social and reciprocal behaviour is sustained by reinforcing activity from other people. Positive social exchange relationships between individual employees, their first-line managers and their team members motivate those individuals to behave in ways that reward and reinforce those positive relationships (e.g., Cropanzano and Mitchell, 2005). The individual is likely to be invested in their managers under these circumstances (e.g., Mustafa et al., 2016; Sieger et al., 2013). A meaningful reward to that manager would be superior workplace performance by the individual employee. Positive social exchange will compel the individual to seek means to perform their tasks in new and better ways, triggering IB (Bednall et al., 2018; Scott and Bruce, 1994). There is no assurance the behaviour will lead to a positive outcome. But the *intent* is to create a positive improvement that rewards the social exchange. This is the reciprocity principle (Blau, 1964; Cropanzano and Mitchell, 2005; Gouldner, 1960; Homans, 1958; Meeker, 1971).

Positive exchange relationships between individuals and their managers encourage individuals to volunteer innovative activity that goes beyond role prescriptions (Bammens, 2016; Zhang and Jia, 2010). This is consistent with the concept of organizational citizenship behaviour, which associates extra-role behaviour with increases in individual performance (Konovsky and Pugh, 1994; Podsakoff et al., 2009; Smith, Organ and Near, 1983). Assuming that individuals are motivated to achieve higher job rewards, the value proposition (4)

(Homans, 1974) holds that individuals are more likely to carry out actions that might lead to those rewards. Monsen, Patzelt, and Saxton (2010) and Scott and Bruce (1994) support this view, suggesting an individual will engage in IB when they expect some positive personal returns from their entrepreneurial actions.

### **SET and the individual within a team context**

SET sees individual action as having ramifications beyond the individual level (Barnett, Long and Marler, 2012). Here, Homans (1958) argued that cohesiveness, a property that attracts people to take part in a group, is a value that draws social approval and rewards to that group. The ties that exist among individuals engaged in social exchanges affect their actions, including their willingness to adhere to or violate social norms (Qureshi, Kistruck and Bhatt, 2016). The norm of reciprocity allows for individuals to be more trusting of, and committed to, one another (Cropanzano and Mitchell, 2005). Trust maintains social exchange (Konovsky and Pugh, 1994) and can affect the relationship between behaviour and performance (Homans, 1958, 1974). In line with Scott and Bruce (1994) and Yuan and Woodman (2010), among others, we propose that trust conditions IB aimed at improving workplace performance.

Interpersonal exchanges generate or discourage trust (Tanghe, Wisse and Van Der Flier, 2010), and this (dis)trust affects performance. Individuals have different trust referents (Dirks and Ferrin, 2001). It can be horizontal between an individual and their team members or vertical between an individual member and their supervisor (Mayer, Davis and Schoorman, 1995; Schoorman, Mayer and Davis, 2007). When employees trust their team colleagues and supervisors, they are more likely to engage in risk-taking and innovative behaviour aimed at exceeding task demands (Mayer et al., 1995). Without trust, their behaviour shifts towards self-protection (Colquitt et al., 2011) at the expense of entrepreneurial behaviour (Shepherd

and Krueger, 2002), innovation (Anderson and West, 1998; Caldwell and O'Reilly, 2003), and task performance. We therefore expect that horizontal trust and vertical trust will moderate the relationships between the IB of individuals and their teams' workplace performance.

## **HYPOTHESES**

### **IB and perceived workplace performance**

When an individual's task or role is well-defined, its enactment is straightforward because work behaviours are formally prescribed. We use enactment theory (Weick, 1988) to predict why IB as an exchange-driven behaviour might benefit perceived workplace performance.

When reciprocating for a positive social exchange with extra-role behaviour, the employee is likely to achieve higher task performance to reward that relationship by going beyond formal work behaviours with IB. In doing so, he or she encounters uncertainty calling for the individual to make sense of emerging events to achieve the desired outcome.

Enactment theory predicts that to overcome the uncertainty caused by the effort to exceed normal performance in novel ways, the individual will use IB to make sense of emerging circumstances and shape the desired workplace performance. When operating under conditions of ambiguity and uncertainty, the individual exhibits constrained rationality (Weick, 2001). These individuals cannot predict that their IB *will* improve performance (Jansen, 2003; Yuan and Woodman, 2010). IB is not scripted so the individual must devise action as opportunities for innovation are recognized. This introduces the possibility that their sensemaking might be erroneous or faulty on occasions, unintentionally harming workplace performance. Still, an individual using his or her IB is generally directed to seek opportunities for improvement and consider new and better ways to perform tasks. Because the behaviour is novel and innovative, enactment theory sees the individual as taking actions to provide

meaning to this new experience (sensemaking) (Weick, 1995), to influence the perception of others (sensegiving) (Gioia and Chittipeddi, 1991), to influence others to use similar behaviours (sensegiving to the team as part of negotiation), to process social information and experience for collective sensemaking (Barnett et al., 2012), so as to individually and collectively improve workplace performance.

Moreover, individuals exhibiting IB may act as champions (Howell, Shea and Higgins, 2005; Markham and Griffin, 1998) who take leadership for new product or service development and exercise informal influence to instigate innovation and change within firms. IB initiatives are then expected to improve workplace performance as the individual better foresees, anticipates, and detects opportunities for improvement and develops creative solutions to challenges encountered through this process (De Jong and Den Hartog, 2010; Scott and Bruce, 1994).

These positive IB-associated performance effects could benefit the team in which an employee works as well. Individual members contribute to workgroup performance in terms of skills, abilities, attitudes, behaviours, and outcomes (Griffin, Neal and Parker, 2007; Hoegl and Gemuenden, 2001). A workgroup represents the [semi]permanent team to which individuals are assigned and whom they interact with regularly to perform tasks (Anderson and West, 1998). IB may impact the performance of teams when individual initiatives change work (procedures) or introduce innovations that may improve the way several employees perform their duties. Also, during sensemaking, an individual must influence the perception of others (sensegiving) and influence others to use similar behaviours to collectively advance new initiatives (Gioia and Chittipeddi, 1991; Weick, 2001), particularly in novel and uncertain situations (Cornelissen, Mantere and Vaara, 2014). Given role interdependency in work teams (Griffin et al., 2007), and given the interaction principle in enactment theory (Weick, 2001), IB is expected to contribute to perceived team performance as well. Thus:

*Hypothesis 1:* IB is positively related to (a) perceived individual performance and (b) perceived team performance.

### **IB within a work team context**

When individual-level behaviour is embedded in interactions between team members, it can manifest as a higher-level phenomenon (Kozlowski and Klein, 2000), which we describe as  $IB_T$ . This higher-level phenomenon ( $IB_T$ ) can affect team and individual performance.

Because IB is a 'bottom-up' phenomenon, in that it has its theoretical origin at a lower level but has emergent properties at higher levels (Kozlowski and Klein, 2000), we assume that implementing work-related improvements starts with individual actions and behaviour.

Innovations or work improvements require idea generation which is an individual-level process (Somech and Drach-Zahavy, 2013). Consequently, we think of an employee that exhibits IB as a resource that a team can draw upon, while the team provides the context in which IB occurs (Kozlowski and Klein, 2000). The pool of individual-level IB resources available within a team thus constitutes the configuration of  $IB_T$ .

We build upon Kozlowski and Klein's (2000) pooled constrained emergence prototype of team composition to explain the nature of  $IB_T$  as an aggregate of IB. Pooled constrained emergence asserts that there are processes that partially constrain the emergence of a collective phenomenon leading to restricted variability within teams. Complete equality of IB contributions within teams is restricted because employees embedded within the same team might experience the social exchanges in more positive or negative ways resulting in different levels of IB per team member. Theoretically, teams characterized by strong supervisor-member and member-member social exchanges will display high levels of  $IB_T$  due to the quality of the exchanges and the principles of negotiation and reciprocity therein (Scott and Bruce, 1994). Quality exchanges between members are crucial in reducing conflict

between team members when individuals displaying IB champion new ideas (Jansen, 2003; Markhan, 1998).

When individuals enact IB within a work team, team members interpret and explain these innovative behaviours by constructing rational accounts (Weick, 1995). These rational accounts address the uncertainty resulting from novel actions and enable or restrict further behaviour by team members (Maitlis, 2005). The social exchange resulting from the enactment of IB can build confidence in team members' reliability and integrity, leading to shared expectations about behaviours and outcomes. The interpretations or actions resulting from IB<sub>T</sub> are not inherently positive though. For example, Cornelissen et al. (2014) discuss the failure of sensemaking under group conditions where interpretations become biased and perpetuated erroneously. But, teams in which members frequently display IB are likely to generate a climate supporting innovation (Anderson and West, 1998) consisting of participative safety, (social) support, and knowledge sharing (Caldwell and O'Reilly, 2003; De Clercq et al., 2010; Ozer, 2011). Thus, we expect positive results within a team context as IB is rooted in a desire to achieve positive outcomes to reciprocate for positive exchanges.

Teams with a larger pool of IB resources can benefit when looking to make work-related improvements. Teams able to rely on a larger pool of resources experience performance benefits since each individual member brings their unique expertise, background, and dispositions (Jordan and Troth, 2004). Teams that draw upon a larger pool of IB resources may then generate more creative solutions and make use of a larger array of expertise. Although teams might experience such benefits in general, IB<sub>T</sub> is needed to convert these benefits into team performance. Advantages from high IB<sub>T</sub> can also stem from the interactions among team members. Team norms can act as a form of social control that directs the IB of team members towards particular organizational outcomes (Chiaburu and Harrison, 2008; Ozer, 2011). Similarly, (social) support and knowledge sharing allow for the

collective scrutiny of entrepreneurial ideas, increasing the likelihood that more-complete information can be brought to bear on entrepreneurial acts, driving better-advised and higher-performing decisions.

For individuals, high levels of IB<sub>T</sub> within a team improve their workplace performance as they benefit from the collective dynamics created by other team members that also engage in IB. Knowledge sharing resulting from high levels of IB<sub>T</sub> allows individuals to better judge the appropriateness and viability of their innovative behaviours, meaning they can enact their IB in more effective ways. Additionally, safety and (social) support within high IB<sub>T</sub> teams motivates employees to persevere and allows them to draw upon team members when needed. IB<sub>T</sub> should then increase their individual performance. Thus:

*Hypothesis 2:* IB<sub>T</sub> is positively related to (a) perceived individual performance and (b) perceived team performance.

### **Trust and IB within work teams**

In work teams, trust can affect the behaviour expended in pursuit of perceived workplace performance. When employees trust their team colleagues (horizontal trust) and supervisors (vertical trust), they are more likely to engage in entrepreneurial behaviour aimed at exceeding regular task demands (Mayer et al., 1995; Shepherd and Krueger, 2002). Without such trust, their behaviour shifts towards self-protection at the expense of entrepreneurship (Colquitt et al., 2011).

Horizontal trust embodies the belief an individual has in the actions of co-workers, whose actions and behaviours they cannot control, and are vulnerable to (Mayer et al., 1995; Chiaburu and Harrison, 2008). In work teams, the social exchange among individuals can increase knowledge sharing and entrepreneurship (De Clercq et al., 2010), but the returns to team workplace performance may co-vary based on horizontal trust. Work teams require

more interaction, cooperation and exchange of information to coordinate their activities, and thereby require horizontal trust to be effective (Griffin et al., 2007). The team conditions generated by higher levels of horizontal trust produce higher levels of information exchange and cooperative behaviour (Tanghe et al., 2010) and set a team climate commensurate with innovation activity (Caldwell and O'Reilly, 2003; Dirks and Ferrin, 2001).

Greater horizontal trust facilitates sensemaking to coordinate individual team members' IB in pursuit of superior perceived performance. Collective sensemaking enables team members to overcome preconceptions about ideas that might not be fully understood by one actor alone (Weick, 2001). Although consensus can be erroneous, trust among the team members provides the lubricant for individuals to jointly devise new plans and actions. The outcomes of the innovative behaviour team members expend to exceed ordinary workplace performance will thus be materially affected by their peers. Trust (or distrust) among team members fosters (or attenuates) participation and potentially facilitates (or hinders) the coordination of innovative and entrepreneurial actions by individuals, elevating (or deflating) the overall performance consequences of those actions. Thus:

*Hypothesis 3:* The relationship between IB<sub>T</sub> and team perceived workplace performance is positively moderated by the horizontal trust team members have with each other.

Vertical trust embodies the belief an individual team member has in the support and reliability of the supervisor (as team leader) (Shamir and Lapidot, 2003). An individual team member must have confidence in the support of their supervisor because these individuals have influence over resource allocation, performance evaluation and reward. Under SET, high vertical trust would be expected to drive individuals to excel within their teams in reciprocity for the trusting relationship held with the supervisor (De Clercq et al., 2010). Aggregated to the team, vertical trust represents the combined willingness of team members to work towards the leader's activities, goals and decisions (Dirks, 2000). We expect that

with high vertical trust, the IB of team members would be closely attuned to the performance expectations of the supervisor, with a desire to exceed those expectations.

To exceed such expectations, individual team members must enact new plans and actions to deliver better and more novel ways to complete tasks. Vertical trust increases confidence that IB and the sensemaking attached to it will find favour with the supervisor. Where supervisors and their subordinates have trustful bonds, relatively stable dyads develop that can result in high-quality exchanges. In teams, these subordinates often reciprocate for vertical trust through increased self-governance, knowledge sharing and cooperative behaviour (Dirks and Ferrin, 2001), and innovation (Caldwell and O'Reilly, 2003). Members are then likely to display more purposeful risk-taking (Mayer et al., 1995) due to the confidence that they will receive appropriate rewards and will not be undeservedly penalized by the supervisor if their efforts fail to result in targeted outcomes (Dirks and Ferrin, 2001). This leads to the following hypothesis:

*Hypothesis 4:* The relationship between  $IB_T$  and perceived team workplace performance is positively moderated by the vertical trust team members have in their direct supervisor.

When the supervisor and subordinates are contained within the same team, vertical trust may strengthen the moderating effect of horizontal trust on a team's perceived workplace performance. Even though horizontal trust promotes information sharing, safety, and advances employees toward work goals, employees can still be subject to sanctions by managers if their sensemaking is applied erroneously (Chiaburu and Harrison, 2008; Ensher, Thomas and Murphy, 2001). At the team level, risk-taking occurs because the horizontal trust creates an environment in which employees are more likely to share their ideas (Chiaburu and Harrison, 2008; Ensher et al., 2001), but the effects of such a positive team climate can only be maximized if the likelihood that failures are heavily penalized is reduced through vertical

trust (Dirks and Ferrin, 2001). Vertical trust thus creates a team environment needed for IB<sub>T</sub> and the championing of new ideas (Marham, 1998; Markham and Griffin, 1998). The increased knowledge sharing brought on by this trust aids sensemaking (Weick, 2001) and fosters idea development and innovation as well (Anderson and West, 1998; De Clercq et al., 2010). Consequently, we expect IB<sub>T</sub> initiatives to be most positively associated with perceived workplace performance when high horizontal team trust and high vertical team trust exist simultaneously. Thus:

*Hypothesis 5:* IB<sub>T</sub>, horizontal trust, and vertical trust have a positive three-way interaction effect on perceived team workplace performance; specifically, the relationship between IB<sub>T</sub> and perceived team workplace performance is most positive when vertical trust and horizontal trust are both high.

## **RESEARCH METHODS**

### **Research setting, design and sample**

The empirical research was carried out at a major Dutch financial services firm. The financial service sector has faced considerable change in the last 15 years and innovation and entrepreneurship is needed to reengage customers that have become distant from the firm owing to new technologies and price-based business models (Airmic, 2016; Institute of International Finance, 2016; Jansen et al., 2006; OECD, 2017; Setia et al., 2013). The study was carried out at a leading insurance company in The Netherlands ('The Company'). It employs approximately 1,900 people and manages multiple brands. The organizational structure is function-based and encompasses six departments: front-office, operations, purchasing, commerce, IT, and human resources. We carried out our research at the two largest departments: the front office and operations department. The front office primarily deals with direct contact with customers. The majority of employees within this department assist customers with all types of questions in a

call centre setting providing after-sales service and product information. The majority of the employees in the operations department are responsible for customer care including the timely handling of all claim forms and other administrative tasks. The Company makes use of formally-recognized teams, each with their own manager. We collected data through two intranet-based surveys. The second survey was sent one month after the first survey. By collecting data at two different points in time, a single response and common method bias is reduced (Podsakoff et al., 2003).

The first survey included the measurement scales for horizontal and vertical trust, team performance, and basic control variables (gender and age). The second survey included the IB and individual employee performance measurements as well as more detailed control variables (education, organizational experience, and team experience). We followed Dillman's (1978) protocol to protect the identity of the respondents, maintain confidentiality, explain the reporting of our research findings, and reassure that individual scores would not be reported to management. All 1,247 employees received an invitation to complete the survey. Those employees that assume a managerial position were excluded from the survey. After two weeks, a reminder was sent by senior management to increase response. In total 1,104 surveys were returned for a response rate of 88.53 percent. The respondents belonged to 129 different teams. For the second survey sent one month later, the exact same procedure was used. In total, 628 surveys were returned for a response rate of 50.36 percent. A response rate of over 50% is still widely regarded as sufficient for analytical purposes (Babbie, 2004) and the drop in response rate is most likely the result of the low willingness of respondents to fill in questionnaires in general (see Dillman, 1978). Most respondents were female (73% in survey 1, 69% in survey 2), the average age was 39 years, 36% were highly educated, 32% had been employed at The Company for one to five years with a further 48% for over ten years and most (65%) had one to five years of experience in their team.

Both surveys included a team code to aggregate the individual datasets to the *team* level. However, due to Company privacy regulations, the survey *could not* include a unique respondent number and could not be merged at the individual level. Although we reduce the danger of contemporaneous biasing (both forms of trust and team performance were collected one month before the IB data were collected), the individual employee performance measure had to be collected together with the IB measure. The 628 respondents of the second survey were members of 103 different teams, each consisting of at least two employees. Teams consisting of respondents that only filled in the first survey or the second survey were excluded from the analysis. The number of usable respondents from the first and second survey is then lowered to 1,046 and 615 respectively. The total number of teams is 99. Team size varies between 2 members per teams (smallest team) and 31 team members (largest team). On average, teams consist of 10.75 team members.

## **Measures**

Given our focus on non-managerial employees within the front office and operations department of a financial services firm, we developed an IB measure that is tailored to the contextual situation with The Company. We argue that attitudinal and behavioural components are needed to operationalize IB and to manifest a temporal stability towards innovation (De Jong et al., 2015). Furthermore, self-efficacy towards mastering new routines, procedures, and ways of working is important (Bolton and Lane, 2012). Items were generated to assess the respondents' favourability toward workplace innovation and risk-taking—as indicated by their amenability to and self-professed proficiency at workplace innovation—and the frequency with which they initiate workplace innovation with respect to their job. The contextual situation within The Company was taken into account while formulating these items. Items are presented in Table 1 and were measured on a seven-point Likert-type scale.

At the team level, we used Kozlowski and Klein's (2000) pooled constrained emergence prototype to explain the nature of  $IB_T$  as an aggregate of IB. Accordingly, the IB of the individual team members is used to calculate the level of  $IB_T$ . Pooled constrained emergence assumes restricted within-team variance and given this assumption the aggregate (mean) value of IB should be assigned to the team (Kozlowski and Klein, 2000). This measurement approach recognizes that individuals' specific actions are largely responsive to the contexts in which those individuals work.

To measure horizontal trust and vertical trust, we use items consistent with other measurement instruments containing indicators of horizontal and vertical trust, including Braun, Peus, Weisweiler and Frey (2013), Bijlsma-Frankema, De Jong and Van de Bunt (2008) and Butler (1991). Five-point Likert-type scales are used.

Performance within The Company was measured against top management's vision of improving product-service quality. Meeting key performance indicators, implementing and initiating new procedures for customer satisfaction, and the timely and correct handling of administrative tasks are of the essence. To capture these criteria, our measure of perceived team performance consisted of four items based on Jung and Sosik (2002) and González-Romá, Fortes-Ferreira and Peiró (2009) that cover team members' perceptions of their team's focus on quality and relative team performance. All items were measured on a five-point Likert-type scale. As in Fletcher, Major and Davis (2008), a single-item question was used to measure perceived individual workplace performance. Individual employees within The Company are evaluated on a regular basis by their direct supervisor and receive a performance grade ranging from 1 (worst performance) to 10 (excellent performance). Evaluation criteria include the employees' contribution to customer satisfaction and ability to, in an accurate and timely fashion, handle calls, customer complaints, minimize errors, and perform administrative duties. Respondents were asked to report the grade they expected to receive at the next upcoming

evaluation with their direct supervisor. Fletcher et al. (2008) show that such estimations are highly correlated with actual performance evaluations by direct supervisors. Collectively, these activities and their performance are vital to the customer experience and necessary for financial service sector firms to overcome competition and technologies that have led to large customer churn rates.

To control for differences between individual employees and team composition, the control variables gender (coded as zero for females, one for males), age, and education (coded as zero for vocational training, one for Bachelor degree or higher) were used. The experience of the respondent within the organization (coded as zero for less than five years of experience and one for more than five years of experience), the experience of the respondent within their current team (coded as zero for less than one year and one for more than one year of experience), and team size were included to control for team dynamics. We also control for differences between the two departments using a dummy variable (coded as zero for operation department and one for front office).

### **Common method variance**

As company regulations did not allow us to add a unique and personal respondent number, measures for individual workplace performance and IB were collected together in the second survey. This may generate a common method bias (Podsakoff et al., 2003), which we test with a Harman single factor test (Richardson, Simmering and Sturman, 2009; Siemsen, Roth and Oliveira, 2010). A common method bias might be a threat to the validity of the research when a single factor explains more than 50 percent of the variance in the data (Podsakoff et al., 2003). The test results examining the items collected through the same questionnaire suggest that common method variance is not a threat to the validity of the research as the test

indicates that a single factor explains only 33.31 percent of the variance, well below the threshold of 50%.

### **Analytical approach**

We first evaluate the constructs for reliability and validity in a confirmatory factor analysis (CFA) at the individual level (Table 1). IB is measured in the second sample (N=628), the fit-indices of the measurement model are:  $\chi^2(df)=41.02 (14)$ , RMSEA=0.06, CFI=0.97, SRMR=0.04. Horizontal trust, vertical trust, and team performance are measured in the first sample (N=1048), and the fit-indices of the measurement model are:  $\chi^2(df)=127.79 (31)$ , RMSEA=0.06, CFI=0.98, SRMR=0.04. Both CFA's are identified via the 3-indicator rule (3 items with factor complexity of 1 for each latent variable) (see Bollen and Davis, 2009). The Cronbach Alpha for all scales exceeds 0.70. In two cases (IB and Perceived Team Performance) the average variance extracted (AVE) is less than 0.5. However, Fornell and Larcker (1981) argue that AVE values less than 0.50 are acceptable when the composite reliability of the scale is greater than 0.60, as is the case here.

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Insert Table 1 here  
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Next, we tested the appropriateness of aggregating the individual data to the team level. Table 2 shows two indices of agreement ( $r_{WG}$  and  $AD_M$ ) and two indices of reliability ( $ICC_1$  and  $ICC_2$ ). For all items, we show that  $r_{WG} > 0.70$ , suggesting a strong agreement between team members on the individual scale items (Klein and Kozlowski, 2000). The Average Deviation ( $AD_M$ ) scores reflect the averaged difference for each team member's item rating relative to the mean rating for his or her team. Values less than 0.80 indicate acceptable levels of agreement (LeBreton and Senter, 2007). Based on these results, the aggregation of individual data to the team level is appropriate. Intra-class correlation coefficients (ICC) are reliability-based

approaches to check whether and how strongly a hierarchical analysis delivers additional information to one-level analyses. The  $ICC_1$  and  $ICC_2$  for team performance, horizontal trust, and vertical trust indicate that the scores on these variables are being influenced by team membership. The lower  $ICC_1$  and  $ICC_2$  for  $IB_T$  indicate that the scores on this variable are more strongly affected by individual team member behaviours, suggesting that a multi-level analysis can deliver additional information to the one-level analysis.

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Insert Table 2 here  
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To analyse hypotheses 1 and 2 about the effects of IB and  $IB_T$  on (a) individual and (b) team performance, we applied a multi-level that allows the simultaneous consideration of different levels of hierarchically-structured data. We use a multi-level model with manifest covariates (MMC) using Mplus. The second part of our analysis pertains to hypotheses 3-5 and evaluates whether  $IB_T$ , horizontal trust, and vertical trust have significant interaction effects on perceived team-level performance.

## RESULTS

Correlations are shown in Table 3. To test hypotheses 1 and 2 that IB and  $IB_T$  positively affect perceived individual and team workplace performance (Table 4), we first entered the control variables (model 1) and then added IB and  $IB_T$  (model 2). We set  $p < .10$  for significance.

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Insert Table 3 and Table 4 here  
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Hypothesis 1 proposing a positive effect by IB on individual (H1a) and team (H1b) performance receives full support ( $p < .001$  in both instances). Hypothesis 2 proposing that  $IB_T$  improves individual (H2a) and team (H2b) performance also receives full support ( $p < .001$  in both instances).

Table 5 shows the estimates for the moderating effects suggested in hypotheses 3-5 on the relationship between  $IB_T$  and team performance. We stepwise entered the control variables (model 1),  $IB_T$  (model 2), vertical trust (model 3), and horizontal trust (model 4), and the interaction terms (models 5 through 8).

In Table 5, we find a positive effect by  $IB_T$  on team performance ( $p < .001$ ) when both forms of trust are simultaneously considered (model 4) and vertical and horizontal trust have positive effects ( $p < .001$  in both instances) on team performance. In model 7 we find a negative interaction term between both forms of trust and team performance, and in model 8 that team performance is enhanced when the trust constructs are negatively related to one another ( $p < .10$ ).

To test hypothesis 3, we examine the slope differences between pairs of slopes (Table 6). Taking the slope when horizontal and vertical trust are low as the baseline in each instance, we examine the slope of  $IB_T$  on perceived team performance when horizontal trust is high and vertical trust is low (Hypothesis 3) and when vertical trust is high and horizontal trust is low (Hypothesis 4) (Dawson, 2014). Support for these hypotheses requires the slopes in the conditions of high vertical trust/low horizontal trust and low vertical trust/high horizontal trust to be different from the baseline condition.

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Insert Tables 5 and 6 here  
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The significance test for slope differences (Table 6) supports hypotheses 3 ( $t = 4.05$ ;  $p < .000$ ) and 4 ( $t = 2.12$ ;  $p < .05$ ). However, Figure 1 shows that when teams have low levels of  $IB_T$ , perceived team performance is highest under the condition of high vertical trust *and* high horizontal trust. But, when the degree of  $IB_T$  increases, perceived team performance is highest under the condition of high horizontal trust *and* low vertical trust. Thus, the effects of  $IB_T$  on team performance appear to be most positive when team members' trust each other highly and their supervisor less so. Therefore, hypothesis 5 is not supported ( $t = .81$ ;  $p = .42$  [n.s.]).

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Insert Figure 1 here  
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## **DISCUSSION**

Scholars and managers have recognized the importance of individuals across the firm to its entrepreneurial endeavours, but few works have examined what effects innovative behaviour by employees in lower-level positions has on individual- or team-level performance. Our two most important findings are: (1) that IB affects perceived performance at the individual and team levels, and (2) that the relationship between a team's average IB ( $IB_T$ ) and perceived workplace performance is moderated in complex ways by the horizontal and vertical trust that an individual has in their team colleagues and direct supervisor. These findings offer important new contributions to our understanding of entrepreneurship and innovation within firms.

Within the confines of their defined roles, individuals can engage entrepreneurial activity associated with their perceived workplace performance and that of their team. This is important because studies that focus on how firms can stimulate entrepreneurial and innovative behaviour among employees have often taken for granted that this is desirable across organizational levels. We provide a theorization of what IB involves and evidence that desirable performance returns are perceived as occurring for individuals and teams that exhibit IB. These findings contribute important new knowledge to an emerging research agenda about the 'sociology' of entrepreneurship and innovation within firms (De Clercq et al., 2010; Hoegl and Parboteeah, 2006; Wales et al., 2011) and innovative behaviour (Bednall et al., 2018).

We extend the theoretical and empirical treatment of trust in SET and enactment theory. We find that the  $IB_T$ - perceived performance relationship interacts in complex ways with horizontal and vertical forms of trust. Prior research has explored the benefits of trustful

relationships for greater knowledge sharing among employees and diminished need for formal monitoring (De Clercq, Thongpapanl and Dimov, 2011). We add to this how employees' trustful relations with their team members can generate greater returns to workplace performance from IB. Horizontal trust is important for the effectiveness of entrepreneurial initiatives.

Trust is complex because individuals have different trust referents. Results indicate that when there is little trust in one's supervisor, trust among team members is particularly critical to strengthening the relationship between  $IB_T$  and team workplace performance (see a comparison of Figure 1 slope lines 3 and 4, as reported in Table 6). And, when there is little trust among team members, trust in one's supervisor is particularly critical to strengthening the relationship between  $IB_T$  and team workplace performance (see a comparison of Figure 1 slope lines 2 and 4, as reported in Table 6). These results point to a substitution effect with regard to how trust affects the efficacy of  $IB_T$  in driving perceived team workplace performance. The joint presence of high vertical trust and high horizontal trust is not only *not* necessary to enhance the positive impact of  $IB_T$  on perceived team performance, this combination has the opposite effect. As shown in Figure 1, the relationship between  $IB_T$  and team performance is most positive when horizontal trust is high and vertical trust is *low*. Because using IB and  $IB_T$  is often discretionary and subject to tougher social sanctions in a team context, the supervisor can fade in importance. Also, as the use of IB can be outside the parameters of a job, the horizontal trust among team members may take on greater importance than vertical trust in the supervisor. These findings demonstrate the importance of the interaction between the trust individuals hold with their team members and the trust those individual team members hold with their direct supervisor in theoretical and empirical modelling of innovative work behaviour.

Still, these observations do not directly address the matter of how the presence of greater trust in one's supervisor might dampen the positive moderating effect of horizontal trust on the IB<sub>T</sub>-team workplace performance relationship. One possibility is that when vertical trust is high, team members may not be as critically evaluative of their potential innovative behaviours because they will know that their supervisors will "have their backs" if the initiatives are unsuccessful. As such, an overall lower quality of entrepreneurial initiatives may follow, which could dampen the IB<sub>T</sub>-team workplace performance relationship. Thus, the findings suggest "some" amount of *distrust* between a group and their supervisor (low vertical trust) may lead to better-perceived performance when trust within the team is high (high horizontal trust).

Such dynamics are poorly addressed in the corporate entrepreneurship literature, which concentrates mainly on (middle) managers' role in supporting and coordinate entrepreneurial activities (e.g., Hornsby et al., 2009; Kuratko et al., 2005). Considering the role of IB in championing new ideas and instigating change, employees might act without the permission of those in higher positions and bypass traditional chains-of-command (Markham 1998; Howell et al., 2009). Under such conditions, vertical trust becomes less relevant and employees rely more on the support of their co-workers.

### **Managerial implications**

The study results point to two principal managerial implications. First, while both forms of trust can enhance the IB<sub>T</sub>-team workplace performance relationship, IB<sub>T</sub> may be most beneficial for team workplace performance when individuals' relationships with their supervisors are not so trustful that those individuals feel as if they can pursue any entrepreneurial initiative regardless of their quality. Having to prove to their supervisors that IB is warranted—and not simply asking those supervisors to trust in the veracity of their entrepreneurial ideas, or assuming that they will do so—is not necessarily a bad thing.

Accountability for IB is needed, and too much trust—particularly of the vertical variety—can make individuals feel absolved of any real responsibility for the consequences of their entrepreneurial behaviours, therefore leading to a lower quality of entrepreneurial initiatives being pursued.

Second, the development of an organizational environment that supports entrepreneurial initiatives can be important to promoting workplace performance at the individual and team levels. Critical to the development of such entrepreneurship-supportive workplace environments is the promotion trustful relationships between employees and their team members. Thus, the creation of trustful climates among team members should be a priority among managers seeking to realize the greatest benefits from bringing together entrepreneurially-inclined individuals in their organizations.

### **Limitations and Future Research**

Our study has several noteworthy limitations and future research directions. First, we do not establish empirically whether or how IB and its team average might accumulate and aggregate to firm level entrepreneurship. This creates opportunities for future studies as the relationship between IB and firm-level entrepreneurial orientation (EO) might be bi-directional. On the one hand, IB at lower organizational levels might create pockets of entrepreneurship that aggregate to advance the firm's EO and firm performance. However, an IB may emerge in response to top managers' adoption of a firm EO. Further multi-level research, comparing an aggregation model to a diffusion model, is essential. Studying IB<sub>T</sub> in relationship to the overall entrepreneurial culture or disposition within a department or unit also holds considerable potential. This speaks to recent works on the organizational pervasiveness of EO (Wales et al., 2011). An overarching criticism of the corporate entrepreneurship literature is that firm entrepreneurship might be hard to sustain because it

may rely on more than just firm-level EO (Hoskisson et al., 2011). The journey of individuals behaving innovatively in firms over time needs consideration. Our theorizing suggests this journey relies on understanding the social exchange in the enactment of IB.

Second, the indicators and findings are restricted to customer service and administrative employees within a Dutch financial service sector setting. The typical Dutch workplace is characterized by relatively high levels of employee autonomy and relatively little hierarchy. Job autonomy can be an antecedent to individual entrepreneurial behaviour (De Jong et al., 2015) and Dutch employees may display more IB than their counterparts in other countries. We cannot rule out that the autonomy of the individual and autonomy aggregated to the team level could explain an increase in IB. Future models would benefit from including autonomy as a predictor of both level 1 and level 2 variance on perceptions of performance. Relatedly, while innovation is important to financial service sector firms, there may be sector-specific dynamics at play that we do not detect. Thus, we caution that our results come from a single organization in which the measures bear some context specificity.

Third, our study relied on self-reported data and subjective performance indicators. The collection of objective performance data was precluded by The Company's privacy policies. Even though our self-reported performance indicators are generally accurate representations of their true-score counterparts (Fletcher et al., 2008), scholars should consider alternative measures. Objective performance indicators examined longitudinally might be ideal, and performance metrics beyond workplace or task performance may also help.

Fourth, the entrepreneurial self-efficacy of organizational members requires investigation. The presence of entrepreneurial self-efficacy is assumed but not well-examined in our study (only one of the IB items relates to self-identified proficiency at job-related change). Future researchers might investigate whether phenomena such as trust increase the likelihood that those with low entrepreneurial self-efficacy will exhibit IB.

Finally, trust can operate more widely than described in our study and organizational policies can affect trust (Six and Sorge, 2008). Research is needed to better understand why the interaction between horizontal and vertical trust has varied effects on team performance with respect to IB. It is interesting in our findings that some degree of *distrust* between a team and their supervisor actually leads to increased perceptions of performance. The implications of these observations to understand trust and entrepreneurship in and across the firm are important avenues for scholarly research.

## **CONCLUSION**

Our theoretical framing and empirical findings call for a continued debate on what conditions IB and its effects on valuable organizational outcomes across the different levels of a firm. We reveal the contributions of individual and team IB to perceived workplace performance but also show that the work context, in the form of trust in social exchange relationships, is an important contingency influencing the extent to which IB is associated with desirable work outcomes.

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**Table 1**  
**Constructs, Items, Descriptive Statistics and Reliabilities on the Individual Level**

| Construct                  | Indicators (items)   | Mean | Variance | Skew  | Kurtosis | Std. factor loading | Composite Reliability | Cronbach alpha | AVE  | Fornell Larcker-Ratio |
|----------------------------|--|------|----------|-------|----------|---------------------|-----------------------|----------------|------|-----------------------|
| Innovative behaviour (IB)  | I value new plans and ideas, even if I feel that they could fail in practice                             | 5.33 | 0.84     | -0.79 | 1.22     | 0.56                | 0.78                  | 0.77           | 0.42 | 0.10                  |
|                            | I always try to find if (internal) clients have wishes or desires that they are not consciously aware of | 5.23 | 0.99     | -0.62 | 0.59     | 0.55                |                       |                |      |                       |
|                            | I am constantly looking for new ways to improve my performance at the job                                | 5.64 | 0.85     | -0.91 | 2.06     | 0.74                |                       |                |      |                       |
|                            | I quickly master new routines, procedures and new ways of working  | 5.37 | 1.04     | -0.55 | 0.30     | 0.75                |                       |                |      |                       |
|                            | I have very little problems with renewal and change  | 5.72 | 1.13     | -1.12 | 1.60     | 0.61                |                       |                |      |                       |
| Horizontal trust           | I have trust in our team   | 4.21 | 0.36     | -0.58 | 1.84     | 0.94                | 0.91                  | 0.78           | 0.77 | 0.42                  |
|                            | I can count on my co-workers when I really need them   | 4.22 | 0.37     | -0.38 | 0.74     | 0.78                |                       |                |      |                       |
|                            | The atmosphere within the team is good   | 4.18 | 0.41     | -0.53 | 0.98     | 0.90                |                       |                |      |                       |
| Vertical trust             | I trust my direct supervisor   | 4.15 | 0.61     | -1.14 | 2.28     | 0.81                | 0.78                  | 0.91           | 0.54 | 0.59                  |
|                            | If I need my direct supervisor, he or she will be there for me   | 4.22 | 0.49     | -0.99 | 2.37     | 0.68                |                       |                |      |                       |
|                            | My direct supervisor trusts me   | 4.18 | .055     | -1.12 | 2.49     | 0.72                |                       |                |      |                       |
| Perceived team performance | Within our team we work together to achieve the team goals   | 4.09 | 0.45     | -0.60 | 1.18     | 0.66                | 0.76                  | 0.76           | 0.44 | 0.56                  |
|                            | Our teams actively makes sure that we achieve the goals of our (internal) clients                        | 3.96 | 0.36     | -0.68 | 2.06     | 0.56                |                       |                |      |                       |
|                            | Within the team, we check if we have achieved our team goals   | 3.93 | 0.48     | -0.72 | 1.52     | 0.72                |                       |                |      |                       |
|                            | Our team works together to achieve better quality.   | 4.17 | 0.43     | -0.72 | 1.60     | 0.72                |                       |                |      |                       |

Note: IB is measured in the second sample (N=628); horizontal trust, vertical trust, and team performance are measured in the first sample (N=1048)

**Table 2**  
**Indices for Aggregation of Items and Descriptive Statistics for Aggregated Constructs when Individuals are nested within Teams**

| Constructs                                      | Item | $r_{WG} > 0.70$ <sup>2</sup> | $AD_M < 0.80$ <sup>3</sup> | Mean | Variance | Skew  | Kurtosis | ICC(1) <sup>4</sup> | ICC(2) <sup>5</sup> |
|---|------|------------------------------|----------------------------|------|----------|-------|----------|---------------------|---------------------|
| Innovative behaviour in Team (IB <sub>T</sub> ) | 1    | 0.79                         | 0.54                       | 5.50 | 0.33     | -0.41 | 1.39     | 0.04                | 0.21                |
|   | 2    | 0.79                         | 0.54                       |      |          |       |          |                     |                     |
|   | 3    | 0.81                         | 0.54                       |      |          |       |          |                     |                     |
|   | 4    | 0.80                         | 0.51                       |      |          |       |          |                     |                     |
|   | 5    | 0.71                         | 0.64                       |      |          |       |          |                     |                     |
| Horizontal Trust                                | 1    | 0.85                         | 0.36                       | 4.23 | 0.10     | 0.29  | 0.60     | 0.16                | 0.66                |
|   | 2    | 0.84                         | 0.37                       |      |          |       |          |                     |                     |
|   | 3    | 0.84                         | 0.37                       |      |          |       |          |                     |                     |
| Vertical Trust                                  | 1    | 0.77                         | 0.46                       | 4.25 | 0.14     | -0.19 | 0.57     | 0.15                | 0.65                |
|   | 2    | 0.80                         | 0.42                       |      |          |       |          |                     |                     |
|   | 3    | 0.78                         | 0.44                       |      |          |       |          |                     |                     |
| Perceived Team Performance                      | 1    | 0.83                         | 0.39                       | 4.05 | 0.10     | -0.10 | 0.96     | 0.12                | 0.58                |
|   | 2    | 0.85                         | 0.35                       |      |          |       |          |                     |                     |
|   | 3    | 0.79                         | 0.42                       |      |          |       |          |                     |                     |
|   | 4    | 0.81                         | 0.40                       |      |          |       |          |                     |                     |

Note: Indices of Agreement ( $r_{WG}$ ), Average Deviation ( $AD_M$ ), and Intraclass correlation coefficients (ICC); N= 99 Teams.

<sup>2</sup> Klein and Kozlowski (2000) argue that strong agreement ( $r_{WG} > 0.70$ ) can justify the aggregation of data to a higher level.

<sup>3</sup> A critical value of 0.80 or less is suggested for establishing agreement when using a 5-point scale (see LeBreton and Senter, 2007).

<sup>4</sup> Within-cluster reliability of 0.1 and larger indicates the dependence of observations in clusters (Bliese, 2000; Klein and Kozlowski, 2000).

<sup>5</sup> Values greater than 0.15 indicate reliability of cluster means (Bliese, 2000).

**Table 3**  
**Correlations**

| <i>Level 1 (N=628)</i>                 | Mean (S.D.)  | TS       | G       | AGE      | EDU      | DEP     | OEX     | TEX     | IB      | PIP |
|--|--------------|----------|---------|----------|----------|---------|---------|---------|---------|-----|
| Team size (TS)                         | 13.12 (4.90) | 1        |         |          |          |         |         |         |         |     |
| Gender (G)                             | 0.31 (0.46)  | 0.02     | 1       |          |          |         |         |         |         |     |
| Age (AGE)                              | 2.48 (0.98)  | 0.02     | -0.07t  | 1        |          |         |         |         |         |     |
| Education (EDU)                        | 0.36 (0.48)  | -0.13*** | 0.19*** | -0.24*** | 1        |         |         |         |         |     |
| Department (DEP)                       | 0.39 (0.49)  | -0.03    | -0.07t  | 0.13***  | -0.15*** | 1       |         |         |         |     |
| Org. experience (OEX)                  | 0.65 (0.48)  | -0.04    | -0.03   | 0.46***  | -0.30*** | -0.08t  | 1       |         |         |     |
| Team experience (TEX)                  | 0.20 (0.40)  | -0.11**  | -0.03   | 0.23***  | -0.18*** | 0.13*** | 0.37*** | 1       |         |     |
| Innovative behavior (IB)               | 5.53 (0.68)  | -0.08t   | 0.12**  | -0.07t   | 0.20***  | 0.01    | -0.12** | -0.07   | 1       |     |
| Perceived individual performance (PIP) | 7.39 (1.14)  | 0.01     | -0.04   | -0.16*** | -0.01    | 0.07    | -0.11** | -0.08** | 0.24*** | 1   |

| <i>Level 2 (N=99)</i>                        | Mean (S.D.)  | TS       | G     | AGE      | EDU      | DEP     | OEX      | TEX    | IB <sub>T</sub> | VTRUST  | HTRUST  | PTP |
|--|--------------|----------|-------|----------|----------|---------|----------|--------|-----------------|---------|---------|-----|
| Team size (TS)                               | 10.75 (5.66) | 1        |       |          |          |         |          |        |                 |         |         |     |
| Gender (G)                                   | 0.31 (0.26)  | 0.04     | 1     |          |          |         |          |        |                 |         |         |     |
| Age (AGE)                                    | 2.51 (0.57)  | -0.01    | 0.05  | 1        |          |         |          |        |                 |         |         |     |
| Education (EDU)                              | 0.39 (0.32)  | -0.13    | 0.23* | -0.37*** | 1        |         |          |        |                 |         |         |     |
| Department (DEP)                             | 0.48 (0.49)  | -0.18t   | -0.11 | 0.35***  | -0.28**  | 1       |          |        |                 |         |         |     |
| Org. experience (OEX)                        | 0.67 (0.30)  | -0.11    | 0.01  | 0.60***  | -0.33*** | 0.10    | 1        |        |                 |         |         |     |
| Team experience (TEX)                        | 0.25 (0.30)  | -0.25*   | 0.06  | 0.49***  | -0.44*** | 0.35*** | 0.45***  | 1      |                 |         |         |     |
| Innovative behavior. team (IB <sub>T</sub> ) | 5.57 (0.41)  | -0.19t   | 0.14  | -0.27**  | 0.42***  | -0.04   | -0.33*** | -0.23* | 1               |         |         |     |
| Vertical trust (VTRUST)                      | 4.25 (0.36)  | -0.26**  | -0.06 | -0.07    | 0.19t    | -0.13   | 0.10     | 0.05   | 0.24*           | 1       |         |     |
| Horizontal trust (HTRUST)                    | 4.23 (0.28)  | -0.13*** | 0.17* | -0.08    | 0.04     | -0.05   | -0.04    | 0.02   | 0.01            | 0.20    | 1       |     |
| Perceived team performance (PTP)             | 4.05 (0.24)  | -0.08    | -0.03 | -0.19t   | 0.17t    | -0.09   | -0.09    | -0.10  | 0.38***         | 0.40*** | 0.51*** | 1   |

\*\*\*p≤0.001

\*\*p≤0.01

\*p≤0.05

t p≤0.10

**Table 4**  
**Multi-level Model of the Effects of IB and IB<sub>T</sub> on**  
**Perceived Individual and Team Performance**

|  | Model 1                |         |                  |       | Model 2                |   |                  |         |      |        |           |     |
|--|------------------------|---------|------------------|-------|------------------------|---|------------------|---------|------|--------|-----------|-----|
|  | Individual performance |         | Team performance |       | Individual performance |   | Team performance |         |      |        |           |     |
| <b>Level 1</b>                           | Est.                   | t-value | p                | Est.  | t-value                | p | Est.             | t-value | p    |        |           |     |
| Gender                                   | -0.04                  | (-0.87) |                  | 0.03  | (0.70)                 |   | -0.06            | (-1.37) | 0.01 | (0.23) |           |     |
| Age                                      | -0.16                  | (-3.74) | ***              | 0.01  | (0.23)                 |   | -0.15            | (-3.47) | ***  | 0.00   | (0.07)    |     |
| Education                                | -0.05                  | (-1.08) |                  | -0.07 | (-1.62)                |   | -0.08            | (-1.69) |      | -0.12  | (-2.65)** |     |
| Org. experience                          | -0.02                  | (-0.41) |                  | 0.03  | (0.59)                 |   | -0.00            | (-0.04) |      | 0.05   | (0.90)    |     |
| Team experience                          | -0.06                  | (-1.35) |                  | -0.00 | (-0.48)                |   | -0.06            | (-1.23) |      | 0.01   | (0.16)    |     |
| <b>IB</b>                                |                        |         |                  |       |                        |   | 0.22             | (4.81)  | ***  | 0.19   | (4.48)    | *** |
| <b>Level 2</b>                           | Est.                   | t-value | p                | Est.  | t-value                | p | Est.             | t-value | p    | Est.   | t-value   | p   |
| Team size                                | -0.03                  | (-0.06) |                  | 0.28  | (1.76)                 | t | 0.07             | (0.30)  |      | 0.33   | (2.29)    | *   |
| Department                               | 0.96                   | (0.96)  |                  | -0.18 | (-1.28)                |   | 0.44             | (1.70)  | t    | -0.15  | (-1.20)   |     |
| <b>IB<sub>T</sub></b>                    |                        |         |                  |       |                        |   | 0.83             | (3.55)  | ***  | 0.60   | (5.09)    | *** |
| Pseudo-R <sup>2</sup> <sub>Level 1</sub> | 0.04                   | (2.19)  | t                | 0.01  | (1.19)                 |   | 0.08             | (3.34)  | ***  | 0.05   | (2.67)    | **  |
| Pseudo-R <sup>2</sup> <sub>Level 2</sub> | 0.92                   | (0.48)  |                  | 0.13  | (1.17)                 |   | 0.81             | (2.00)  | *    | 0.43   | (3.46)    | **  |

\*\*\*p≤0.001

\*\*p≤0.01

\*p≤0.05

t p≤0.10

N=628

**Table 5**  
**IB<sub>T</sub> Effects on Perceived Team Performance Moderated by Vertical and Horizontal Trust**

|   | <b>Model 1</b> | <b>Model 2</b> | <b>Model 3</b> | <b>Model 4</b> | <b>Model 5</b> | <b>Model 6</b> | <b>Model 7</b> | <b>Model 8</b> |
|---|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
|   | Est. t-value p |
| Team size                               | -0.06(-0.51)   | 0.02 (0.20)    | 0.07 (0.75)    | 0.14 (1.73)t   | 0.14 (1.76)t   | 0.14 (1.75)t   | 0.12 (1.55)    | 0.13 (1.67)t   |
| Gender                                  | -0.05(-0.47)   | -0.09(-0.94)   | -0.04(-0.44)   | -0.16(-2.03)*  | -0.16(-1.97)*  | -0.16(-1.96)*  | -0.17(-2.21)*  | -0.18(-2.33)*  |
| Age                                     | -0.17(-1.23)   | -0.15(-1.16)   | -0.12(-0.98)   | -0.09(-0.87)   | -0.12(-1.15)   | -0.12(-1.16)   | -0.10(-1.01)   | -0.11(-1.16)   |
| Education                               | 0.13 (1.04)    | 0.02 (0.18)    | -0.03(-0.29)   | 0.02 (0.20)    | 0.00 (0.03)    | 0.00 (0.03)    | 0.01 (0.06)    | 0.02 (0.16)    |
| Org. experience                         | 0.04 (0.27)    | 0.11 (0.93)    | 0.03 (0.36)    | 0.10 (0.98)    | 0.10 (1.02)    | 0.10 (1.02)    | 0.09 (0.94)    | 0.10 (1.02)    |
| Team experience                         | 0.02 (0.16)    | 0.06 (0.45)    | 0.01 (0.04)    | 0.02 (0.21)    | 0.05 (0.52)    | 0.05 (0.51)    | 0.07 (0.74)    | 0.08 (0.80)    |
| Department                              | -0.02(-0.19)   | -0.05(-0.49)   | 0.00 (0.03)    | 0.01 (0.09)    | 0.01 (0.17)    | 0.02 (0.23)    | 0.02 (0.22)    | 0.03 (0.33)    |
| IB <sub>T</sub>                         |                | 0.40 (3.94)*** | 0.31 (3.15)**  | 0.37 (4.42)*** | 0.34 (3.85)*** | 0.33 (3.73)*** | 0.35 (3.98)*** | 0.40 (4.35)*** |
| Trust (v: vertical)                     |                |                | 0.33 (3.62)*** | 0.22 (2.68)**  | 0.22 (2.67)**  | 0.22 (2.68)**  | 0.28 (3.45)*** | 0.23 (2.55)**  |
| Trust (h: horizontal)                   |                |                |                | 0.51 (7.14)*** | 0.49 (6.93)*** | 0.49 (6.89)*** | 0.59 (7.54)*** | 0.65 (7.68)*** |
| IB <sub>T</sub> x trust (v)             |                |                |                |                | 0.12 (1.48)    | 0.11 (1.23)    | 0.00 (0.05)    | 0.05 (0.46)    |
| IB <sub>T</sub> x trust (h)             |                |                |                |                |                | 0.02 (0.25)    | 0.12 (1.31)    | 0.26 (2.08)*   |
| Trust(v) x trust (h)                    |                |                |                |                |                |                | -0.24(-2.57)** | -0.27(-2.84)** |
| IB <sub>T</sub> x trust (v) x trust (h) |                |                |                |                |                |                |                | -0.22(-1.64)t  |
| R <sup>2</sup>                          | 0.06 (1.23)    | 0.17 (2.48)*   | 0.26 (3.43)*** | 0.49 (6.83)*** | 0.50 (7.10)*** | 0.50 (7.06)*** | 0.53 (7.77)*** | 0.55 (8.07)*** |

\*\*\*p≤0.001

\*\*p≤0.01

\*p≤0.05

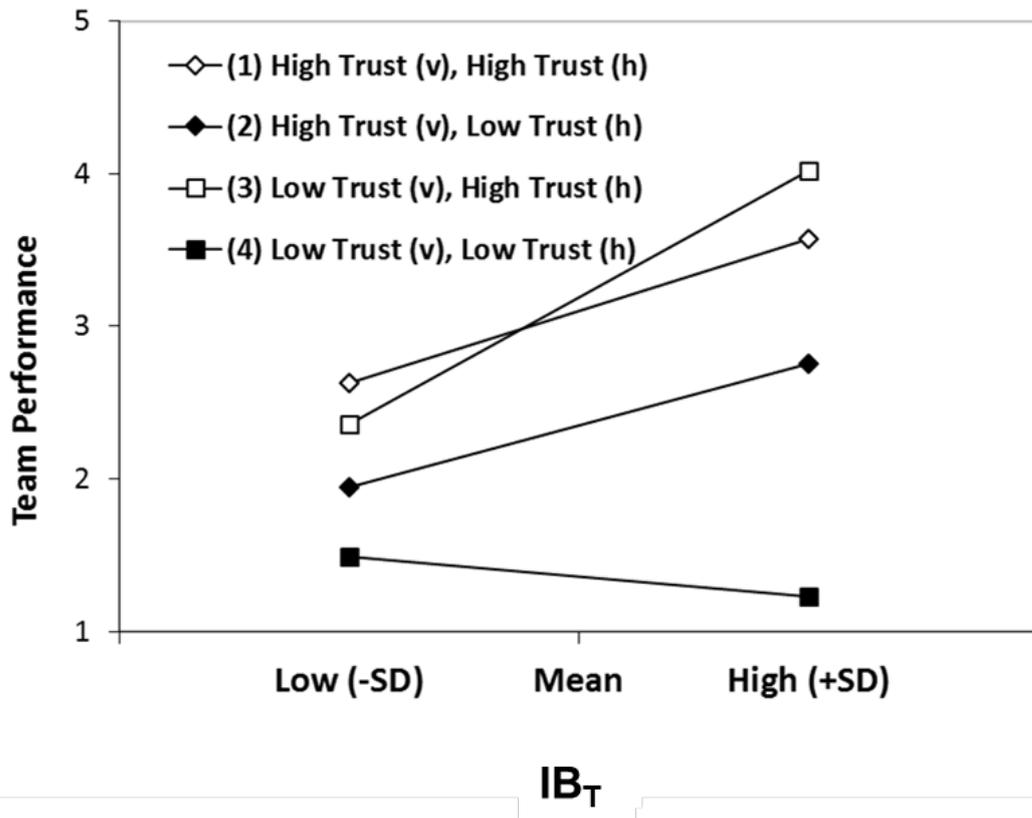
t p≤0.10

N=99

**Table 6**  
**Comparison of Slopes of the Perceived Performance Effect by the Combination of Trust Forms**

| <b>Pair of slopes</b>   | <b>t-value for slope difference</b> | <b>p-value for slope difference</b> |
|---|-------------------------------------|-------------------------------------|
| (1) and (2): high vertical/<br>high horizontal vs. high<br>vertical/low horizontal                  | -0.19                               | 0.85                                |
| (1) and (3): high<br>vertical/high horizontal vs.<br>low vertical/high horizontal                   | -0.85                               | 0.40                                |
| (1) and (4): high vertical/<br>high horizontal vs. low<br>vertical/low horizontal<br>(hypothesis 5) | 0.81                                | 0.42                                |
| (2) and (3): high vertical/low<br>horizontal vs. low<br>vertical/high horizontal                    | -1.01                               | 0.32                                |
| (2) and (4): high vertical/low<br>horizontal vs. low<br>vertical/low horizontal<br>(hypothesis 4)   | 2.12                                | 0.04                                |
| (3) and (4): low vertical/high<br>horizontal vs. low<br>vertical/low horizontal<br>(hypothesis 3)   | 4.05                                | 0.00                                |

**Figure 1**  
**Plot of the Interaction Effects of Trust (Vertical and Horizontal) on Perceived Team Performance under Low and High Levels of  $IB_T$**



Note: High/Low values on the x-axis represent +/- one standard deviation from the scale mean.