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Ritala Paavo, Vanhala Mika, Järveläinen Katja

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THE ROLE OF EMPLOYEE INCENTIVES AND MOTIVATION ON ORGANIZATIONAL INNOVATIVENESS IN DIFFERENT ORGANIZATIONAL CULTURES

Abstract: Organizational innovativeness is known to be affected by employee incentives and motivation, but the evidence is inconclusive regarding the organizational contexts and contingencies where this phenomenon takes place. To examine this issue, we adopt the Competing Value Framework of four types of organizational cultures, and hypothesize differences in the incentives-motivation-innovativeness relationships. Using an empirical study of 425 Finnish firms in technology industries, we found in general that intangible and tangible incentives facilitate both intrinsic and extrinsic motivation, but only intrinsic motivation leads to improved organizational innovativeness. Testing our model for subsamples that included clan, adhocracy, market, and hierarchy cultures, we found that results vary considerably between those. First, incentives lead to motivation to different degree regarding to the organizational culture in question. Further, intrinsic motivation leads to innovativeness under adhocracy, clan, and market culture, but not under hierarchy culture, and extrinsic motivation does not lead to innovativeness under any culture.

Keywords: Organizational innovativeness; Incentives; Motivation; Organizational culture; Competing Values Framework

1. Introduction

Innovations and organizational renewal often emerge from the creative ideas and input of individual employees. Therefore, managers must stimulate this process by fostering an organizational culture that empowers creative individuals (Ahmed, 1998; Amabile, 1996, 1997; Amabile et al., 1996; Özsomer et al., 1997). To achieve this, it is important to create institutional surroundings in which creativity and innovation are accepted as basic cultural norms, and to develop related managerial practices (e.g., Amabile et al., 1996; Ahmed, 1998; Büschgens et al., 2013; Martins and Terblanche, 2003). However, achieving such organizational environment is not easy. For instance, managers face many challenges in identifying optimal ways of motivating their employees to complete tasks (Behrens and Patzelt, 2018; Faisal Ahammad et al., 2015; Stajkovic and Luthans, 2003), share knowledge, contribute new ideas and take initiatives (Foss et al., 2009, 2015; Minbaeva et al., 2003). Employees also respond differently to managerial practices and incentives, and motivational processes vary across different organizational cultures and environments (Krausert, 2014; Shalley et al., 2000; Ryan and Berbegal-Mirabent, 2016). To understand organizational innovativeness, we must thus explore both practices that incentivize and motivate individuals, as well as take into account the cultural surroundings in which they are embedded.

Existing research provides substantial evidence of the links between organizational culture and innovativeness (e.g., Büschgens et al., 2013; Brettel et al., 2015; Matzler et al., 2013; Wang et al., 2010), and between organizational culture and incentives (e.g., Bushardt et al., 2011; Kerr and Slocum, 1987; Li and Roloff, 2007), as well as between different forms of incentive and motivation (e.g., Deci et al., 1999; Gagné and Forest, 2008). Some studies have also investigated the overall "big picture"; the links between incentives, (intrinsic) motivation, and creativity (e.g., Amabile, 1997; 1998; Burroughs et al., 2011; Im et al., 2012; Lee at al., 2018) and the influence of organizational culture and incentives on creative behavior in organizations (Amabile et al., 1996; Amabile and Pratt, 2016; Martins and Terblanche, 2003).

In the current study we go deeper into the role of culture in organizational innovativeness in viewing it as a contingency factor (moderator) than a direct explanatory factor. This is because we view culture as a context within which individuals are incentivised and motivated, and ultimately behave (or not) in innovative ways. We expect that looking the

mechanisms of incentives and motivation within cultures – rather than culture as a whole – provides a more accurate view on when particular cultures are helpful for innovativeness and when they provide obstacles. By doing so, we respond to several calls regarding further research on organizational-specific contexts that regulate employee behavior based on incentives (cf. Sung et al., 2017, p. 303). Furthermore, recent studies have shown that organizations differ in major way regarding their incentive systems and resulting employee motivations that drive innovativeness (Behrens and Patzelt, 2018), pinpointing the role of contextual factors. To contribute towards these gaps in our understanding, the present study examines *how organizational innovativeness is impacted by types of incentive and motivation within different organizational cultures.*

In attempting to explain this incentive-motivation-innovativeness linkage, we integrate arguments from three field. First, we focus on *incentives* and *incentive systems* (Milne, 2007), that relate to organizational activity that seeks to motivate individuals to act in ways that are consistent with organizational objectives, such as creative or productive behavior. Second, following the widely used approach (e.g. Miao et al. 2007; Lau et al. 2018) we draw on self-determination theory (Deci and Ryan, 1985), which distinguishes between *extrinsic* and *intrinsic motivation*. Finally, we view organizational culture as a context for relationships between incentives, work motivation, and innovativeness (cf. Witte and van Muijen, 1999, p. 498). In particular, we examine four organizational culture types—clan, adhocracy, market and hierarchy— based on Quinn and Rohrbaug's (1983) competing values framework (CVF), which has been widely used in an extensive body of empirical research (e.g., Chatman and O´Reilly, 2016).

Informed by these three perspectives, we will develop and test a model where intangible and tangible incentives affect intrinsic and extrinsic employee motivation and organizational innovativeness. We study these effects both within a general model and using subsamples of different cultural types (clan, adhocracy, market, hierarchy). Our empirical study of 425 Finnish firms confirms that intangible and tangible incentives facilitate various types of motivation, but only intrinsic motivation leads to improved organizational innovativeness. Interestingly, we find that these results vary considerably across different organizational cultures. For instance, the results suggest that it might be challenging to inspire creativity in hierarchical cultures, while clan and adhocracy cultures are the most feasible contexts for

facilitating organizational innovativeness. Our results contribute to innovation management literature by providing systematic as well as detailed implications that help to understand how to best facilitate creative thinking and continuous learning among employees in organizational cultures of various kinds.

2. Conceptual background

2.1 Organizational innovativeness

Organizational innovativeness can be defined primarily as the adoption of an idea, behavior, or process that is new to that organization (Damanpour, 1991, 1996; Park and Kruse, 2014). According to Damanpour (1996), innovation encompasses the generation, development, and implementation of new ideas or behavior, including new products or services, process technologies, organizational structures, and administrative systems. Accordingly, we explore organizational innovativeness as a holistic concept, referring to how a firm develops technical innovations that include new products, services, and production process technologies, as well as administrative innovations such as new procedures, policies, and organizational forms (Daft, 1978; Damanpour, 1991; Park and Kruse, 2014; Van de Ven, 1986). While technical innovations are linked to an organization's basic work activities, administrative innovations relate more directly to management activities and the organization's social structure, including policies governing recruitment, allocation of resources, structuring of tasks, authority, and reward (Daft, 1978; Damanpour, 1991). While acknowledging this heterogeneity, we are interested here in overall organizational innovation and how this is influenced by the interplay between incentives and employee motivation within different organizational cultures.

2.2 Incentives and motivation in organizations

Incentives are an important mechanism for the organization to facilitate employee motivation. In this regard, the generic terms *incentive* or *incentive system* are used to encompass such concepts as reward, compensation, and recognition (Milne, 2007). The incentive system—which determines who gets rewarded and why—is an unequivocal statement of a company's values and beliefs (Kerr and Slocum, 1987). Incentives are used to reinforce the organization's values, to promote outstanding performance, and to foster continuous learning by acknowledging desired behavior and achievement (Milne, 2007). *Tangible incentive* systems—

also referred to as reward, pay, or benefit systems—are strategic programs and plans for distributing financial rewards or penalties (Bento and White, 2003; Li and Roloff, 2007; Park and Sturman, 2016). A compensation package commonly includes direct and indirect pay, often in the form of benefits. At their best, compensation strategies as management tools can enhance a firm‘s effectiveness in meeting strategic objectives by influencing individual behavior and encouraging high levels of performance (Milne, 2007). *Intangible incentives* include recognitions, non-financial awards or tokens of appreciation given selectively to employees to acknowledge their behavior and commitment, which can be as basic as positive feedback or just saying thank you (Milne, 2007).

Motivation involves certain mental processes that arouse interest and energize, direct, and sustain goal-oriented behavior and performance. Simply put, a person is motivated when they want to do something. While the behavior of a motivated person is characteristically voluntary and volitional, motivation-enabling processes constantly shape how the individual is affected by their interaction with the surrounding environment, including the workplace (Cinar et al., 2011; Ryan and Deci, 2000). In the present context, the focus is on employee work motivation and employee engagement, which have a significant influence on organizational performance and productivity, as more motivated employees perform better (Ahmed, 1998; Ankli and Palliam, 2012; Sokro, 2012; Stajkovic and Luthans, 2001, 2003). Understanding motivation is especially important in the context of organizational innovativeness because of its significant impact on employees' knowledge sharing behavior (Stenius et al., 2016; Shujahat et al., 2019). If managers understand what moves their employees towards a desired goal, motivation can be used as a tool (Cinar et al., 2011).

In this study, Deci and Ryan's (1985) self-determination theory (SDT) is applied in examining the origins of individual motivation in terms of two distinct and widely adopted types: intrinsic and extrinsic (cf. Hofeditz et al., 2017; Miao et al., 2007). *Intrinsic motivation* refers to doing something because it is inherently interesting, where the individual derives spontaneous satisfaction from the activity itself. *Extrinsic motivation* refers to doing something because it leads to a distinct outcome that may include tangible or intangible rewards. According to Amabile (1993) perceptions of intrinsic and extrinsic motivation may vary; while individuals may be more oriented toward one or the other, most people can be influenced by both intangible and tangible incentives.

2.3 Organizational culture

Organizational incentives, motivation, and resulting innovativeness have been broadly seen to be taking place in an organizational *context*, which affects how individuals and teams behave and perform regarding these phenomena. This context has been described with concepts such as work environment (Amabile and Pratt, 2016), organizational climate (Ekvall, 1996), innovative climate (Van der Vegt et al., 2005), or more broadly, organizational culture (Brettel et al., 2015; Matzler et al., 2013; Naranjo-Valencia et al., 2017). In the current study, we focus on *organizational culture* since it provides a broad umbrella to understand how individuals are embedded to organizational norms, rules, and systems (Schein, 1985). Organizational culture involves a complex set of values, beliefs, assumptions, and symbols that define how a firm conducts its business (Barney, 1986). Hofstede (1998) characterizes organizational culture as the collective mental programming that distinguishes the members of one organization from those of another. Organizational culture can also be examined sociologically as an attribute possessed by organizations that enables researchers and managers to identify and empirically measure the differences between cultures (Cameron and Quinn, 2006).

As values are central to organizational culture, in this study we adopt Quinn and Rohrbaugh's (1983) *competing values framework* (CVF) to classify and compare different values as the most widely adopted typology of organizational culture (Chatman and O´Reilly, 2016). Utilizing CVF is particularly useful for the current purposes as it has been subject to a major cross-contextual validation, and it has been demonstrated to explain differences in innovative behavior and outputs of organizations (for reviews and meta-analyses, see Büschgens et al., 2013 and Hartnell et al, 2011). CVF assigns organizations to four different cultural types: clan, adhocracy, hierarchy, and market, based on two critical dimensions identified by Quinn and Rohrbaugh (1983): flexibility vs. control and external vs. internal orientation. In a *clan culture* (flexibility and internal orientation), the firm is seen as an extended family, where employees typically work in teams, participating a lot and openly sharing their insights. An *adhocracy culture* (flexibility and external orientation) emphasizes innovative and entrepreneurial behavior and values new challenges and risk taking. A *market culture* (control and external orientation) is competitive and results-oriented; personnel management is characterized by competitiveness, high demands, results orientation and a focus

on achievement. Finally, a *hierarchy culture* (control and internal orientation) strives for stability, predictability, and smooth-running efficiency by being systematic and coordinated. In such a culture, personnel management emphasizes conformity, efficiency, and security of employment.

The meta-analysis by Büschgens et al. (2013) broadly supports the important role of organizational culture in promoting or limiting innovativeness (see also Hartnell et al, 2011). Their results show that innovativeness is most strongly and positively related to a developmental (adhocracy) culture, followed in descending order by group (clan) culture and rational (market) culture.[1] Conversely, organizational innovativeness is negatively related to a hierarchical culture. Additionally, Büschgens et al. (2013) found that innovation-supporting cultures do not seem to differentiate much between incremental and radical innovations and are probably equally supportive of both.[2] Similar findings have recently been found regarding the role of organizational culture types and entrepreneurial orientation – other cultures promote EO, while hierarchy culture suppresses it (Brettel et al., 2015). Further, Matzler et al. (2013) found that hierarchy and market cultures increase exploitation in the organization, clan culture negatively impacts exploration, and finally, adhocracy increases both exploitation and exploration.

In the current study we view organizational culture as an organizational environment and a context within which individuals are incentivised and motivated, and ultimately behave (or not) in innovative ways. We expect that looking the mechanisms of incentives and motivation within particular organizational cultures provides an useful view on when particular cultures are helpful for innovativeness and when they provide obstacles.

[1] Though these (and some other) researchers use different names to describe organizational cultures (namely group culture, developmental culture, rational culture, and hierarchical culture), their core values and dimensions are similar to the culture types identified by the Competing Values Framework. Thus the results of such studies are interpreted similarly across the two types of labelling.

[2] This evidence supports our choice in examining organizational innovativeness as a generic construct, rather than separating between incremental and radical innovation, for instance.

3. Hypotheses development

3.1 Incentives, motivation and innovativeness

It is broadly established that incentives and incentive systems are used in organizations to facilitate employee motivation. In this regard, self-determination theory suggests that extrinsic motivation can be controlled by external factors and intrinsic motivation by inherently interesting and satisfying things (Gagné and Deci, 2005; Ryan and Deci, 2000; Miao et al., 2007).

Existing evidence quite widely agrees with the arguments of self-determination theory. First, there is a broad base of studies that have provided support for the effects of intangible incentives on intrinsic motivation. For example, in an extensive meta-analysis, Deci et al. (1999) demonstrated that intangible incentives had a positive effect on intrinsic motivation while tangible rewards had the opposite effect. Supporting these findings, it has been shown that when the incentives scheme is changed from monetary and performance-based towards intangible one providing e.g. social recognition intrinsic motivation will increase, and extrinsic motivation will decrease (cf. Kuvaas et al., 2017). Ledford et al. (2013) also found that both tangible and intangible rewards play a role in motivation, and that while tangible rewards do not undermine intrinsic motivation, intangible incentives have a positive effect. Similarly, Moellers et al. (2018) found that if employees are stimulated through intangible, non-monetary reward system, their passion and intrinsic motivation can be increased. Second, it has been broadly established that tangible incentives (e.g. merit-based rewards and monetary bonuses) are helpful in boosting extrinsic motivation as well as related issues such as job satisfaction and recruiting, and even intrinsic motivation (see e.g. Law, 2016).

Overall, while there are also evidence suggesting nuances to these relationships (see e.g. Amabile and Pratt, 2016), it can be concluded that intrinsic motivation is especially affected by intangible and extrinsic motivation by tangible incentives (Yoon et al., 2015). Based on the accumulated evidence and arguments, we would expect intangible incentives to be more closely linked to intrinsic motivation and tangible incentives to extrinsic motivation. Accordingly, we propose the following hypotheses.

Hypothesis 1a-b: Implementation of a) intangible incentives is positively related to the perceived intrinsic motivation of personnel, and b) tangible incentives positively related to the perceived extrinsic motivation of personnel

While it is useful to understand how incentives help to boost individual motivation in organizations, it should also be acknowledged that different types of motivation have different implications for organizational goals, and in the case of the current study, organizational innovativeness. Indeed, since motivation directs and sustains goal-oriented behavior and performance, the individual employee's motivation exerts a significant influence on organizational outcomes such as performance, productivity, or innovativeness (Ahmed, 1998; Ankli and Palliam, 2012; Kuvaas et al., 2017; Sokro, 2012; Stajkovic and Luthans, 2001, 2003). In this regard, the accumulated evidence suggests that intrinsic motivation may exert a greater influence than extrinsic motivation on employee attitudes and performance in general, and that intrinsic motivation may be a key driver of creativity and innovativeness (Amabile, 1993, 1996; Amabile et al., 1996; Ankli and Palliam, 2012; Cho and Perry, 2011: Ryan and Deci, 2000). Overall, the linkage between intrinsic motivation and organizational creativity and innovatinvess is broadly established in various types of studies (for review and discussion, see Amabile and Pratt, 2016).

On the other hand, the relationship between extrinsic motivation and performance remains unclear, with evidence both for and against. While the relationship has been found to be positive for simple and standardized tasks, it seems small or even negative for more interesting and complex tasks (e.g., Bareket-Bojmel et al., 2014; Kuvaas, 2017; Weibel et al., 2010). In addition, Cerasoli et al. (2014) found that when intrinsic motivation influences performance, the role of extrinsic motivation is less important. On the other hand, while some extrinsic motivators may weaken intrinsic motivation and its effect on performance (e.g. innovativeness), other factors may compensate; for example, Currie et al. (2015) reported that tangible incentives (e.g., performance-based compensation) can be significant drivers of employee innovative behaviors. However, it might be that such tangible incentives might spur intrinsic motivation, which would explain the increase in innovative and creative behavior. Thus, we conclude that in general (i.e. not accounting specific cultural context), organizational

innovativeness is mostly facilitated by intrinsic motivation of employees, and therefore we put forward the following hypothesis:

> **Hypothesis 2:** Perceived intrinsic motivation is positively related to organizational innovativeness.

3.2 The contingency role of organizational culture

So far, we have discussed a general, baseline model of the interplay between incentives and motivation in relation to organizational innovativeness. However, different organizational practices do not occur in a vacuum, as contextual issues—notably organizational culture—play a role in how various incentives affect motivation (see for example Foss et al., 2015). Thus, we build on the the assumption that organizational behavior are institutionally embedded, and that organizational culture is a useful construct in understanding the institutional environment of organizational processes and phenomena (see for example Kondra and Hurst, 2009). While the positive impact of tangible or intangible incentives on employee work motivation and performance remains a matter of ongoing dispute, we argue here that the optimal design of incentives depends crucially on contextual factors, and that the first step is to determine the appropriate incentives for the specific company and its employees (Pouliakas and Theodossiou, 2012; Sammer, 2007; Ryan and Berbegal-Mirabent, 2016). Therefore, we expect that the relationships between incentives and motivation and between motivation and innovativeness are likely to differ across cultures.

Regarding the relationship between incentives and motivation, we argue that the culture types can be grouped to two categories. First, the choice of tangible and intangible incentive systems depends on the typical types of tasks appreciated in different cultures; while intangible incentives and intrinsic motivation underpin effective performance in problem solving or heuristic tasks, tangible incentives and extrinsic motivation may suffice for algorithmic tasks that are more automated or repetitive (Gagné and Deci, 2005). Problem solving and heuristic tasks are more related to the cultures where new ideas, knowledge sharing, and team-work are appreciated – that is – the clan and adhocracy cultures. Thus, under such cultural contexts intangible incentives provide to be particularly useful in facilitating intrinsic motivation. On the other hand, more mechanistic and performance oriented cultures

(hierarchy and market cultures) provide a suitable setting for tangible rewards leading to extrinsic motivation. Indeed, it has been found that rewarding works differently across organizational cultures. For instance, Kerr and Slocum (1987) suggested that a reward system in which mentor-like superiors evaluate subordinates on subjective criteria and provide frequent feedback, reflects a clan culture. On the other hand, a performance-based pay system that links rewards to quantitative performance measurement, with low levels of superior-subordinate interaction, is considered appropriate to a market culture.

In summary, we argue that clan and adhocracy cultures provide a context where intangible incentives are particularly effective in facilitating employees' intrinsic motivation. On the other hand, hierarchy and market cultures provide a more suitable context for tangible incentives leading to extrinsic motivation. We are not suggesting any negative effects here, given that all types of incentives can be beneficial to motivation, and they are not necessarily substitutes (Amabile and Pratt, 2016; Cerasoli et al., 2014). However, we expect that the four organizational cultures types as outlined in the CVF model provide particular benefits, the arguments which are summarized in the following two hypotheses:

> **Hypothesis 3a:** Clan and adhocracy cultures positively moderate the relationship between intangible incentives and intrinsic motivation.

> **Hypothesis 3b:** Hierarchy and market cultures positively moderate the relationship between tangible incentives and extrinsic motivation.

We also expect to see differences between the four cultures in terms of the relationship between motivation and organizational innovativeness, Aligned with Hypothesis 2, we focus particularly on the relationship between intrinsic motivation and organizational innovativeness, as we do not expect extrinsic motivation play a significant role.

In an adhocracy culture, the prevailing values of growth, stimulation, variety, and autonomy encourage employees to take risks and to apply their creativity (Hartnell et al., 2011). On that basis, adhocracy culture is likely to be positively associated with innovativeness, and particularly adept for individuals who have intrinsic motivation to develop ideas and solutions, given that adhocracy culture does not provide much direction and managerial framework for

goal-setting. Similarly, clan cultures also appear as innovation-friendly, given their openness and trust among employees (Brettel et al., 2015; Cameron and Quinn, 2016) – features that are known to drive knowledge sharing as well as creativity in organizations. However, the fact that clan cultures rely heavily on participation, employee involvement, and open communication, might undermine innovation by the effects of group interdependence (see for example Braunscheidel et al., 2010), limiting opportunities to identify novel solutions or challenge traditional approaches (e.g., Hartnell et al., 2011; Sethi et al., 2001). On the other hand, clan cultures still provide flexibility, high levels of knowledge sharing, and a trustful atmosphere for expressing ideas (e.g. Brettel et al., 2015). Therefore, the role of intrinsic motivation is even further highlighted in clan cultures, where intrinsically motivated individuals could take the benefit of the open communication channels and knowledge sharing, while avoiding the limitations of group think.

In sum, we hypothesize that adhocracy and clan cultures are particularly feasible contexts for intrinsically motivated employees to contribute to organizational innovativeness, given their features that promote open and safe knowledge sharing, as well as collaboration among employees and teams.

> **Hypothesis 4a:** Adhocracy and clan cultures positively moderate the relationship between intrinsic motivation and organizational innovativeness.

While adhocracy and clan cultures are contexts where intrinsic motivation plays a major role, we argue that market and hierarchy cultures are more aligned with extrinsically-motivated activities that focus on concrete performance targets. Performance and efficiency-oriented contexts do not align well with creative and innovative behavior. Indeed, several authors have suggested that market culture's emphasis on group goal-setting and group performance in the interests of productivity and efficiency might be expected to undermine innovativeness (Braunscheidel et al., 2010; Hartnell et al., 2011; LePine, 2005).

There are many good reasons to argue why particular cultural contexts undermine the potential of intrinsic motivation for organizational innovativeness. For example, individuals with high performance orientation who undertake challenging tasks may not exhibit the adaptability needed for innovativeness and creativity. The high levels of competitiveness and

even aggression that characterize market culture may work against innovativeness, and suppress individuals' intrinsic motivation for creativity. Furthermore, the formalization of activities in a hierarchy culture (e.g., an emphasis on rules and regulations), in combination with the excessive role of authority and poor employee participation, may limit innovativeness (e.g. Naranjo-Valencia et al., 2010, 2011; Lau et al., 2018). In hierarchy cultures, the horizontal knowledge flows are often limited given the centralized communication schemes and top-down decision making (Song and Thieme, 2006). In market cultures the horizontal knowledge flows might be limited for other reasons such as fast-paced work, competitive environment, and orientation towards individual performance. Therefore, these types of cultures often leave employees without power to push innovative ideas forward, and might discourage for those that would otherwise be motivated (e.g. Brettel et al., 2015; Büschgens et al., 2013). The following hypothesis summarizes the negative contingency role of hierarchy and market cultures.

> **Hypothesis 4b:** Hierarchy and market cultures negatively moderate the relationship between intrinsic motivation and organizational innovativeness.

4. Methods

4.1 Data collection

The following empirical analysis is based on quantitative survey data collected in 2014 from Finnish companies operating in technology-driven industries. Based on the NACE classification of economic activities in the European community, these include the electrical and electronics industry, mechanical engineering, metals, engineering and related technical consultancy, and the ICT industry. The electronics and metals sectors were selected because, as well as being technology-intensive, they received the greatest number of international patents in 2012 (Statistics Finland, 2013), which can be interpreted as one indicator of innovativeness. The ICT industry is included because of its rapid rate of technological progress and innovativeness, making it one of the fastest growing sectors in the EU (OECD, 2011).

By making the questionnaire available in both Finnish and English, it was possible to include company managers whose first language is not Finnish. The original measurement scales were translated into Finnish, ensuring that nothing was lost in translation.

The questionnaire was pretested by two entrepreneurs holding managerial positions in their own companies and one HR professional working in an international company. Based on their comments and suggestions made by representatives of The Federation of Finnish Technology Industries, the questionnaire items were modified to ensure readability, clarity, and precision. For the English questionnaire, the scales were then back-translated (see Appendix A).

The dataset (obtained from the Amadeus database) included 3,704 companies that met the inclusion criteria. After eliminating unreachable and ineligible respondents, the final sample included 2,873 companies. In the four-week period during which the questionnaire was available, 425 valid responses were collected. Based on one key informant per company, the effective response rate was 15%. By industry, most of the respondents came from manufacturing (48%), information and communication (33%), and professional, scientific and technical activities (17%). The majority of respondents (76%) were current chief executive officers or vice presidents. The second largest group of respondents was HR managers and directors (9%), followed by chief operating officers and development managers (6%), chief finance officers and finance managers (3%), and chairmen and board members (2%). The remaining respondents (4%) included marketing directors, office managers, and sales directors. A majority (25%) had worked at their current company for 6–10 years while many had worked at the company (18%) or had held their current position (10%) for more than 20 years.

4.2 Measures

All variables other than organizational culture were measured using a 4-point Likert-type scale. Appendix A includes all the final items and measures as refined for reliability and validity. The rationale for these measures is elaborated below.

Our measurement design is focused on *organizational* level of analysis, as our aim in this study was to capture the existence of the phenomena and variance of those between, not within, companies. More specifically, we aimed to capture general level/types of incentives, motivation, and innovativeness within each company, and not of those for each individual they employ. Therefore, the level of the analysis in this study is the organization and consequently we relied on individual respondents that represented highly knowledgeable persons from each company. In this regard, earlier studies have suggested that the cognitive maps of the highly ranked members of the organization (e.g. Chief Executive Officer, HR

director) can be seen to represent the essential aspects of all the members of the organization and this approach have been utilized in previous studies (Lyles and Schwenk, 1992) also when motivation (DeVoe and Iyengar, 2004; Usugami and Park, 2006) has been under scrutiny. For instance, it is shown that there is a sufficient level of interdependence between managers' perceptions and employees' self-ratings of the motivation (DeVoe and Iyengar, 2004; see also Huber and Power, 1985). Thus, we believe the chosen measurement approach helps to examine the hypotheses in the context of the current study, regardless of its inherent limitations (the potential biases are further elaborated in the next section).

Both *intangible* and *tangible incentives* were measured by three items that asked respondents how often different incentive policies were implemented in their company. These items were inspired by Kauhanen (2012) and Wood (1996). Items related to intangible incentives covered recognition, education, and flexible work arrangements while those related to tangible incentives concerned base salary, pay-for-performance commission, and rewarding new ideas. Scales ranged from *never* (1) to *often* (4).

Measures of perceived *intrinsic motivation* (five items) and *extrinsic motivation* (two items) were largely based on a scale developed by Trembley et al. (2009). We added two items to the intrinsic motivation scale: social bonds within the organization (Baumeister and Leary, 1995) and meaningfulness of work (Guay et al., 2000). Other items related to intrinsic motivation covered learning, challenges, and enjoying difficult work tasks. We added one further item on employee benefits (Kauhanen, 2012) to the extrinsic motivation scale, and the final version of this scale covered items on income and benefits. The scales ranged from *does not correspond at all* (1) to *corresponds a lot* (4).

Organizational innovativeness was measured by five items. The first of these was adapted from Wang et al. (2010) to measure the extent of new product and service innovations introduced to the market. The remaining four items were inspired by Damanpour (1991) and Park and Kruse (2014). These addressed the extent to which the company had adopted new technical and administrative innovations. The scale ranged from *not at all* (1) to *a lot* (4).

Organizational culture was measured using the instrument developed by Cameron and Quinn (2006) to present four types of organizational culture (clan, adhocracy, hierarchy, and market). Based on these descriptions, informants were asked to rate the extent

to which each matched their own organization; the question was framed as a forced choice, resulting in a rank-ordering.

We used four variables (age of company, number of employees, industry type, and R&D intensity) as control variables to account for any effect they might have on organizational innovativeness (Andersson et al., 2004; Tu and Hall, 2004). Firm age was measured as the number of years since establishment, and number of employees was utilized as a proxy for firm size. Industry type was adapted from the NACE classification, and R&D intensity was measured as R&D expenditure as a percentage of total revenue.

4.3 Assessment of bias

The reliance on self-reported measures meant that common method variance might have biased the findings. Common method bias (CMB) is of particular concern when respondents are asked to address items that relate to both independent and dependent variables. Following relevant precedents from the literature (e.g., Minbaeva et al., 2012; Vaccaro et al., 2012), we took several steps to reduce the risk of such bias.

First, the survey design and administration explicitly assured respondent confidentiality (cf. Tsai and Ghoshal, 1998; Minbaeva et al., 2012), so reducing any risk that respondents might alter their answers to align with the expectations of others. In addition, we consulted with practitioners in the field to improve the scale items and used clear and proper grammar to keep the survey compact (MacKenzie and Podsakoff, 2012). The fact that the survey asked experienced respondents to assess concrete constructs further reduced the possibility of CMB (see for example Rindfleisch et al., 2008; MacKenzie and Podsakoff, 2012). Moreover, anchoring of the scales varied in our survey (different for incentives, motivation, and innovativeness), helping further to decrease the possibility of CMB (e.g. Podsakoff et al, 2003; Rindfleisch et al. 2008; MacKenzie and Podsakoff, 2012).

To further assess the risk of CMB, we performed statistical analyses that included Harman's one-factor test (Podsakoff et al., 2003) and a principal component analysis that incorporated items from all of the constructs. We found that five factors accounted for the total variance, the largest of which accounted for 28% of the variance. In line with Podsakoff et al. (2003) and following the procedure suggested by Liang et al. (2008), a measurement model that included one method factor was also tested, allowing items to load both on their theoretical

constructs and on a common method factor. Loadings on the method factor were substantially lower than those on construct factors. Finally, our analyses with the partial least squares (see the Results section below) revealed high discriminant validity which further decreases the concern of CMB (Ahammad et al., 2017). Taken together, these tests suggest that common method bias was unlikely to be a major concern.

5. Results

We used partial least squares (PLS) for the analyses (version 3.2.7 of SmartPLS; see Ringle et al. 2015) and followed the process suggested in the literature (see e.g., Hair et al., 2014). To simultaneously address multiple and complex relationships (e.g. Ahammad et al. 2017) among incentives, motivation, and organizational innovativeness, using PLS for structural equation modeling (SEM) is appropriate for the following reasons. First, PLS is exploratory in nature and is based on minimizing the residual variance of the dependent variables. It therefore makes more modest demands on measures compared with other SEM techniques (Echambadi et al., 2006; Hair et al., 2014). In addition PLS-based structural modeling can be utilized with smaller sample sizes (Hair et al., 2014). These features make PLS suitable for exploratory research questions also with small sample sizes (see e.g. Ahammad et al., 2017), as in our culture sub-groups, where the smallest groups comprised 49 and 75 respondents (for the market and hierarchy cultures, respectively). As a first step in our analysis, we assessed the internal consistency and discriminant validity of the scales.

5.1 Internal consistency

To test for convergent validity, we examined construct reliability (CR), factor loadings, and Average Variance Extracted (AVE). In the CR test, all constructs returned a value above the 0.7 threshold (see Bagozzi and Yi, 1991). Secondly, the loadings were high and statistically significant for all items, indicating that all were related to their specific constructs, so verifying the posited relationships among indicators and constructs. Finally, AVE measures for all constructs exceeded the 0.5 cut-off (see Fornell and Larcker, 1981). Measures of CR and convergent validity are included in Appendix A.

5.2 Discriminant validity

Discriminant validity refers to the extent to which any one construct differs from the others. The square root of AVE should be greater than the variance between that construct and other constructs in the model (i.e., the correlation between two constructs) (Fornell and Larcker, 1981). The constructs fulfilled this condition; in our model (see Table 1), the diagonal elements (square root of AVE) were greater than the off-diagonal elements in the corresponding rows and columns. In sum, the model assessments provided good evidence of the validity and reliability of concept operationalization.

INSERT TABLE 1 HERE

5.3 Correlation analysis

Table 2 presents means, standard deviations and a correlation matrix. As the matrix shows, there are significant correlations between the independent variables (incentives and motivation) and the dependent variables (motivation and innovativeness). This supports the expectation of interconnectedness between incentives and motivation and between motivation and innovativeness.

INSERT TABLE 2 HERE

5.4 Testing the model

To test our research model, we estimated a path model reflecting the posited relationships between incentives, motivation, and organizational innovativeness, following the recommended procedures (see for example Hair et al., 2014). As shown in Table 3, our research model explained about 18% of the variance in organizational innovativeness for the full sample. Moreover, in the full sample model, the R^2 value was 19% for intrinsic motivation and 11% for extrinsic motivation.

Path estimates for intangible incentives to intrinsic motivation (B = 0.340, p = 0.000) as well as tangible incentives to extrinsic motivation (B = 0.172, p = 0.000) confirmed

our Hypothesis 1a and 1b. We also found support for Hypothesis 2, suggesting a positive relationship between intrinsic motivation and organizational innovativeness. The path from intrinsic motivation to organizational innovativeness was positive and statistically significant (B = 0.311, p = 0.000). In addition, even if not hypothesized, we also tested the effect for extrinsic motivation, and the results show that there wasn't a statistically significant path from extrinsic motivation to organizational innovativeness (B = -0.012, p = 0.398).

In addition, we wanted to explore the relationships between incentives, motivation, and organizational innovativeness within different organizational cultures. To that end, we tested four additional models to determine any effect of organizational culture in the previously tested paths, as in Hypotheses 3a-b and Hypotheses 4a-b. We therefore conducted a sub-group analysis, splitting the sample into the four cultures: clan (n = 174), adhocracy (n = 125), hierarchy (n = 75), and market (n =49) and running a separate PLS analysis for each of the four groups. Table 3 shows the results for the full sample and the four sub-samples.

INSERT TABLE 3 HERE

For *clan culture*, the path from intangible incentives to intrinsic motivation (B = 0.306, p = 0.000) was significant and had a positive impact. The effect of tangible incentives on both intrinsic (B = 0.136, p = 0.037) and extrinsic (0.193, p = 0.011) motivation was also positive and significant. In addition, the effect of intrinsic motivation on organizational innovativeness (B = 0.208, p = 0.013) was significant and positive. For clan culture, then, the models show significant full paths from incentives (intangible and tangible) to organizational innovativeness, mediated by intrinsic motivation.

The model for *adhocracy culture* showed even more substantial path estimates, with otherwise similar findings. First, the path from intangible incentives to intrinsic motivation showed a positive impact (B = 0.421, p = 0.000). Secondly, the paths from tangible incentives to both intrinsic (B = 0.145, p = 0.023) and extrinsic (B = 0.215, p = 0.027) motivation were also significant. Finally, the path from intrinsic motivation to organizational innovativeness (B = 0.337, p = 0.000) was significant. The results for this model were similar

to those for clan culture, with two significant paths all the way from incentives (intangible and tangible) through motivation (intrinsic) to organizational innovativeness.

In the case of *hierarchy culture*, there were significant paths from intangible incentives to both intrinsic (B = 0.416, p = 0.000) and extrinsic motivation (B = 0.225, p = 0.027). In addition, the path between tangible incentives and extrinsic motivation was positive and significant (B = 0.321, p = 0.001). Interestingly, hierarchy was the only culture in which neither intrinsic or extrinsic motivation had any effect on organizational innovativeness, indicating the absence here of any mediating effect.

In the model for *market culture*, there is also a significant path from incentives through motivation to organizational innovativeness, with a distinct empirical logic. This path runs from tangible incentives to intrinsic motivation (B = 0.481, p = 0.002) and from there to organizational innovativeness (B = 0.465, p = 0.001). In addition, there is a significant path with positive effect from tangible incentives to extrinsic motivation (B = 0.515, p = 0.022). It is notable that this was the only culture type in which intangible incentives played no role, as their effect on motivation had close-to-zero coefficients.

Based on these results, part of our hypotheses regarding the contextual and moderating role of organizational culture found support. Some paths were insignificant in certain cultures while significant in others, and the effect sizes varied a lot in different cultures. As Hypothesis 3a and 3b suggested, organizational culture affects the relationship between both types of incentives and both types of motivation (as discussed above). Hypothesis 4a and 4b concerning the role of organizational culture in how intrinsic motivation relate to organizational innovativeness were partially supported, as in adhocracy and clan cultures culture had a positive contingency role. Furthermore, hierarchy culture was the only culture under which the relationship between intrinsic motivation and innovativeness was not significant. However, regarding the role of market culture the results show that contrary to our Hypothesis 4b the effect of intrinsic motivation to organizational innovativeness is actually stronger within market culture. Figure 1 summarizes the significant path coefficients of the structural model for the full sample, as well as for the four sub-groups.

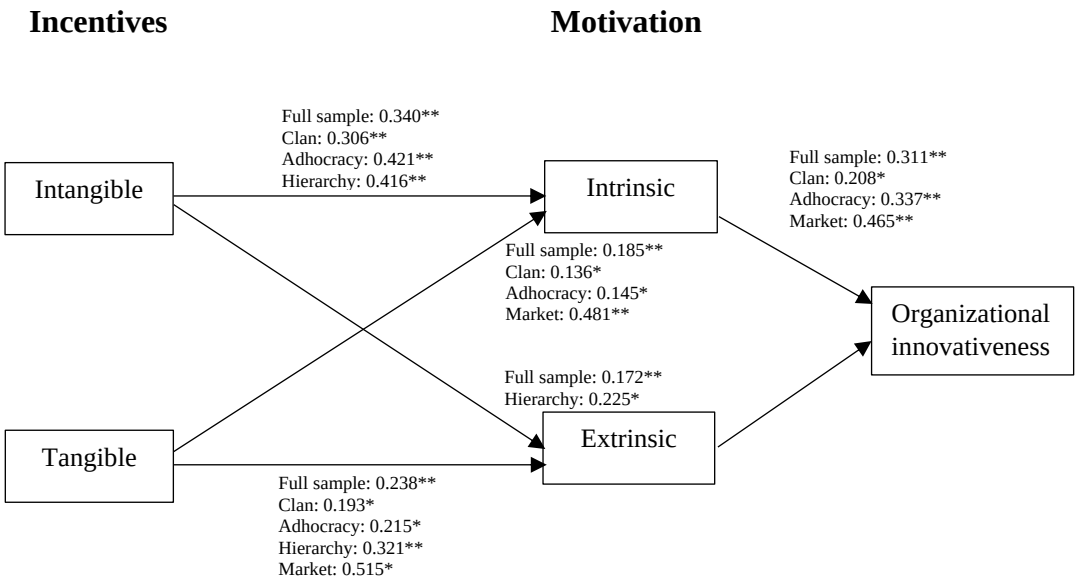

Figure 1 Research model and significant paths (control variables omitted for clarity reasons)

6. Discussion and Conclusions

This study examined the interrelations among intangible and tangible incentives, employee motivation, and organizational innovativeness across various organizational cultures. The empirical survey of 425 respondents from Finnish technology industries provides interesting and novel evidence about how organizational innovativeness is facilitated in different organizational cultures, so making an important contribution to the relevant literature. In particular, the study contributes to the research stream examining managerial practices and employee motivation across various organizational contexts (e.g., Currie et al., 2015; Foss, 2009, 2015; Krausert, 2014). The implications are discussed in detail below.

The results for the full sample show that organizational innovativeness is facilitated mainly through intrinsic motivation, which is in turn augmented by both intangible and tangible incentives. Importantly, the results show that while extrinsic motivation is also increased by both types of incentives, it does not lead to organizational innovativeness. This

clearly suggests that while incentive-motivation linkages are multiplex, intrinsic motivation ultimately mediates organizational innovativeness. Overall, these results support earlier claims that intrinsic motivation is a key driver of creativity (Amabile, 1993, 1996; Amabile et al., 1996; Amabile and Pratt, 2016; Ankli and Palliam, 2012; Behrens and Patzelt, 2018; Cho and Perry, 2011: Ryan and Deci, 2000).

Taking organizational culture into account, the path model reveals more detailed and interesting findings (for a summary, see Table 4). First, *clan* and *adhocracy* cultures support the fully mediated linkage between intangible and tangible incentives, intrinsic motivation, and organizational innovativeness. While clan culture is communicative and features strong relational ties, adhocracy is an innovative and entrepreneurial environment (cf. Cameron and Quinn, 2006). Based on our results, both of these cultures provide a good foundation for the use of both types of incentive to generate intrinsic motivation, leading ultimately to organizational innovativeness. However, this is likely to be achieved by different means; while clan culture may nurture employees who are easily intrinsically motivated by virtue of their embeddedness in the "extended family," adhocracy relies on entrepreneurial risk taking and innovative opportunity search. In both of these contexts, a variety of different types of incentives – both tangible and intangible – are useful in generating intrinsic motivation, ultimately leading to organizational innovation.

On the other hand, *market culture* seems to increase organizational innovativeness mainly by linking tangible incentives and intrinsic motivation. Organizations with market culture are distinctly oriented to the external environment and function primarily through economic market mechanisms such as monetary goals in pursuing competitiveness (Cameron and Quinn, 2006). In such cultures, our results suggest that tangible incentives can be used to facilitate both intrinsic and extrinsic motivation, leading to increased organizational innovativeness (contrary to our initial hypothesis). It was also interesting that only market culture lacked any linkage between intangible incentives and intrinsic motivation. This ineffectiveness of intangible incentives can be seen as partial support for the alleged detrimental effects of market culture to innovativeness (Braunscheidel et al. 2010; Hartnell et al., 2011; LePine, 2005). However, as our results suggest, tangible incentives can play an important complementary role in fostering motivation and innovative behavior in such cultures.

Finally, the *hierarchy* is the only culture that fails to link any form of incentive or motivation to organizational innovativeness. This is perhaps unsurprising in light of the emphasis on control and efficiency (Büschgens et al., 2013; Cameron and Quinn, 2006), but the results suggest that incentives can still increase motivation in such cultures. We found relationships between intangible incentives and intrinsic motivation, and between tangible incentives and extrinsic motivation. Indeed, regardless of these results, it is important to keep in mind that there are no intrinsically good or bad cultures; while hierarchy seems to diminish organizational innovativeness, it may impact positively on other organizational goals.

INSERT TABLE 4 HERE

In sum, it seems that both intangible and tangible incentives play an important role in motivating people at work, especially in terms of the intrinsic motivation that is crucial for creativity and innovativeness (see Table 4 for summary of the results). Our findings broadly support the intrinsic motivational approach to organizational innovativeness and management (cf. Amabile and Pratt, 2016), entailing a holistic view that embraces a broad range of incentives and policies. Our findings also highlight interesting differences among sub-groups, confirming that culture indeed matters. The results regarding innovativeness under different organizational cultures follow quite closely to those supported by the meta-analysis of Büschgens et al. (2013). However, our results provide further understanding of the interplay of employee incentives and motivation that facilitate – in different ways – achieving organizational innovativeness. Altogether, the results of the current study enhance the understanding of how cultural and contextual factors contribute to the effects of employee incentives on behavior (Sung et al., 2017) and the role of cultural and institutional environments in organizational innovativeness (Ahmed, 1998; Martins and Terblanche, 2003; Matzler et al., 2013; Vanhala and Ritala, 2016).

The study has some limitations in relation to research design and sampling. Our perception-based approach to measuring incentives, motivation, and innovativeness is likely to have influenced our results, and future research should collect these data from different sources.

For instance, employees could be surveyed in organizational rather than cross-organizational settings (as here) to determine what incentivizes and motivates them, using supervisor evaluation to assess innovative performance. Future research should also further investigate how incentives lead to motivation and ultimately to innovative behavior; for example, more controlled research designs could be used to address these issues under experimental conditions. Equally, qualitative research could compare firms with differing cultures to further assess the present findings. A further limitation of the present study is our use of CVF to categorize organizational cultures. While this is the most widely used typological approach (Chatman and O´Reilly, 2016), it has attracted some criticism in the literature. For example, it could be asked whether competing values are actually competing, or whether they may be complementary, existing simultaneously for instance in organizations that emphasize time efficiency while also investing in innovativeness (Hartnell et al., 2011; Chatman and O´Reilly, 2016; see also Brettel et al., 2015). Future studies might take account of this issue by clustering or grouping firms with similar configurations in terms of different cultures types. It might also be useful to consider other typologies of organizational culture. In general, however, we believe that the present findings provide a useful foundation for future research on this topic.

Appendix A. Measurement items

Concept	*Item*	*Factor loading*	*CR*	*AVE*
Incentives	*Using the scale below, indicate how often each of the following reward policies is implemented in your company. Answer each item according to the following scale: 1: never, 2: seldom, 3: sometimes, 4: often. In our company…*			
Intangible incentives	…personnel are given personal praises and acknowledgements from their superiors.	.741***	.75	.50
	…personnel are provided different training programs and educational courses to develop their competences	.713***		
	…the management is understanding and flexible regarding work arrangements (e.g. working hours, leave of absence, telecommuting)	.659***		
Tangible incentives	...employees base salary is increased if (s)he carries out her/his job duties well	.743***	.77	.53
	…personnel are offered traditional, predefined pay-for-performance rewards (e.g. sales commission, production commission).	.655***		
	…personnel are rewarded for ingenuity and new ideas (e.g. improvement ideas, innovations).	.780***		
Motivation	*Using the scale below, indicate to what extent each of the following items corresponds to your perceptions as a manager to primary reasons why your personnel are currently engaged with their work duties.* *Answer each item according to the following scale: 1: does not correspond at all, 2: corresponds a little, 3: corresponds moderately, 4: corresponds a lot. The personnel of our firm engage in their work duties primarily because…*			
Intrinsic motivation	…they experience a strong social bond with work community and colleagues.	.665***	.91	.66
	…they derive pleasure from learning new things.	.882***		
	…they enjoy confronting new challenges and solving them.	.875***		
	…they enjoy being successful at difficult work tasks.	.835***		
	…they perceive their work to be meaningful and fun.	.781***		
Extrinsic motivation	…they can earn a lot of money doing this job.	.721***	.78	.65
	…they get good employee benefits.	.880***		

Organizational innovativeness	*Answer the questions according to the following scale: 1: not at all, 2: a little, 3: moderately, 4: a lot.* *During the last 3 years, to what extent your firm has…* …introduced new product and service innovations to the market?	.767***		
	…started using new products or services that are new to the firm?	.788***		
	…brought to use technologies or technical processes that are new to the firm? (e.g. input materials, equipment, work flow mechanisms)	.758***	.86	.54
	…brought to use administrative procedures that are new to the firm?	.712***		
	…brought to use organizational forms/structures that are new to the firm?	.654***		

*** Statistically significant at 0.005 significance level.

Organizational culture		*Please, rate each of the following alternatives (A-D) in descending order on a scale from 1 – 4 depending on the extent to which each description is similar to your own organization. (1 being the most suitable description and 4 the least suitable description of your company. Use each of the values between 1 and 4 once.)*
	Clan	**A Firm as an extended family** The emphasis in this firm is on commitment, loyalty, participation, openness and mutual trust. Personnel development is emphasized and personnel are managed through mentoring and nurturing. Work is often done in teams and people tend to give a lot of themselves to the firm.
	Adhocracy	**B Innovative and entrepreneurial** The emphasis in this firm is on innovativeness, staying on the cutting edge, creating new challenges, and being entrepreneurial. Since the firm strives to be a product leader and innovator, trying new things and prospecting for opportunities are valued. Among personnel, freedom, uniqueness and risk taking is pronounced.
	Market	**C Competitive and results-oriented** The emphasis in this firm is on outpacing the competition, hitting stretch targets, and winning in the marketplace. Personnel management is characterized by hard-driving competitiveness, high demands, results-orientation and focus on achievement.
	Hierarchy	**D Controlled and efficient** The firm is characterized by strong control, and formal rules and policies. By being systematic, the organization strives towards stability, predictability and smooth-running efficiency. Dependable delivery, stable scheduling, and low-cost production are valued. Personnel management emphasizes conformity, efficiency and security of employment.

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Table 1 Discriminant validity

Construct	**1**	2	3	4	5
1. Intangible incentives	**.71**				
2. Tangible incentives	0.34	**.73**			
3. Intrinsic motivation	0.40	0.30	**.81**		
4. Extrinsic motivation	0.25	0.30	0.29	**.80**	
5. Organizational innovativeness	0.34	0.35	0.34	0.09	**.74**

Notes: The square root of AVE associated with the construct is presented diagonally. Correlations between the constructs are presented in the lower left triangle.

Table 2 Correlation matrix

Variable	Mean	SD	1	2	3	4	5	6	7	8
1. R&D intensity	0.28	2.05								
2. Employees	258.92	3037.85	-.14							
3. Age	25.07	20.33	-.042	.404**						
4. Industry	7.11	4.12	.0.27	-.071	-.376**					
5. Intangible incentives	3.30	0.47	-.032	.039	-.093	.247**				
6. Tangible incentives	2.51	0.67	-.032	.128**	.089	.004	.352**			
7. Intrinsic motivation	3.17	0.58	.039	.043	-.147**	.291**	.392**	.221**		
8. Extrinsic motivation	2.34	0.64	.042	.049	-.087	.109*	.243**	.260**	.265**	
9. Org. innovativeness	2.58	0.59	.001	.061	-.041	-.008	.346**	.346**	.325**	.082

Notes: N = 425. **Correlation is significant at the 0.01 level. *Correlation is significant at the 0.05 level.

Table 3 Research model testing

Path	Full sample (N = 425)	Clan (N = 174)	Adhocracy (N = 125)	Hierarchy (N = 75)	Market (N = 49)
Control variables					
R&D intensity→Organizational innovativeness	-.039 (0.179)	-.093 (0.210)	.034 (0.319)	.053 (0.340)	.119 (0.146)
Employees→Organizational innovativeness	.048 (0.253)	.154 (0.037)	.289 (0.004)	.203 (0.089)	-.158 (0.290)
Age→Organizational innovativeness	-.014 (0.412)	-.005 (0.477)	-.292 (0.004)	-.071 (0.339)	.311 (0.091)
Industry (Manufacturing)→Organizational innovativeness	-.012 (0.471)	-.118 (0.500)	-.189 (0.500)	.011 (0.555)	.167 (0.102)
Industry (Information and communication)→Organizational innovativeness	.078 (0.315)	-.057 (0.500)	-.232 (0.500)	.212 (0.102)	.332 (0.322)
Industry (Professional, scientific and technical activities)→Organizational innovativeness	-.222 (0.044)	-.330 (0.500)	-.377 (0.500)	-.281 (0.094)	.006 (0.432)
Dependent variable					
Intangible incentives→Intrinsic motivation	.340 (0.000)	.306 (0.000)	.421 (0.000)	.416 (0.000)	-.005 (0.490)
Intangible incentives→Extrinsic motivation	.172 (0.000)	.133 (0.081)	.179 (0.136)	.225 (0.027)	-.004 (0.494)
Tangible incentives→Intrinsic motivation	.185 (0.000)	.136 (0.037)	.145 (0.023)	.102 (0.157)	.481 (0.002)
Tangible incentives→Extrinsic motivation	.238 (0.000)	.193 (0.011)	.215 (0.027)	.321 (0.001)	.515 (0.022)
Intrinsic motivation→ Organizational innovativeness	.311 (0.000)	.208 (0.013)	.337 (0.000)	.215 (0.146)	.465 (0.001)
Extrinsic motivation→ Organizational innovativeness	-.012 (0.398)	.069 (0.247)	-.048 (0.293)	.119 (0.278)	.090 (0.332)
R^2 for Intrinsic motivation	.192	.139	.233	.204	.229
R^2 for Extrinsic motivation	.114	.072	.100	.189	.263
R^2 for Organizational innovativeness	.181	.151	.283	.281	.335

Notes: P value for statistical significance is reported in parentheses.

Table 4 Results by type of organizational culture

Path	Clan	Adhocracy	Hierarchy	Market
Incentives and motivation				
Intangible incentives→Intrinsic motivation	x	x	x	-
Intangible incentives→Extrinsic motivation	-	-	x	-
Tangible incentives→Intrinsic motivation	x	x	-	x
Tangible incentives→Extrinsic motivation	x	x	x	x
Motivation and organizational innovativeness				
Intrinsic motivation→ Organizational innovativeness	x	x	-	x
Extrinsic motivation→ Organizational innovativeness	-	-	-	-