

# Effects of initiative-friendly culture, individual creativity, and knowledge sharing on innovation: Mediating and moderating approaches

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## Abstract

**Purpose:** Management scholars and practitioners regard innovation as key to long-term firm success, suggesting the need to understand the best methods for enhancing innovation in the workplace. The current study investigates how an initiative-friendly culture, individual creativity, and knowledge sharing contribute to innovation.

**Design/methodology/approach:** A quantitative study was conducted among 125 employees working in different organizations, most of them in France.

**Findings:** The results indicate that creativity has a positive effect on innovation, but neither an initiative-friendly culture nor knowledge sharing have direct impacts on it. Their impacts on innovation instead are indirect, through creativity. Furthermore, business ethics and organizational size strengthen the association between creativity and innovation.

**Originality/value:** The findings thus provide new insights into how innovation can be enhanced in the workplace, along with relevant implications for research and practice.

**Keywords:** Individual creativity, knowledge sharing, initiative-friendly culture, innovation, business ethics, organizational size

## Introduction

In turbulent, dynamic business environments, companies must innovate constantly (Gumusluoglu and Ilsev, 2009; Tellis et al., 2009). Organizational innovation is “the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations” (OECD, 2005, p.46), it drives long-term organizational success and competitive advantages (Weerawardena, 2003), by improving product and service quality, attracting new customers, facilitating entry to new markets, and enhancing the firm's marketplace position.

The survival and prosperity of firms thus depend on their ability to innovate constantly (Herrmann and Felfe, 2014; Thornhill, 2006). Innovative firms even may be more efficient, more competitive, and faster in their growth than non-innovative ones (Mansuryand Love, 2008). Most previous research thus supports a positive relationship between innovation and organizational performance (e.g., Garcia-Morales et al, 2011; Han, Kim, and Srivastava, 1998; Song and Swink, 2009), leading Hogan and Coote (2014, p.1613) to assert that “firms that engage in various innovative behaviors, such as the development of new products, services, and solutions, can realize positive performance outcomes.”

In turn, researchers attempt to uncover the factors that support and enhance innovation in the workplace (Crossan and Apaydin, 2010). Innovation literature generally can be grouped into three streams that reflect the level they consider: individual, group, or organizational. At the individual level, the factors that affect a company’s ability to innovate include motivation, personality, experience, knowledge, skills, and behavior. As Van de Ven (1986) argues, for firms to innovate, they need competent people who have the ability to cooperate and integrate their skills and competences. For this stream, we contribute by examining the nature of the relationship between individual creative ability and innovation, moving beyond just the relationship between creativity and innovation, by introducing a moderation approach. That is, the transformation of new ideas into concrete goods and services is a fundamental challenge for innovation management (Van de Ven, 1986). Among studies that consider different determinants of creativity and innovation, few investigations examine the factors that affect the conversion of creative ideas into new products (Baer, 2012).

At the group level, teamwork, knowledge sharing, trust, and coworkers’ support all drive innovative behavior. We delve deeper into the role of knowledge sharing, which is particularly influential in modern competitive environments (Swart et al., 2014). Most research addresses the effects of expertise or skills on individual creativity and innovation; only limited studies have investigated the role of knowledge sharing (e.g., Vincent et al., 2002; Carmeli and colleagues, 2013). Examining how knowledge sharing influences innovation thus provides useful implications for both theory and practice.

Finally, at the organizational level, innovation relates to attributes such as financial support, human resource practices, organization size, leadership, and organizational culture (Damanpour, 1991; Mumford, 2000; Ahuja et al., 2008). Organizational contexts and practices might motivate and encourage members to develop innovation capacities (Zhou and George, 2001). Theories of organizational behavior confirm that organizational attributes determine organizational actions and behaviors (Adler and Borys, 1996). Although the effect of organizational support on innovation is well supported, previous research has paid less attention to how culture affects innovation. Accordingly, various studies highlight the need for empirical

research into organizational culture and innovation (Nakata and DiBenedetto, 2012; Tellis, Prabhu, and Chandy, 2009) and whether the effects are direct or indirect.

Thus, previous studies have generally established that organizational, individual, and group attributes matter for organizational innovation, but how the combination across levels affects innovation remains unclear. This study aims to fill this gap and thus contribute to extant literature. That is, substantial research investigates how organizations enhance innovations, but much remains to be learned. First, we provide a clearer understanding of ways to enhance innovation, in relation to the combination of individual characteristics, group dynamics, and organizational factors, as manifested in knowledge sharing, creativity, and culture. Second, for the positive link between creativity and innovation, we identify various moderating constructs, including ethical culture and organization size. Thus, in addition to testing the direct link between creativity and innovation, we consider whether the strength of this relationship might vary with these firm-specific factors. With this approach, we can address a key research question, namely, *in which organizational contexts is individual creativity more valuable to innovation?* Third, we demonstrate how an initiative-friendly culture and knowledge sharing affect innovation. In this regard, we address another pertinent question: *Do organizational culture and knowledge sharing exert direct or indirect effects on innovation?* We propose that individual creativity is a mediator in the relationships of initiative-friendly culture and knowledge sharing with innovation.

Our theoretical model (Fig. 1) illustrates the predicted influence of the three constructs—initiative-friendly culture, creativity, and knowledge sharing—on innovation. It also features the two proposed moderating constructs, ethics and organization size, in an attempt to explain the link between creativity and innovation.

### **Literature and Hypotheses**

Innovation scholars (e.g., Fagerberg and Verspagen, 2009; Sappasert and Clausen, 2012) emphasize the importance of innovation for organizational success and sustainable competitive advantages. Innovation can be defined as any “new product or service, production process technology, structure, administrative system, plan or program pertaining to organizational members” (Damanpour, 1991: 556). Orlikowski (1991) describes innovation as either incremental or radical. Incremental innovation implies improving existing products, services, processes, practices, and technologies or adding new features. Radical innovation instead entails inventing or creating new products, services, or technologies. Avermaete et al. (2003) instead classify four types of innovation. First, product innovation implies a firm’s capacity to make or adapt new products. Second, process innovation involves the adaptation of a new infrastructure or the implementation of new technology. These two forms are also known as technological innovation, such that a firm adopts new technology in these cases.

Third, organizational innovation, also known as administrative innovation, alters some basic firm activities, such as human resources, marketing, finance, procurement, sales, or operations (Damanpour et al. 2009). Fourth, market innovation refers to the “exploitation of territorial areas” or “penetration of market segments” (Avermaete et al. 2003, p.10). From these definitions, we recognize that the foundation of innovation is ideas; people create, propose, modify, and implement those ideas (Van de Ven 1986). The present research focuses on product innovation and process innovation.

### *Initiative-Friendly Culture, Creativity, and Innovation*

One of the variables closely associated with creativity and innovation is organizational culture (Büschgens, Bausch, and Balkin, 2013; Lin, Donough, Lin, and Lin, 2013). An organization’s culture is a set of beliefs and values shared by individuals within the same organization, which affect their behaviors (Den Hartog and Belschak, 2007). According to Simpson et al. (2006), a firm that hopes to innovate continuously must set an appropriate culture that evokes shared beliefs, values, and understanding among employees. Managers can build an organizational culture to influence employee behavior (Mumford et al., 2002; Tellis et al., 2009); as Mumford (2000) proposes, establishing an appropriate context for supporting creativity and innovation enables a firm to generate, exploit, renew, and implement new and valuable ideas to improve its performance. Hogan and Coote (2014) also refer to organizational culture as a powerful tool that firms can use to reach their desired organizational outcomes.

Some scholars even argue that a supportive culture is the most important driver of creativity and innovation (Herrmann and Felfe, 2014). An innovative culture also can support the generation and implementation of creative ideas and initiatives (Skerlavaj et al., 2010). Furthermore, autonomy is an important feature of an organizational culture that is conducive to creativity and innovation. An initiative-friendly culture consists of dimensions such as risk taking, high autonomy, tolerance of mistakes, and low bureaucracy (Miron et al., 2004). Accordingly, we derive an initiative-friendly culture construct by measuring four items: welcoming and supporting initiative taking, rewarding employees for taking initiative, not blaming employees for their mistakes, and risk taking.

Empirical evidence supports these effects of organizational culture on employees' behaviors (Gregory et al., 2009). An innovative organizational culture encourages employees to think creatively (Shattow, 1996) and search for new ways to address problems and issues (Miron et al., 2004). Risk taking is critical to creativity and innovation too (Claver, Llopis, Garcia, and Molina, 1998). A learning-oriented business culture encourages employees to develop their thinking ability and produce creative outcomes (Weisberg, 1999; Gong et al., 2009). Employee empowerment also appears essential to fostering innovative behavior among employees.

As Yukl (2006) points out, employee empowerment has two main attributes: (1) employees have reasonable autonomy in performing their work, and (2) employees have the freedom and right to make mistakes and fail. Such attributes clearly can liberate employees' creative potential.

Although various studies examine how a creativity-oriented culture influences firm innovativeness (Amabile et al., 1996, Cummings and Oldham, 1996), we need further studies to uncover the actual characteristics of the organizational culture that promote creativity and innovation (Hogan and Coote, 2014). According to Gregory et al. (2009, p. 683), "That organizational culture influences firm effectiveness is an assumption implicitly held by many managers and management researchers, although few empirical studies have provided detailed insight into the relationship." We aim to provide new insights along these lines. That is, noting existing evidence of a positive link between certain types of organizational cultures and innovation (Büschgens et al., 2013; Lin et al., 2013; Miron et al., 2004), we posit that a culture must be conducive to individual learning, new idea generation, and risk taking if it is to encourage innovation.

**Hypothesis 1.** An initiative-friendly culture relates positively to individual creativity.

**Hypothesis 2.** An initiative-friendly culture relates positively to innovation.

### ***Influence of Individual Creativity on Innovation***

Creativity and innovation are generally seen as distinct constructs (Shalley et al., 2004). Creativity refers to the production of new and useful ideas and is mostly examined at the individual level; innovation involves the implementation of those ideas and is mostly examined at the team or organizational level (Jiang et al., 2012). Individual creativity is often the first step in the innovation process (Zhou and George, 2001). According to Jiang et al. (2012), creativity is at the heart of innovation. An innovative firm thus needs creative employees who possess the courage to produce and implement new ideas that result in new products (Amabile et al., 1996; Coelho et al., 2011; Sarooghi et al., 2015). According to Zhou (2003), employee creativity contributes fundamentally to organizational innovation, effectiveness, and survival. Many firms thus seek to support individual creativity because they believe that creativity is a key source of innovation (Zhang and Bartol, 2010). Although the link between creativity and innovation generally appears positive (Hirst et al., 2009), Shalley and colleagues (2004) call for further examinations to understand the intricacies of this relationship. Accordingly, we test the relationship in a different context to provide new insights into the dynamics of innovation, according to the fundamental hypothesis that Hypothesis 3. Individual creativity relates positively to innovation.

### *Ethics as a Moderator*

The exercise of creativity by employees is a risky endeavor. Creative people, because they think and operate outside routine and proven standards, risk making mistakes and errors. If a work environment is deeply ethical and guided by strong ethical principles, employees may feel more at ease in turning their creative ideas into actual innovations. However, the wealth of firms that have exhibited unethical and questionable business practices suggests the need for further empirical research on this topic (Riivari and Lämsä, 2014). According to Crane and Matten (2007), in changing business environments, firms face various important challenges that demand strong guiding principles and norms. Ruiz-Palomino and colleagues (2013) show that ethical companies can create atmospheres in which employees feel a sense of psychological safety and experience positive moods, which enables them to derive new ways to perform their work. An ethical culture seemingly might influence positive organizational behaviors, including innovativeness (Kaptein, 2011; Huhtala et al., 2012; Riivari et al., 2012). This research therefore examines the role of ethics for strengthening the link between creativity and innovation, with the following prediction: Hypothesis 4. Ethics moderates the relationship between individual creativity and innovation.

### *Organization Size as a Moderator*

Organization size influences the creativity–innovation relationship in an organization (Damanpour, 1996); innovation is associated with organization size (Ahuja et al., 2008). However, previous research provides some contradictory results regarding the effect of organization size on the creativity–innovation relationship. While such that some researchers suggest a more positive link between creativity and innovation in small and medium-sized firms, but others posit a negative connection. We predict that the creativity–innovation link is stronger in large firms than in small and medium-sized firms, in line with findings that show that large firms have the (financial, human, technological) resources to perform activities associated with the production and execution of new and creative ideas (e.g., Raisch and Birkinshaw, 2008; Azadegan et al., 2013). Thus, we predict:

**Hypothesis 5.** The relationship between individual creativity and innovation is stronger in large firms than in small and medium-sized firms.

### *Knowledge Sharing, Creativity, and Innovation*

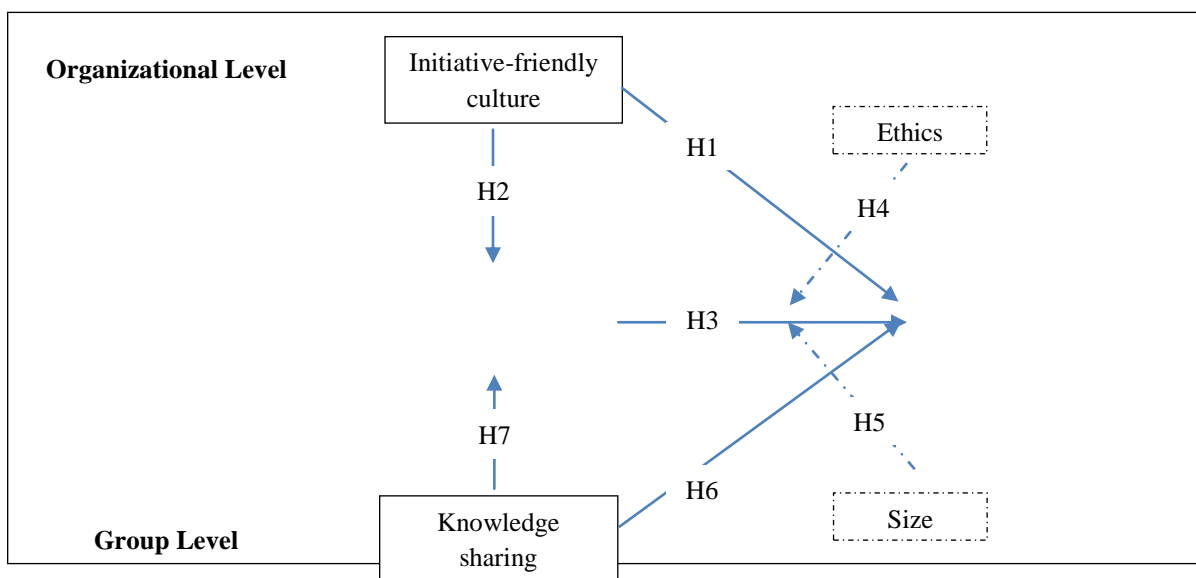
Knowledge sharing refers to the provision of task information and know-how to help or collaborate with others to solve problems, develop new ideas, or implement policies or procedures (Cummings, 2004). Knowledge sharing grants firms competitive advantages (Swart, Kinnie, Rossenberg, and Yalahik, 2014).

According to core competence theory (Prahalad and Hamel, 1990), to build a sustainable competitive advantage, an organization must develop a culture in which knowledge is easily shared among employees. Knowledge sharing also is central to creativity and innovation (Collins and Smith, 2006); an important factor in the promotion of individual creativity is knowledge (Vincent et al., 2002). Not only does knowledge sharing contribute to creativity (Armbrecht et al. 2001), but it also enhances product innovation (Cohen and Levinthal 1990) and competitive product success (Boland and Tenkasi 1995).

An organizational atmosphere that emphasizes communication and knowledge sharing is therefore critical for generating new product ideas (Troy et al., 2001). In particular, sharing and receiving ideas and knowledge with and from colleagues enhance employees’ innovative abilities (Paulus and Brown, 2007; Carmeli et al., 2013). Park et al. (2014) affirm the positive relationship between knowledge creation practices and creativity, and Nonaka (1994) shows that innovation also is enhanced when members share their knowledge with one another. Accordingly, organizations must develop mechanisms for creating and sharing knowledge (Madjar 2005). For Jiménez-Jiménez and Sanz-Valle (201), creativity is especially enhanced in environments in which employees are willing to share knowledge, because in such settings, creative and innovative ideas can be generated and successfully executed (Hansen, 2002). Other researchers highlight how knowledge-sharing practices contribute to creativity (Armbrecht et al. 2001), product innovation (Cohen and Levinthal 1990), and competitive product success (Boland and Tenkasi 1995). Therefore, we posit: **Hypothesis 6.** Knowledge sharing relates positively to individual creativity. **Hypothesis 7.** Knowledge sharing relates positively to innovation.

Fig. 1 depicts the hypothesized relationships.

Fig. 1: Research model





## Methodology

### *Sample and Procedures*

The present study includes a sample of 125 employees working in different organizations. To reach the prospective participants, we uploaded a survey questionnaire to [www.surveymonkey.com](http://www.surveymonkey.com), a website specializing in online data collections.

We recruited prospective participants from a single source, namely, the alumni list of a French business school. The alumni department sent emails with the research survey link to these working professionals, inviting them to take part, voluntarily and anonymously. The email described the scope and objectives of the research, informed recipients that they could skip any questions they did not feel comfortable answering, and explained the voluntary nature of the survey. In total, emails were sent to approximately 2000 alumni, but we received around 230 undeliverable system responses, whether because the message timed out, was rejected by a server, went to an unknown address, or targeted a recipient on some form of long-term leave. We collected 125 complete responses from alumni, for a response rate of 7.06 percent. Table 1 presents the sample characteristics in detail.

**Table 1.** Sample characteristics

	<b>Characteristics</b>	<b>%</b>
Function	Top executives	16.4
	Middle managers	38.5
	Supervisors	6.6
	Non-managerial employees	38.5
Gender	Male	54.3
	Female	45.7
Organizational size	Small- and medium-sized organizations (less than 500 employees)	55.2
	Large-sized organizations (more than 500 employees)	44.8
Work country	France	76.8
	Various countries	23.2

### *Measures*

We used a multi-item, five-point Likert scale anchored at 1 = “strongly disagree” and 5 = “strongly agree” to measure the variables. Some scales were newly developed for this study; others were adopted from existing literature. The Appendix details all the scales used in this study.

### **Data analysis and results**

The data analysis used a two-stage method. First, we checked the reliability and the validity of the research constructs. Second, we examined the structural relationships using structural equation modeling (SEM) techniques (AMOS 20.0).



### *Reliability and Validity of the Research Constructs*

We examined the internal reliability of the variables (i.e., items of a scale measure the same latent construct) using two indexes: Cronbach's alpha ( $\alpha$ ) and composite reliability (CR). The Appendix presents the values for each construct. All the indexes exceed the recommended minimum threshold of 0.70 (Nunnally, 1978), such that the Cronbach's alpha coefficients vary from 0.799 to 0.904, and the CR coefficients vary from 0.873 to 0.933. Accordingly, the constructs in our research are sufficiently reliable.

We also assessed the data using principle components analyses with Varimax rotation. We extracted four factors with eigen values greater than 1.0. Together the constructs explain 72.14 percent of the total variance. As the Appendix reveals, all the items loaded exclusively on the factor (construct) that they were theoretically supposed to measure. Accordingly, we find support for unidimensionality (i.e., degree to which items load only on their respective constructs).

We also checked two types of validity: convergent and discriminant. *Convergent validity* is the degree to which the items of a given construct measure the same underlying latent factor. We evaluated it using two indexes. First, standardized path loadings—which indicate the degree of association between the underlying latent factor and each item—should be greater than 0.7 and statistically significant. As the Appendix reveals, the path loadings were greater than 0.70, except for INF-CUL4 (0.597). They also were statistically significant (greater than 1.96). We retained the INF-CUL4 path, because the association between this item and its respective construct was statistically significant. Second, the average variance extracted (AVE) should exceed 0.50. As indicated in the Appendix, all the AVE values were higher than 0.5, in support of convergent validity.

*Discriminant validity* indicates that a measurement is distinct and empirically different from other measures. Following Fornell and Larcker's (1981) approach, discriminant validity is met when the AVE is greater than the square of the inter-construct correlations. As we show in Table 2, all AVEs are greater than these squares, so the condition for discriminant validity is met.

**Table 2.** Discriminant validity

N	Constructs	1	2	3	4
1	Knowledge sharing	<b>0.760</b>			
2	Initiative-friendly culture	.069	<b>0.639</b>		
3	Individual creativity	.103	.242	<b>0.777</b>	
4	Innovation	.003	.139	.197	<b>0.641</b>

\* The bolded values on the diagonal represent the AVEs; the other values are the squares of the inter-construct correlations.

### *Hypotheses tests*

We used several indices and standards to assess model fit: the ratio of the chi-square to the degrees of freedom ( $\chi^2/df$ ), which should be less than 3.0; a comparative fit index (CFI) greater than 0.90; normed fit index (NFI) less than 0.90; and goodness-of-fit index (GFI) and root mean square of approximation (RMSEA) less than 0.08 for a good fit and less than 0.05 for an excellent fit (Gefenet al., 2000; Hair et al., 2006).

As noted previously, we tested the relationships in the research model (Fig. 1) using SEM techniques in AMOS. Model 1 involves the direct impact of knowledge sharing, creativity, and initiative-friendly culture on innovation. The model estimation produced the following statistical indexes:  $\chi^2/df = 1.456$ , CFI = 0.962, NFI = 0.891, GFI = 0.889, and RMSEA = 0.061. Therefore, the model is consistent with the data. The structural relationship results are in Table 3.

**Table 3.** Estimation of the structural equation model (Model 1)

Path specified	Path Coefficient $\beta$	T-Value	p-Value	Comment
Initiative-friendly culture – Innovation (H1)	0.209	1.674	0.094	Rejected
Initiative-friendly culture – Creativity (H2)	0.575	5.477	0.000	Accepted
Creativity – Innovation (H3)	0.382	2.810	0.005	Accepted
Knowledge sharing – Innovation (H6)	-0.135	-1.361	0.173	Rejected
Knowledge sharing – Creativity (H7)	0.212	2.417	0.016	Accepted

**Note:** The relationship is significant if the T-value is greater than 1.96.

Contrary to H1, an initiative-friendly culture does not have a significant impact on innovation ( $\beta = 0.209$ ,  $t = 1.674$ ,  $p = 0.094$ ). Therefore, H1 is rejected. As shown in Table 3, we find a significant and positive impact of initiative-friendly culture on creativity though ( $\beta = 0.575$ ,  $T = 5.477$ ,  $p = 0.000$ ), thus confirming H2. Furthermore, individual creativity has a significant and positive effect on innovation ( $\beta = 0.382$ ,  $t = 2.810$ ,  $p = 0.005$ ), in support of H3. Because knowledge sharing does not have any significant impact on innovation ( $\beta = -0.135$ ,  $t = -1.361$ ,  $p = 0.173$ ), we must reject H6. In contrast, H7, suggesting a significant and positive impact of knowledge sharing on creativity, is supported ( $\beta = 0.212$ ,  $t = 2.417$ ,  $p = 0.016$ ).

The second model, the multi-group moderation Model 2, enables us to examine the moderating impact of ethics on the relationship between individual creativity and innovation. We first dichotomized the sample using the median (3.75) value of the business ethics construct, to produce two groups: (1) low business ethics (66 responses) and (2) high business ethics (59 responses). The model estimation produced the following statistical indexes:  $\chi^2/df = 1.173$ , CFI = 0.970, NFI = 0.832, GFI = 0.847, and RMSEA = 0.037, indicating good fit with the data. In turn, the results show that creativity is positively and significantly related to innovation when ethics is

high ( $\beta = 0.451$ ,  $T = 2.698$ ,  $p = 0.007$ ), but the relationship becomes insignificant when ethics is low ( $\beta = 0.206$ ,  $T = 1.034$ ,  $p = 0.301$ ), in support of H4.

Model 3 is also a multi-group moderation model; with it, we investigate the moderating impact of organization size on the relationship between creativity and innovation. The adopted scale distinguishes two groups: The smaller organization group has less than 500 employees and is comprised of 58 responses, whereas the larger organization group, with more than 500 employees, accounts for 67 responses. The model estimation produced statistical indexes that indicate good fit with the data:  $\chi^2/df = 1.273$ ,  $CFI = 0.955$ ,  $NFI = 0.825$ ,  $GFI = 0.828$ , and  $RMSEA = 0.047$ , which suggest that the model is consistent with the data. According to the multi-group analysis, creativity has a positive and significant impact on innovation in small- and medium-sized organizations ( $\beta = 0.618$ ,  $T = 3.223$ ,  $p = 0.001$ ), but in large organizations, the impact becomes insignificant ( $\beta = 0.184$ ,  $T = 0.914$ ,  $p = 0.361$ ). Accordingly, we must reject H5.

We summarize the results for Models 2 and 3 in Table 4, which indicate that both business ethics and organization size have moderating roles in the relationship between creativity and innovation.

**Table 4.** Multi-group moderation analysis (Model 2 and Model 3)

Model	Path Specified		Coefficient ( $\beta$ )	t-Value	p-Value
Model 2 Moderating effect of business ethics	Low	Creativity→Innovation (H4)	0.206	1.034	0.301
	High		0.451	2.698	0.007
Model 3 Moderating effect of organization size	Small and medium-sized	Creativity→Innovation (H5)	0.618	3.223	0.001
	Large		0.184	0.914	0.361

### Discussion and Implications

Modern business environments are characterized by fast, dynamic changes, leading both researchers and practitioners to identify innovation as a critical factor contributing to the survival and growth of organizations. Several studies seek to uncover the main determinants of innovation and the processes by which it might be supported and enhanced in the workplace (Crossan and Apaydin, 2010; Naranjo-Valencia et al., 2016). Despite this long-standing interest in examining these processes and supportive factors, we know of no research that has empirically tested how factors at three different levels—individual, group, and organizational—together affect innovation. With the current research, we elaborate on and test a model of the joint effects

of individual, group, and organizational factors on innovation, then test this theoretical model among a sample of 125 organizations.

The results reveal several interesting findings that contribute to both theory and practice. First, in line with prior findings (Zhang and Bartol, 2010, Hirst et al., 2009), we show that creativity has a positive impact on innovation. We expected direct, positive impacts of all three levels of creativity on innovation, but instead, the findings revealed that only individual creativity (individual level) has this direct effect. Neither culture nor knowledge sharing has direct impacts on innovation; instead, they both enhance innovation through the mediation of creativity. These findings confirm the important role of individual creativity for enhancing innovation within organizations (Sarooghi et al., 2015; Yoshida et al., 2014; Liu et al., 2012). We thus contribute a deeper understanding of how initiative-friendly culture, knowledge sharing, and creativity relate to innovation, alone and in combination. Furthermore, this study confirms the importance of a mediating approach for examining causal relationships. Introducing creativity as a mediating variable helps explain the nature of the effects of initiative-friendly culture and knowledge sharing on innovation. Our research findings accordingly indicate that managers should prioritize individual creativity if they hope to establish an innovative firm. As noted by George and Zhou (2007), creativity is the means by which employees create value for their organization. Thus, leaders should continually seek ways to encourage and support their employees' efforts to develop more creative skills and competencies.

Second, an initiative-friendly culture and knowledge sharing are antecedents of individual creativity. This finding represents a response to calls for more research into the different factors that enhance or constrain employee creativity (e.g., Zhou and Shalley, 2003). The results of our study confirm that these two constructs relate directly to creativity, and then indirectly to innovation. Efforts by managers to enhance employee creativity could involve creating a culture that allows members to propose initiatives, take risks, and exercise more freedom and autonomy. Farmer and colleagues (2003) find that when a firm creates a culture that supports creativity and innovation, employees adapt their behaviors to the new norms and codes, and as a result, they become more creative and innovative. Moreover, employees should be encouraged and supported to not only produce knowledge but also share that knowledge with colleagues. In line with Gibbert and Krause's (2002) suggestion that knowledge sharing cannot be forced, but rather must be encouraged, we recommend that managers find ways to encourage individual members to produce, share, and use new knowledge.

Third, the relationship between creativity and innovation is highly contextual (Sarooghi et al., 2015), and accordingly, our research explains the link between creativity and innovation by applying a moderating approach. We introduce two moderating variables, ethics and size, both of which moderate the creativity–innovation relationship. Our study thus enriches prior literature by demonstrating the importance of a moderating approach for explaining and understanding this relationship. We show that creativity does not systematically transform into

innovation; other factors are at play. Therefore, researchers should adopt a moderating approach when examining the impact of creativity on innovation.

We also expand theoretical knowledge about the importance of ethics for transforming creative, new ideas into innovations. That is, some studies note the influence of ethics on creativity or on innovation separately, but limited research acknowledges the three-way interaction among creativity, ethics, and innovation. We empirically examine this interaction and thereby determine that managers need to devote more attention to ethics as a facilitator of the conversion of new ideas into innovative products and services. Developing an ethical culture is a strong determinant of organizational creativity and innovation (e.g., Choi et al., 2013; Kaptein, 2011; Weeks and colleagues, 2004).

Finally, in smaller firms, creativity has a more significant effect on innovation; creative ideas are more likely to be converted into innovative outputs in small and medium-sized organizations than in large firms. These findings are in line with arguments that smaller companies are more creative and innovative than larger ones. We predicted that larger firms would be better able to convert creative ideas into innovations, because of their considerable resources and capabilities, but the findings reveal the opposite. Perhaps in large organizations, managers are more distant from frontline employees, so they devote less attention and support to those employees (Child and Mansfield, 1972). In smaller organizations, with their fewer employees and hierarchical layers, managers instead can provide more time and attention to each employee, which leads to fuller consideration and a higher likelihood of the implementation of new ideas and initiatives generated by employees (Hambrick, Finkelstein, and Mooney, 2005). Our findings also indicate that leaders should work to provide continuous support to creative individuals through feedback, dialogue, and full consideration of their ideas.

### **Limitations and Directions for Future Research**

Our findings provide insights into the nature of the relationship between creativity and innovation, but our study also has limitations that suggest opportunities for future research. First, the low response rate of 7.08 percent may raise concerns about nonresponse bias. Studies with higher response rates would strengthen our findings. Second, we relied on a quantitative study, so complementing our findings with qualitative research might offer a richer understanding of how innovation can be improved in the workplace. Third, considering the importance of a moderating approach for explaining the nature of the relationship between creativity and innovation, we recommend the inclusion of other moderating variables in further research, to develop a deeper understanding of this relationship. Fourth, our findings show that creativity is a mediating variable among culture, knowledge sharing, and innovation. It would be interesting to use a mediating approach to explain the relationship between creativity and innovation too.

In other words, examining if any variables mediate this relationship would offer new insights. Further research should consider this approach to enhance our understanding of how creativity influences innovation.

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**Appendix: Scales used in this study**

<b>A.1. Knowledge sharing (KNO-SHA) (Ho and Ganesan, 2013)</b>	<b>Factor Loading</b>
$\alpha = 0.869$ ; $CR = 0.904$ ; $AVE = 0.760$	
<b>KNO-SHA1.</b> My co-workers and I share a significant amount of knowledge and skills.	.879
<b>KNO-SHA2.</b> My co-workers and I share advanced knowledge and skills.	.903
<b>KNO-SHA3.</b> My co-workers and I share knowledge and skills of significant value.	.833
<b>A.2. Initiative-friendly culture (INF-CUL) (developed for this study)</b>	
$\alpha = 0.799$ ; $CR = 0.873$ ; $AVE = 0.639$	
<b>INF-CUL1.</b> Taking initiatives is welcome in my organization.	.858
<b>INF-CUL2.</b> My organization does all it can to support new initiatives.	.767
<b>INF-CUL3.</b> Taking initiative is rewarded in my organization.	.762
<b>INF-CUL4.</b> My organization wouldn't blame me for non-intentional mistakes.	.597
<b>A.3. Creativity (CREAT) (Zhang and Bartol, 2010)</b>	
$\alpha = 0.904$ ; $CR = 0.933$ ; $AVE = 0.777$	
<b>CREAT1.</b> I suggest new ways of performing work tasks.	.824
<b>CREAT2.</b> I come up with new and practical ideas to improve performance.	.839
<b>CREAT3.</b> I exhibit creativity on my job.	.798
<b>CREAT4.</b> I often have a fresh approach to work-related problems.	.833
<b>A.4. Innovation (INNOV) (first two items adapted from Camison and Villar-López, 2014; last two from Bolivar-Ramos et al., 2012)</b>	
$\alpha = 0.812$ ; $CR = 0.877$ ; $AVE = 0.641$	
<b>INNOV1.</b> My organization improved its product designs or service offerings.	.712
<b>INNOV2.</b> My organization reduced the time to develop new products/services.	.821
<b>INNOV3.</b> My organization increased the rate of introduction of new products/services to the market.	.812
<b>INNOV4.</b> My organization increased the percentage of revenue generated from new products/services.	.729