Mindfulness and Creative Process Engagement: The Mediating Role of Workplace Relational Systems

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Abstract

Purpose

Despite widespread recognition of the importance of mindfulness in organizational science literature, little is known about how mindfulness motivates individuals to configure information processing and team member exchange relationships to increase creative process engagement. Drawing on motivated information processing theory, this study conceptualizes and empirically examines whether and how mindfulness motivates individuals toward creative process engagement.

Design/Methodology/Approach

We collected data through an online survey from 311 respondents working in the Research and Development (R&D) departments of organizations in multiple industries in Pakistan. For analytical purposes, we have applied the structural equation modelling technique.

Findings

This study advances a different view of individual mindfulness on the creative process engagement in the following ways. First, mindfulness enables individuals to self-regulate in specific situations and become effective in fostering creative process engagement. Second, our study extends research on relational information processing by linking it to mindfulness and creative process engagement. Relational information processing partially mediates the relationship between mindfulness and creative process engagement. Third, our study highlights that mindfulness motivates individuals to focus more on developing quality working relationships, but they seem less willing to participate in idea generation and problem-solving solutions.

Originality

Our findings provide implications for research on mindfulness, creativity, and motivated information processing to enhance individuals' creative process engagements. We also discuss the implications for executives on the relational and creative benefits of mindfulness.

Keywords: Mindfulness, team member exchange, relational information processing, motivated information processing, creative process engagement

Introduction

Considerable evidence in the organizational science literature indicates that enhanced workforce creativity contributes to problem-solving, innovation, and organizational effectiveness (Anderson *et al*., 2014; Jeong *et al*., 2023). However, consistently achieving a higher creative performance is only possible if individual employees are motivated to engage in creativity-specific processes, termed as creative process engagement (CPE) (Jeong *et al*., 2023; Richard *et al*., 2019). Given that CPE is inherently characterized by uncertain and information-rich contexts, mindfulness can be an important predictor of CPE (cf. Chen *et al*., 2022). This assertion is grounded in the premise that mindful individuals—those with high levels of mindfulness—process information in meaningful ways (Fiol and O'Connor, 2003; Li *et al*., 2021), self-regulate their emotions and stressors (Hülsheger *et al*., 2021), stay focused and persistent in demanding contexts (Chen *et al*., 2022) and identify novel ways of doing their jobs *(*Leroy *et al*., 2013). Such individuals exhibit a higher CPE, demonstrated through a detached and focused engagement in creative problem identification, information search and processing, and idea generation and evaluation (Obal *et al*., 2016; Amabile and Pratt, 2016; Zhang and Bartol, 2010).

Although extant research offers preliminary indications that mindfulness is a valuable resource that can offer creative benefits at the individual level, exactly how it happens is still mysterious (van Knippenberg and Hirst, 2020). Despite robust evidence related to psychological outcomes of mindfulness, such as improvement in emotional regulation and metacognitive awareness (Reina *et al*., 2022), a deeper understanding is warranted on whether and how mindfulness motivates CPE at the individual level (Carmeli *et al.,* 2015; Shahbaz and Parker, 2021). This lack of research is of great concern because mindful individuals integrate and process motivational cues —such as attention, goal activation, and evaluation— towards CPEs (Reina *et al*., 2022). Moreover, many organizations (e.g., Google, LinkedIn, Ford) invest

significant resources into mindfulness-related practices and trainings to develop self-awareness and attention among their employees, with the aim of motivating them for enhanced CPEs (Liu *et al*., 2022).

To address this important shortcoming in the literature, we integrate theoretical logic of motivated information processing (MIP) (De Dreu et al., 2006) with mindfulness lens (Brown and Ryan, 2003). In doing so, we build on (Song et al. 2018) who integrate MIP and social mindfulness framework to empirically examine customer mistreatment experiences. MIP theory fundamentally asserts that individuals' motivations influence their behaviors related to information processing. On the other hand, mindfulness relates to a higher level of attentiveness to and awareness of what happens in the present (Brown and Ryan, 2003). Several studies suggest possible links between mindfulness and motivation by pointing out that mindfulness can motivate individual behaviors (cf.., Roche and Haar, 2013; Kroon *et al*., 2017; Song *et al*., 2018).

Extending these theoretical arguments to the CPE in team's context, we posit that mindfulness drives individuals' motivations to search and process creativity relevant information cues in a concentrated, detached, creative, and persistent manner (cf. Lebel and Patil, 2018). Moreover, it epistemically and socially motivate individuals to engage in CPE (De Dreu *et al*., 2006, 2008). Since individuals work in the social contexts of innovative teams, epistemic and social motivational mechanisms can be well represented through constructs of relational information processing (RIP) and team member exchange (TMX) (Reina *et al*. 2022). RIP resonates with epistemic motivation and suggests that individuals reflect upon their goals and actions in conversations with social actors, resulting in a deeper understanding of their social environments (Di Stefano *et al*., 2014). While TMX embodies the social motivational mechanism as it fundamentally emphasizes on the quality of relationships. High quality TMX are characterized by trust, reciprocity, and willingness to support, providing psychological

safety and motivation to individuals for engaging in risky creative processes (Hawkes and Neale, 2020). Ozer and Zhang (2021) have addressed both TMX and CPE in their work; however, their model does not allow for the distinct role of mindfulness in the creative process, warranting further investigation on these important mechanisms (Carmeli *et al*., 2015; Reina *et al*., 2022; Muñoz-Doyague and Nieto 2012).

We contributes to the extant body of literature in the following ways. First, we augment the literature on employee creativity by examining individual mindfulness as an important motivator for employee CPE (Carmeli *et al*., 2015). By doing so, we have answered to the calls for more research on how an individual's resources may predict their CPE (Ozer and Zhang, 2021). Relatedly, we also enhance the literature on the consequences of individual mindfulness by highlighting its creative benefits rather than only its psychological benefits, which have been the focus of much of the earlier research (Jensen *et al*., 2017; Li *et al*., 2021; Degbey *et al*., 2021; Reina *et al*., 2022).

Second, we deepen both strands of literature by examining the mechanisms between mindfulness and CPE. Our study is among the pioneer investigations that have empirically explored RIP and TMX as mediators of the mindfulness–CPE relationship. Thus, we have extended the field of relationship-centric mindfulness research by suggesting that individual mindfulness may help improve the seeking and processing of relational information and the formation of high-quality relational ties that may lead to enhanced CPE at the individual level (Carmeli *et al.*, 2015; Reina *et al.* 2022;). Third, we extend the application of MIP theory to the novel organizational context of mindful CPE by employees. Specifically, we highlight when and how mindfulness motivates individuals for relational and creative outcomes.

Theoretical Framework and Hypotheses Development

Motivated Information Processing Perspective of Mindfulness

Building on the concept of motivation— defined as "psychological process that initiates action in a task and determines the form, duration and intensity of engagement in that task" (Acar, 2019, P3)—, MIP provides a rich theoretical foundation to explain why individuals vary in their CPE (van Knippenberg and Hirst, 2020). According to MIP, individual's motivations drive their approach to selectively attend and process information (Kunda, 1990; De Dreu et al., 2006, 2008). MIP further specify that motivations impact on CPE occurs through epistemic and social motivational mechanisms (De Dreu *et al.*, 2008). Epistemic motivation refers to the desire to develop and maintain a rich and accurate understanding of situations (Van Kleef *et al.* 2004; Cheung *et al.* 2016). It increases depth of information processes and influences the degree to which individuals search for new information and deeply process this information (Deng *et al. 2020*). Social motivation, the second core aspect of MIP, is related to individuals' desire to connect with others and form relationships (Sufyan *et al.,* 2023). Individuals with higher social motivation are likely to search, encode and retrieve information that is conducive and consistent with the group's norms, rather than that what is related to personal goals (De Dreu *et al.* 2008). They intend to help others and act more altruistically and cooperatively to promote others' well-being (Lebel and Patil, 2018; Yan and Hollingshead, 2022).

Several studies highlight the relationship between mindfulness and motivation, suggesting that mindfulness is an important reason for individual's motivations to engage in certain behaviors (e.g., Roche and Haar, 2013; Kroon et al., 2017; Song et al., 2018). In this regard, Roche and Haar (2013) found that mindfulness increases motivation among individuals. Kroon et al., (2017) highlight that mindfulness raises individual's awareness of their experiences and enhances their ability to regulate their behaviors, leading to a surge in their motivation. Likewise, Mihelič and Culiberg, (2019) pointed out that mindfulness can

reduce loafing attitudes, which represents the diminished levels of motivations. Furthermore, mindful individuals are motivated to engage only in valuable and important activities (Good *et al.,* 2016) and enjoy working for longer hours with diminished exhaustion, anxiety, burnout and turnover (Roche and Haar, 2013). It resultantly motivates them to bring novelty in their working behaviors (Qiu *et al.,* 2019).

We integrate theoretical logic of MIP with mindfulness lens to suggest that mindfulness can motivate individuals for enhanced CPE. This integration is particularly useful because it allows building a strong connection between mindfulness and information processing (Van Doesum *et al.,* 2013). Mindfulness drives individuals' underlying motivations, allowing them to search and process creativity relevant information cues in a concentrated, detached, creative, and persistent manner (cf. Lebel and Patil, 2018). It not only increases individual's awareness of self (Aránega et al., 2020) and their social environment (Brown and Ryan, 2003), but also facilitates development of positive relationships (Sufyan *et al.,* 2023; Good et al., 2016).

Notably, in the context of CPE taking place in the social environment of teams, we posit that RIP and TMX can well capture epistemic and social motivational mechanisms (Reina *et al.* 2022). Mindfulness allows an individual to increase their personal information repository by enabling them to reduce distractions and focus on essential information cues from their social environment. Motivation to be socially mindful enables individuals to pay attention to the interests and needs of others in the context of social interactions (Song *et al.*, 2018). Previous research shows that mindfulness fosters emotional intelligence and help improve relationships with other team members (Aránega *et al.,* 2020). Thus, mindfulness can motivate individuals to develop a deep desire to gain more understanding of situations and developing a quality relationship with others (De Dreu *et al.*, 2008). It encourages individuals to focus independently and intentionally on what is happening in their surroundings and increasingly become motivated to share their experiences with others (Song *et al.*, 2018; Aránega *et al.,*

2020). In other words, mindfulness-driven motivation may impact CPE directly and indirectly through RIP and TMX.

Mindfulness and Creative Process Engagement

Mindfulness, as an individual resource, may motivate individuals towards CPE by enhancing their awareness of environment and facilitating a sustained consciousness of the present experiences and events (Brown and Ryan, 2003; Jeong *et al*., 2023). In this regard, the existing empirical evidence presents contradictory findings related to relationship between mindfulness and CPE. For example, a positive relationship between mindfulness and creativity was reported by Henriksen *et al.* (2020), whereas Baas *et al.* (2014) found no relationship between mindfulness and creative idea generation, and Zedelius and Schooler (2015) postulated that there is a negative relationship between mindfulness and problem-solving performance.

To resolve this paradoxical situation, we draw on MIP and mindfulness lenses to offer a theory-driven explanation of how mindfulness may motivate CPE (Nijstad and De Dreu, 2012). We posit that mindfulness enhances likelihood of CPE. This is because mindful individuals are motivated to attend and process creative information in a concentrated, detached, creative, and persistent manner. First, mindfulness augments individuals' capacity to acquire informational cues from the surroundings and meaningfully identify deep connections between them in a concentrated manner (Zhang and Bartol, 2010). Such individuals explore a diverse range of creative solutions to current problems and concentrate on the optimal ones (Amabile and Pratt, 2016). Consequently, they can better understand the problems, underlying assumptions, and connections between various pieces of information. Hence, such individuals are better prepared to collect concentrated information and produce novel and useful solutions (Cheung *et al.*, 2020). Second, mindfulness motivates detached information processing by allowing individuals to regulate their emotions and better address the stressors emanating from CPE (Dernbecher and Beck, 2017; Jeong *et al*., 2023). Thus, it gives emotional control and

self-efficacy and lowers anxiety and biased attachment to informational cues and alternative approaches (Dernbecher and Beck, 2017). As a result, they can better adjust to new situations, which enhances their abilities to acquire the required information and generate creative solutions (Begum *et al.*, 2022; Cheung *et al.*, 2020).

Third, mindful individuals demonstrate an enhanced awareness of creative engagements and, as such, actively perform environmental scanning, information gathering, and alternative solution generation and evaluation. They encourage divergent thinking to see the world from varied perspectives and actively engage in experimenting with novel ideas to find best fitted creative solutions (Gielnik *et al*., 2012). Maintaining a state of mindfulness also helps individuals prioritize and manipulate information to generate novel solutions (Henriksen *et al.*, 2020), thereby developing and integrating information processing for CPE (Carmeli *et al.*, 2015). Fourth, performing non-routine, complex, and highly demanding creative tasks inherent in CPE requires individuals to be persistent in their motivation (cf. Degbey and Einola, 2020). Mindful individuals view creative engagements as personally meaningful and satisfying. Resultantly, they have a sustained motivation to learn new things and develop groundbreaking ideas and innovative solutions (Gielnik *et al*., 2012). These arguments led us to develop the following hypothesis:

H1: Mindfulness is positively related to creative process engagement.

Mindfulness and Relational Information Processing

RIP asserts that individuals use conversation as a means to reflect upon their goals and actions (Carmeli *et al*., 2015). However, individuals' approach towards RIP may differ based on their underlying motivations (Kruglanski and Webster, 2018). While substantial progress has been made in understanding the influence of relational systems on individual creative behavior (Ozer and Zhang, 2021; Zhang and Bartol, 2010), the motivational role of mindfulness in information processing is less understood (Carmeli *et al.*, 2015).

Drawing on MIP theory, we posit that mindfulness epistemically motivates individuals to engage in reflective interactions and aligns conversations with aspirations and goals. Thus, individuals with low level of mindfulness will have low epistemic motivation, encouraging them to process relational information in an unsystematic and shallow manner (Kruglanski and Webster, 2018). On the contrary, mindful individuals are likely to have higher epistemic motivation that encourage them to clearly and comprehensively understand social situations. Such individuals pay closer attention to deeply process the information and notice the authenticity and respective displays to accurately understand the situations (Van Kleef *et al.*, 2004). Mindfulness enhances self-awareness of the present moment, leading to positive information processing outcomes. As a result, individuals seek, assimilate, and disseminate information in a goal-directed manner (Dernbecher and Beck, 2017). It implies that individuals in social contexts strategically connect different pieces of information from varied sources to recognize and understand meaningful patterns among disparate pieces of information (Kobayashi, 2016). They interpret, attribute, and integrate information about the relational context in light of their epistemic motivations (Carmeli *et al.*, 2015; Gong *et al.*, 2013; Reina *et al.*, 2022). Such individuals can minimize various distractions that enhance processing of relational information (Bechtoldt *et al.*, 2010). Thus, mindful individuals are expected to demonstrate a high information processing (Reina *et al.* 2022). Based on these assertions, we propose the following hypothesis:

H2: Mindfulness is positively related to relational information processing.

Relational Information Processing and Creative Process Engagement

Understanding the role that mindfulness plays (if any) in processing information could help individuals enhance their learning processes (Cheung *et al.*, 2020). Previous studies contend that RIP motivates individuals to adopt problem-solving approach and generate novel ideas. It has also been shown an individual's motivations influence his/her information processing that

is related to their interactions with other team members (Van Knippenberg *et al*., 2021). In line with this, Cheung *et al.* (2020) theorized that RIP motivates individuals to engage in problem-solving activities and focus on developing new ideas. Given that RIP involves continually reflecting on work tasks during conversations, which enhances CPE (Carmeli *et al.* 2015), we develop the following hypothesis:

H3: Relational information processing is related to creative process engagement.

Mindfulness and Team–Member Exchange

Social exchanges in organizational settings have been the focus of extensive research (e.g., Herman *et al*., 2008; Liao *et al*., 2010; Aklamanu *et al.,* 2016; Sufyan *et al.,* 2023). Two key types of social exchange are conceptualized as leader–member exchange (LMX) and TMX (Liao *et al*., 2010). LMX refers to the vertical exchange between leaders and subordinates, while TMX refers to the horizontal exchange between team members. In both cases, relational quality exists on a low-to-high quality continuum. Specifically, low-quality TMX is characterized by constrained information and resource exchange, while high-quality TMX results in extended information sharing based on mutual trust, respect, reciprocity, and emotional support (Anand *et al*., 2010; Seers, 1989). Scholars are increasingly viewing TMX as a valuable resource that allows individuals to share knowledge and information and encourages positive communication (Hawkes and Neale, 2020). Thus, individuals who perceive their relationships with their team members to be of high quality effectively interact with, and learn from, other team members (Banks *et al.*, 2014). While some scholars have examined the relationship between mindfulness and social exchange in organizations by focusing on LMX (e.g., Reb *et al*., 2019; Zhang *et al*., 2023), relatively little is known about how mindfulness may motivate TMX (Cheung *et al.*, 2020). Moreover, the limited studies conducted on the effect of mindfulness on TMX have returned mixed results (Hawkes and Neale, 2020).

Building on MIP, we argue that mindfulness may socially motivate individuals to improve TMX. It encourages goal-directed, empathetic, respectful, and trustworthy information exchange among team members (Banks *et al.*, 2014). Using specific goals as the basis for information exchange allows team members to share information in a deliberate, focused, and objective manner. Mindfulness-driven social motivation engenders a deeper sense of empathy, which enables individuals to better understand the emotions and perspectives of others (Anand *et al.*, 2010), facilitate conflict reduction, enhance collaborative behaviors, and cultivate strong interpersonal relationships (Hafenbrack *et al.*, 2020). Gerdes *et al.* (2011) linked mindfulness with increased comprehension and sharing of emotions in group settings. Individuals with high levels of mindfulness seek information from their coworkers and hence be more capable of sensing and responding to new opportunities. Such individuals are likely to be more motivated for information sharing and feedback, maintaining high quality TMX. Based on these factors, we hypothesize that:

H4: Mindfulness is positively related to quality interpersonal relationships in team–
member exchange.

Team–Member Exchange and Creative Process Engagement

It is noteworthy that attitudes toward CPE are constructed in the social context and thus formed during interactions with other team members (Mao *et al.*, 2021). Working in teams tends to facilitate information exchange, knowledge acquisition, and the production of creative and useful ideas (Muñoz-Doyague and Nieto, 2012). In TMX, team members share resources and information to create harmony with their colleagues and develop strong interpersonal relationships (Banks *et al.*, 2014). High-quality TMX occurs when group members engage in creative processes, such as idea development (Ozer and Zhang, 2021). However, TMX may be characterized by relational and task conflicts driven by various factors and lead to different performance outcomes (Meng *et al.*, 2015). For example, when TMX involves task conflicts

and constructive controversies, more divergent thinking and creative behaviors are observed, whereas relationship conflicts hinder creative engagement (Shalley and Gilson, 2004). Although there is evidence that conflict is influenced by factors that impact team function, such as the effect of group norms on individual behaviors (Meng *et al.*, 2015), there are mixed findings on the direct relationship between TMX and CPE (Ozer and Zhang, 2021).

Moreover, most of the previous studies on idea generation and problem identification largely concentrated on LMX and creative behaviors (Begum *et al.*, 2022; Zhang and Bartol, 2010). This is because leadership studies position leaders as capable of empowering employees to effectively perform their jobs, which consequently increases their motivation for work (De Dreu *et al.*, 2006). Individuals involved in LMX develop a distinct dyadic reciprocal relationship with their supervisors. In contrast, individuals involved in TMX perceive themselves as representing the team identity rather than as unique individuals. Hence, their perceptions reflect their interpersonal connections with other team members (Banks *et al.*, 2014; Chen *et al.*, 2021). Ozer and Zhang (2021) studied the disposition of individuals to exchange and build relationships with their colleagues to identify ideas for creative solutions.

According to MIP theory, individuals involved in high-quality TMX are more motivated to openly share ideas, seek peer feedback, and effectively collaborate, which creates a conducive environment for CPE (Seers, 1989). They also have a sense of psychological safety that allows them to challenge existing norms, take risks, and explore novel solutions. Moreover, they are willing to take time to thoroughly understand the present situation and are likely to search for and communicate information, increasing harmony and the attainment of collective benefits (Bechtoldt *et al.*, 2010). Thus, we hypothesized that:

H5: Team–member exchange is positively related to individual creative process engagement.

The Mediating Role of Relational Information Processing

Carmeli *et al.* (2015) contend that RIP has become a common practice in today's businesses as individuals seek and process information based on their motivations. The emergence of RIP reflects an increase in interpersonal activity. They also suggested that RIP supports the development of individual creative behaviors (Carmeli *et al.*, 2015). RIP helps to stimulate the creation of new ideas in several different ways, including via synthesis and recombination of previously acquired information and connection of disparate informational cues that may appear to be unrelated (Cheung *et al.*, 2020). In addition, RIP encourages individuals to be engaged and attentive to creative ideas. Such individuals are typically exposed to information cues that challenge their existing assumptions, encouraging them to become more involved in problem recognition and ideation (Cheung *et al.*, 2020). This is because such exposure may encourage individuals to question their beliefs or habits, which changes their thinking (Begum *et al.*, 2022).

Recent studies have investigated how mindfulness ultimately influences CPE at the individual level (Begum *et al.*, 2022; Cheung *et al.*, 2020). The findings show that when an individual believes they can reflect during a conversation, more real-time exploration and exploitation of information occurs (Carmeli *et al.*, 2015). In addition, it has been shown that as individuals leverage the resources available for problem-solving and generate innovative ideas, they are likely absorb or process information (Harris and Helfat, 1997). Thus, mindfulness can epistemically motivate employees to examine their currently held views when they are exposed to inconsistent or irrelevant information, and this can lead to the identification of problems and the generation of new ideas. Thus, we theorize that mindfulness motivates individuals for RIP and enforce CPE and develop the following hypothesis:

H6: Relational information processing positively mediates the relationship between mindfulness and creative process engagement.

The Mediating Role of Team–Member Exchange

Hawkes and Neale (2020) stated that mindfulness enables team members to explore and exploit the exchange of information and communication and consequently develop high-quality relationships. In their work on mindfulness and cooperative behaviors in teams, Nonose *et al.* (2014) found a positive link between mindfulness and team cooperation. In addition, Amabile (1988) showed that exchanging information engages individuals in problem solving and facilitates the production of novel and valuable ideas, and Krishnan (2021) found that mindfulness-driven motivation is important in information searching and creativity enhancement. At the same time, a direct and positive relationship has been established between mindfulness and TMX (Hawkes and Neale, 2020).

Mindfulness encourages individuals to consider the potential consequences of their choices and consciously act to take advantage of opportunities, bring about conducive circumstances, and prevent unfavorable results that may impede their advancement toward their goals (Zhu *et al.*, 2018). Such individuals can combine different pieces of information and produce original and useful ideas through discussions and knowledge exchanges with their coworkers (Carmeli *et al.*, 2015). They are also likely to discuss and understand the present world situation in an open and non-judgmental manner (Hafenbrack *et al.*, 2020). Considerable evidence exists that mindfulness can fundamentally contribute to perspective-taking, work engagement, and creative behaviors (Cheung *et al.*, 2020). However, practicing creative behaviors incurs several risks, namely of being challenged or rejected, labeled as deviant, and expelled from the group (Gong *et al.*, 2012).

Nevertheless, based on MIP, we suggest that mindfulness motivates individuals to maintain high-quality TMX by sharing more information and resources (Muñoz-Doyague and Nieto, 2012). As a result, individuals become more receptive to form and maintain social relationships with their coworkers (Hafenbrack *et al.*, 2020). Furthermore, employee

interaction in teams may be a crucial consideration for effective creative behavior (Hawkes and Neale, 2020). However, some earlier studies provide mixed results on the effects of TMX on CPE (Zhu *et al.*, 2018). Still, no previous study has investigated TMX as a mediating factor of the relationship between mindfulness at work and individual CPE. Thus, we develop the following hypothesis:

> *H7: Team–member exchange mediates the relationship between mindfulness and creative process engagement.*

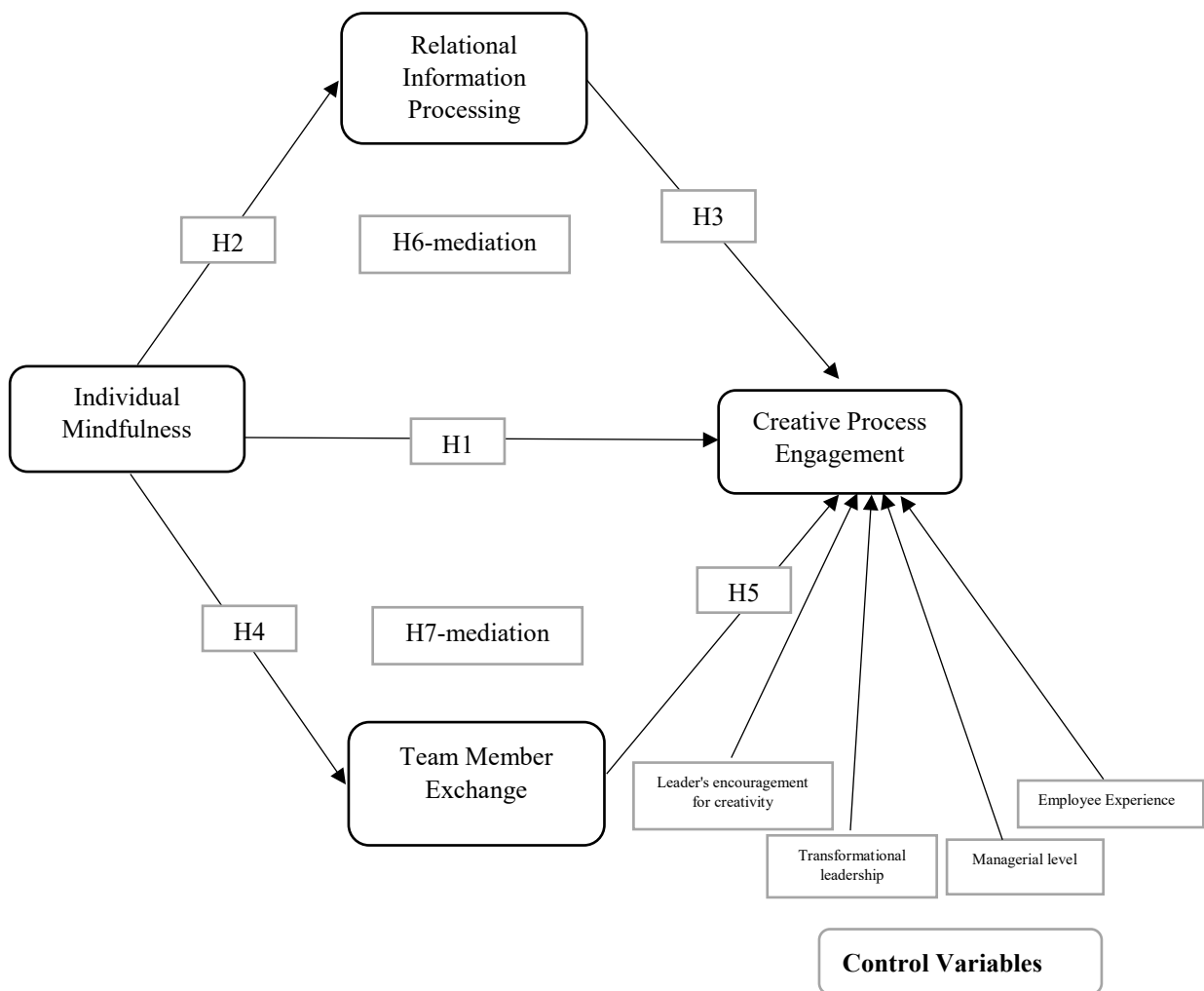The hypothesized relationships are shown in Figure (1) below.

Figure 1. Conceptual mode (Source: Authors own creation)

Methodology

Sample and Data Collection

The study sample consisted of individuals working in research and development (R&D) teams in large-scale enterprises in Pakistan. Several industries were covered: engineering, information and telecommunications, electronics, textiles, fast-moving consumer goods, and pharmaceuticals. We ensured that the study included a range of industries to increase the generalizability of our findings. One author initially contacted the top management team of each identified company to introduce the study and request the R&D team members' contact details. We focused on R&D team members because their work requires considerable innovation and focus on a given task. Based on the contact information we acquired from the respective companies, we sent an email to 660 potential participants that included a Uniform Resource Locator (URL) survey link and a cover letter explaining the purpose of the survey and the assurance of data privacy. In total, 368 respondents completed and returned the survey, and the response rate was 55%. A total of 34 survey responses were excluded from the final analysis due to incomplete information and missing values. During the data cleaning process, we found that the standard deviation of the 23 items was less than 0.20. Following the recommendation of Hair Jr. *et al*., (2017), we did not include items in the final data analysis. Finally, we obtained 311 usable responses for the data analysis. The demographic information of the respondents is shown in Appendix A.

Before the final launch of the survey, we pilot-tested the survey among a group of academics and industry professionals to review the items and sort them according to the study context. We compared early and late responders to reduce the potential threat of common technique bias. The independent and dependent variables were also separated into different sections of the survey to make it difficult for the respondents to form links between the numerous items. Using this type of questionnaire design, along with a prolonged survey time,

forces respondents to take a moment and read the instructions and definitions for each item before answering them (Podsakoff *et al*., 2003). The t-test showed no significant differences.

The potential participants were informed that any information they provided would only be used for academic purposes. Anonymity and confidentiality were ensured by collecting the respondents' contact information via a separate online site. Furthermore, we checked for common method bias by following Podsakoff and Organ's (1986) suggestion of using Harman's single-factor test. The results showed that the first component accounted for only 32% of the overall variance, indicating the absence of common method bias.

Control Variables

Following the methodology utilized in previous studies (Zhang and Bartol, 2010), we took into account that specific demographic factors (i.e., experience, managerial level, leader's encouragement for creativity, and transformational leadership) may influence our findings and incorporated these factors into the model as control variables. Previous studies have shown that employee characteristics, such as experience, influence creativity, and the transformational leadership style is also an established antecedent of CPE (Begum *et al*., 2022).

Measurement

To reduce the burden on the respondents and keep them engaged and motivated to complete the survey, we minimized the number of items used to measure CPE and the contributing factors. Based on previous studies, we implemented CPE scales based on factor loadings and coverage of the relevant content. Following Zhang and Bartol (2010), we adopted the CPE Assessment scale and items, which use a five-point Likert scale (1 = "never," 2 = "rarely," 3 = "occasionally," 4 = "frequently," and 5 = "very frequently"). We measured mindfulness in the workplace at an individual level with items adopted and operationalized from the Mindfulness Attention Awareness Scale (MAAS) (Brown and Ryan, 2003). We utilized multiple items to capture the extent to which individuals agreed with each item via a five-point scale (from 1 =

"strongly disagree" to 5 = "strongly agree"). The MAAS is used to measure how often an individual practices deep self-reflection of present experiences and keeps a close eye on the happenings around them (Brown and Ryan, 2003). There is much interest in the concept of mindfulness in the academic literature. Other studies have used the MAAS to investigate the impact of mindfulness on employee creativity (Cheung *et al*., 2020). MAAS is strongly linked to self-awareness and thinking about and reflecting on oneself, and individuals have varying degrees of concentration and awareness (Brown and Ryan, 2003). We evaluated and adopted the RIP scale using the same three-item measures as Carmeli *et al.* (2015). The RIP scale has been validated at an individual level and is designed to assess an individual's strategies (Carmeli *et al.*, 2015). TMX was assessed by asking respondents to rate their focal TMX relationships with their coworkers (Seers, 1989). The TMX items and scale have been validated to establish the relationship between TMX and individual-level creativity (Ozer and Zhang, 2021).

Results

Reliability and Validity

IBM SPSS version 24 and Smart PLS 3.0 were used to evaluate the data (Henseler *et al*., 2015). When used in complex models with a limited number of samples, PLS-SEM is more powerful than covariance-based structural Equation modelling (SEM) (Sarstedt *et al*., 2019). PLS path-modeling approach involves two stages: evaluation of the measurement model and the structural model. An examination of the measurement model showed that all the construct measures were valid and reliable. We evaluated the results of the structural model by considering the hypothesized links between the various constructs in the model. Before carrying out the analysis, the level of predictability of the structural model was evaluated by analyzing the R^2 (Chin *et al*., 1998) and Q^2 (Geisser, 1975) values. According to Chin *et al*. (1998), the goodness-of-fit of a PLS model can be estimated by examining its high R^2 values,

high Q^2 values, and high factor loadings (or correlations). Each endogenous construct accounts for a different proportion of the total variance (R^2) that the model explains. RIP accounted for 24% of the total variance, TMX accounted for 41%, and CPE accounted for 46%. As a result, an f^2 value of 0.02 was considered to indicate a moderate effect, whereas f^2 values of 0.15 and 0.35 were considered to indicate significant effects (Cohen, 2013). Thus, our findings reveal that mindfulness had a considerable effect on CPE ($f^2 = 0.564$), TMX had some effect TMX ($f^2 = 0.16$), and RIP had relatively little effect ($f^2 = 0.09$). In addition, we used Stone–Geisser's cross-validated Q^2 measure (Geisser, 1975) to investigate the four endogenous constructs to determine the extent of their predictive power.

We used SPSS in conjunction with the bias-corrected and accelerated bootstrapping method for the mediation analysis. The bootstrapping method uses a resampling procedure for the calculation of the confidence intervals for the estimates of the indirect effects. During this investigation, about 5,000 duplicated samples were used to compute the confidence intervals. According to (Hayes, 2017), this method is more appropriate and powerful than traditional causal steps, and product-of-coefficients approaches (i.e., the Sobel test) for testing the significance of indirect effects. We multiplied the route coefficients of 5,000 bootstrapping samples and established a 95% confidence interval for the mediators (Hayes and Preacher, 2014).

Table 1. Reliability and validity (Source: Authors own creation)

Variable	Item	Factor loading	Average Variance Extracted (AVE)	Composite Reliability (CR)	Cronbach's alpha
Mindfulness (M)	M1	0.78			
	M3	0.83			
	M5	0.77			
	M8	0.80	0.63	0.87	0.81
Team–member exchange (TMX)	TMX1	0.75			
	TMX2	0.68	0.57	0.90	0.87
	TMX3	0.73			
	TMX4	0.80			

Construct	Item	Loading	AVE	CR	α
	TMX5	0.72			
	TMX7	0.74			
	TMX8	0.77			
Relational information processing (RIP)	RIP1	0.78			
	RIP2	0.78			
	RIP3	0.84	0.65	0.85	0.73
Creative process engagement (CPE)	CPE1	0.73			
	CPE2	0.86			
	CPE3	0.82	0.60	0.88	0.83
	CPE4	0.71			
	CPE5	0.72			
Transformational leadership (TL)	TL1	0.89			
	TL2	0.83	0.64	0.84	0.72
	TL3	0.66			
Leader's encouragement for creativity (LEC)	LEC1	0.70			
	LEC2	0.71			
	LEC3	0.85	0.59	0.85	0.77
	LEC4	0.80			

All the constructs were tested for reliability and validity. The factor loadings for all the constructs were greater than 0.50. The results show that the Cronbach's alpha values for all the constructs were greater than 0.7 (Hair Jr. *et al*., 2017), indicating construct reliability. To examine the "discriminant validity," the Fornell and Larcker (1981) approach was followed. "Convergent validity" is confirmed when construct factor loadings are greater than 0.65, average variance extracted (AVE) and "composite reliability" (CR) are greater than 0.5, and the AVE is less than the CR of the construct (Fornell and Larcker, 1981). The results presented in Table 1 indicate that all the constructs meet these requirements. The AVE and CR values of all the constructs were greater than 0.5, and the AVE value of each construct was less than that of the CR. Based on these findings, convergent validity was established. Discriminant validity is confirmed when the square root of the AVE of each construct is greater than the correlation among the constructs (Fornell and Larcker, 1981). To determine whether our conceptual model warrants multilevel analysis, we used an Intraclass Correlation (ICC) for the outcome variable, as recommended by Hofmann *et al*., (2000). ICC gives information about the degree to which observations within the same group are similar or different. Our findings demonstrate that the

ICC value is less than 0.10, namely ICC = 0.08, with p > 0.05 and F = 2.61, indicating support for individual-level analysis. Values over 0.10 and 0.20 support multilevel aggregation (Bliese, 2000). This shows that the conceptual model does not support the criteria for multilevel aggregation, implying that our sample does not reflect the multi-level analysis. The results presented in Table 2 show Mean, standard deviation, and correlation of the construct.

Table 2. Mean, standard deviation, and correlation (Source: Authors own creation)

	Item	Mean	SD	1	2	3	4	5	6	7	8
1	CPE	3.07	0.99	.77							
2	EE	9.50	4.86	.21*	1						
3	LEC	4.13	1.12	.45**	-.04	.76					
4	ML	2.50	1.35	.50**	-.01	-.02	1				
5	Mindfulness	2.82	1.29	.47**	.31**	.68**	.22*	.79			
6	RIP	3.16	1.26	.67*	.26*	.37**	-.02	.58**	.80		
7	TMX	2.86	1.08	.11*	.19*	.51**	.11*	.56**	.47**	.74	
8	TL	4.21	1.55	.53**	.44**	.62**	.31*	.61**	.36*	.49**	0.80

*p < .01, **p < 0.05, Employee experience (EE), Managerial level (ML)

Hypotheses Testing

The hypotheses were tested using the PLS-SEM technique. For hypothesis 1, we examined the direct relationship between mindfulness and CPE ($\beta = 0.44$, $p < 0.01$). The result shows that a higher individual mindfulness has a more substantial effect on CPE. The result of the H1 is consistent with the previous results (e.g., Cheung et al., 2020). It implies that mindfulness allows individuals to be more self-aware and reflective in challenging situations so that they have more desire and capacity for information search, problem identification and idea generation.

For hypothesis 2, results support that mindfulness is likely a predictor of RIP ($\beta = 0.40$, $p < 0.001$). A growing area of research examined the connection between mindfulness and relational factors in psychological literature (McGill and Adler-Baeder, 2020). A limitation of the literature is that previous studies have been conducted either from the perspective of family relationships or clinical psychology. Consistent with (Carmeli *et al.,* 2015) , our results provide

evidence that individual mindfulness increases individual's reflection-in-conversation and involved more colleagues' for information inputs. The results also suggest that the relationship between RIP and CPE is significant (β = 0.66, p < 0.01), supporting H3. Our results demonstrate that individuals seeking input and engaging in ongoing attempts to reflect on work tasks and practices have more capacity for deeper information searching, idea generation and problem identification. Furthermore, our results suggest that RIP is associated with CPE, meaning that an individual's ability to acquire and process information from their peers improves CPE, such as the generation of new ideas.

H4 stated that the relationship between mindfulness and TMX is positive and significant, and the results supported this notion (β = 0.67, p < 0.01). Our findings suggest that mindful individuals are likely to focus on the development of strong TMX relationships by promoting a shared sense of mutual respect and ensuring that team members feel valued and respond to their colleagues. Further, H5 was not supported, as the association between TMX and CPE was not statistically significant (β = 0.095, p > 0.01). With reference to the schematic diagram shown in Figure 1, the control variables were positively associated with CPE. A possible explanation of the relationship between TMX and CPE is not significant due to misalignment in task and composition of team skills.

We determined the mediating effect of RIP to test H6 because a significant relationship was found between RIP and CPE. According to Zhao *et al*. (2010), a mediation analysis can be performed if all direct paths are significant. When we added RIP as a mediator between mindfulness and CPE, the direct path was still significant (b = 0.166; CI = 0.080, 0.255), and the indirect path was significant (b = 0.27; CI = 0.186, 0.239). These results show that RIP mediates the relationship between mindfulness and CPE. The present study is the first to examine RIP in the context of mindfulness as well as how its effect is related to CPE. This supports our hypothesis that mindfulness on the CPE mediates the effects of RIP. It implies

that mindfulness enhances RIP, which further increases willingness to engage in creative behaviors. Specifically, our result illustrates that individual mindfulness enhanced awareness of their present moment, avoiding distractions, strengthening concentration and sharing information within the team. Consequently, the improved mindfulness motivates individuals to develop constructive thinking about how and what to do at work for searching information, encoding problem and idea generations.

Finally, H7 stated that TMX mediates the relationship between mindfulness and CPE. Our results showed that the H5 was not statistically significant; therefore, we did not perform mediation analysis. Existing studies also emphasize that TMX is an antecedent to employee creativity (Muñoz-Doyague and Nieto, 2012; Ozer and Zhang, 2021); however, our findings suggest that TMX does not impact CPE. To sum up, these key findings reveal that while individuals who participate in TMX may offer and receive support and feedback from one another, these behaviors may weaken their abilities to identify problems and search for information.

Theoretical Implications

We have empirically investigated the direct and indirect (via RIP and TMX) impact of mindfulness on CPE, drawing upon MIP theory. First, our findings contribute to the research on mindfulness and creativity in several ways. Our finding that mindfulness is a predictor of CPE has expanded early stage research on individuals' resources as antecedents of creative behaviors (Ozer and Zhang, 2021). Notably, by building on MIP theory, we offer a theoretically grounded resolution to the problem of contradictory findings about the relationship between mindfulness and creative behaviors. Mindfulness motivates individuals to enhance their CPE (Cheung *et al*., 2020) through searching for and processing information in a concentrated, detached, creative, and persistent manner. This crucial personal resource motivates individuals to identify the right sources of information, attend to salient information

cues, and process them creatively to generate novel and best-fitted solutions (Amabile and Pratt, 2016; Zhang and Bartol, 2010). Our finding that individual mindfulness affects CPE and enhances the understanding of the process underlying RIP for CPE, implies that being mindful may also allow an individual to process information in a more detached way due to a high level of control over their emotions (Jeong *et al.*, 2023). In addition, mindful individuals do not give up easily when faced with challenging circumstances, and this may support sustained engagement in creative processes. Organizations with such individuals are more likely to consistently develop solutions rather than discover them infrequently and by chance (Mueller and Kamdar, 2011). As a result, individual mindfulness appears to have a considerable direct effect on CPE. These findings are valuable because they supplement those of previous research, which demonstrated that mindfulness is more likely to motivate individual CPE (Henker *et al.*, 2015).

Second, a unique contribution of this study is its focuses on RIP as mediator between mindfulness and CPE. In doing so, we have responded to calls for research on the mechanisms that may link mindfulness and creative behaviors (Kroon *et al.*, 2017; Reina *et al.*, 2022). Previous research has examined the relationship at individual level between RIP and creativity (Carmeli *et al.*, 2015). To the best of our understanding and knowledge, this study is the first to document the mediating effect of RIP between mindfulness and CPE, thereby providing an important pathway for creativity. The medication effect stresses that mindfulness can epistemically motivate individuals to process information which further encourages them for CPE. However, our findings related to lack of TMX mediation between mindfulness and CPE implies that even though mindful individuals can create empathetic, respectful, and trustworthy interpersonal relationships with team members and may be willing to share knowledge, these characteristics do not necessarily encourage their engagement in creative processes (e.g., Anand *et al.*, 2010; Banks *et al.*, 2014). These individuals are more socially motivated to

maintain long-term relationships with their team members rather than engaging in extensive information searching and problem identification. Such individuals may go beyond the necessary measures required to gain legitimacy in groups and develop TMX by excessively adhering to established rules and norms, and this is counterproductive behavior for CPE.

Third, our findings contribute to the literature on MIP (De Dreu *et al.*, 2006) in the context of the creative behaviors of employees by examining mindfulness-driven motivation as a predictor of CPE. We found that mindfulness impact problem identification, encoding, and the generation of alternative ideas (Cheung *et al.*, 2020). When this finding is considered alongside the finding that RIP acts as a mediator, it may be concluded that mindfulness-driven epistemic motivation may support the development of the search and processing of information for creative behaviors (Muñoz-Doyague and Nieto, 2012). Thus, mindfulness acts as a motivating factor for participating in teamwork. We propose that mindfulness motivates an individual to undertake RIP (Nijstad and De Dreu, 2012). Therefore, it is possible that the RIP performed by mindful employees is strengthened by their MIP. Our findings also demonstrate that an individual's desire to continually learn about a present situation is linked to RIP. However, the findings related to the direct and mediated impact of TMX on CPE imply that high mindfulness-driven social motivation may in fact discourage individuals from engaging in creative processes. Together, these findings indicate that understanding different types of mindfulness-driven motivations can help us gain insight into when and how individuals get motivated for CPE.

Limitations and Future Research Directions

There are some inherent limitations in this study; however, they offer exciting avenues for future research. This study examined how individuals in teams perceive the quality of their interpersonal relationships, which influences individual CPE. Future studies should investigate how collective mindfulness could be utilized to empower teams. For example, studies could

examine the differences and interplay between individual and leader mindfulness and the effects of each on the influence that TMX has on CPE (Henker *et al.*, 2015). Importantly, we suggest future research should replicate the current model with multilevel analysis as it will bring better and more practical results. In addition, some scholars have highlighted that green thinking is an antecedent of CPE (Begum *et al.*, 2022). Thus, future research studies should investigate whether RIP and green thinking mediate the mindfulness–CPE relationship by collecting data from team leaders in information technology firms. There is increasing recognition of the notion that team environments have a positive influence on the creative behaviors of individuals (Gong *et al.*, 2013).

In this study, we collected data from one developing country. Future research should replicate this study in other developing countries. Future research should also focus on how mindfulness helps foster creativity and innovation and build a competitive advantage for organizations (Krishnan, 2021). It is also important to examine the factors that moderate and mediate an organization's access to the resources and skills required to strengthen RIP, given that it mediates the mindfulness–CPE relationship.

Future research can conceptualize mindfulness at the organizational level and determine how mindfulness can positively impact inter-firm knowledge, collaboration, and innovation. To obtain an accurate picture of the effects of RIP at the organizational level, future researchers should replicate this model at the organizational level. Different factors should also be examined; for example, the effect of analytical processing on the relationship between organizational mindfulness and CPE could be explored.

Given that we found a nonsignificant relationship between TMX and CPE and that Liu *et al.* (2011) concluded that the intention to share individual knowledge mediates the relationship between TMX and the intention to share team knowledge, we suggest that knowledge sharing may mediate the TMX–CPE relationship. Furthermore, future studies

should investigate whether (and how) CPE affects the resolution of environmental and social problems faced by organizations. Our findings confirm the need to include individual mindfulness in future studies of CPE to provide a better understanding of individual CPE.

Practical Implications

From a practitioner's point of view, this study provides various practical recommendations for top management looking to improve CPE in their organizations. Particularly, this study highlights the influence of mindfulness on CPE through RIP. Thus, management should provide more opportunities and communication channels and create work environment conditions that are conducive to find creative solutions to challenging problems collectively with other team members. As a result of the growing recognition of the role mindfulness plays in the development of interpersonal relationships, managers should build teams with members who have common and collective objectives to ensure they can communicate successfully and work together as a team.

We suggest that individual mindfulness and relational dynamics may be effective for individual CPE. The findings of the present research study show that mindfulness may be effective for TMX. Thus, mindfulness is an important way of cooperation and collaboration within the team, seeking out information and feedback and learning from others. Further, our findings show that although mindfulness is important for TMX, coworkers in TMX relationships do not necessarily engage in collaborative problem identification and idea generation. The findings of this study provide reasoning that empowering mindfulness among employees has a beneficial effect on CPE and developing relationship quality within teams.

Conclusion

The purpose of this study is to examine the mediating role of RIP and TMX in the relationship between individual mindfulness and CPE. Specifically, we found that RIP plays a partially mediating role between mindfulness and CPE. Our results show that mindfulness can

effectively develop RIP and consequently increase CPE. We have provided empirical evidence that individual mindfulness is important at work for the development of high-quality exchange relationships, but CPE is not dependent on TMX. Our study provides theoretical support that individual who are mindfulness put increased focus on developing quality of working relationship, but seems less willing to participate in idea generation and problem solving solutions.

Appendix A. Demographic information of the respondents (n = 311) (Source: Authors own creation)

Characteristic	f	%	ªFirm size	F	%
Production manager	94	30.22	50–100	23	07.39
R&D manager	82	26.36	101–250	36	11.57
Middle-level manager	68	21.86	251–300	140	45.01
Relationship manager	65	20.90	>301	112	36.01
Industry type	f	%	Gender ratio		
Manufacturing	97	31.18	Male	227	72.99
Financial Services	89	28.61	Female	84	27.00
Energy and utilities	47	15.11			
Leatherwear and chemicals	32	10.28			
Food processing and services	25	08.03			
Other	21	06.75			
Experience	f	%			
Less than 5	58	18.64			
Between 5 and 15	166	53.37			
More than 15	87	27.97			
ªFirm size: number of employees					

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