

# Workforce diversity and firm performance: Relational coordination as a mediator and structural empowerment and multisource feedback as moderators

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## Abstract

Workforce composition in organizations has become increasingly diverse. As an important step in determining how workforce diversity leads to firm performance, we proposed relational coordination as a mediator through which diversity in age and education indirectly affects firm performance. We also highlighted two human resource management practices (structural empowerment and multisource feedback) as critical contingencies that moderate the effects of workforce diversity on relational coordination and firm performance. We conducted hierarchical multiple regression on multisource data (including responses from senior directors, department directors, managers, and employees, as well as financial performance) from 189 Korean firms in the manufacturing sector, which yielded support for our hypotheses. These findings offer novel theoretical and practical insights into the effective management of workforce diversity.

## KEYWORDS

multisource feedback, relational coordination, strategic human resource management, structural empowerment, workforce diversity

## 1 | INTRODUCTION

Workforce diversity, defined as the distribution of personal attributes among interdependent members of an organization, has become a widely accepted organizational imperative (Jackson, Joshi, & Erhardt, 2003). The retirement age continues to increase all over the world, consequently leading to steady increases in age heterogeneity and average age in the workplace (Fullerton Jr & Toossi, 2001; Rabl & del Carmen Triana, 2014). Similarly, firms have increased their interest in diversifying the educational composition of their workforce as a means to retain a larger pool of informational resources (Chubin, May, & Babco, 2005; Kearney & Gebert, 2009). One of the central challenges that firms face is to facilitate successful coordination among diverse members to improve organizational functioning (Bond & Haynes, 2014; Van Knippenberg & Schippers, 2007). Integrating efforts from a diverse workforce, for instance, can cause difficulties due to biases, misunderstandings, and subgroup

formations. However, when managed successfully, workplace diversity in age and educational background can improve firm performance by bringing in multiple perspectives, improving the quality of decision-making, and enhancing productivity (Bassett-Jones, 2005; Kossek, Lobel, & Brown, 2006; Triana, García, & Colella, 2010). Furthermore, the complex nature of interpersonal connections among diverse workers can provide the basis for sustained competitive advantages that competitors would find difficult to imitate (Barney & Wright, 1998; Richard, 2000).

Existing research poses the question of how firms can promote successful coordination among diverse workforce to benefit firm performance. Studies on workforce diversity have mainly focused on the individual or group levels, thereby insufficiently elucidating the relationship between diversity and firm performance (Jackson et al., 2003; Van Knippenberg & Schippers, 2007). A few studies have tested the relationship of firm performance and several dimensions of demographic diversity, such as race and gender (e.g., Frink et al., 2003;

Richard, 2000), but little is known about its relationship with other types of workforce diversity, such as age and educational differences. Moreover, evidence-based recommendations for practitioners on how firms can reap the benefits of diversity are scarce (e.g., Bassett-Jones, 2005; Bond & Haynes, 2014; Kossek et al., 2006). Specifically, the present research looks into South Korea, where increases in the retirement age and the need for diverse cognitive resource lead to challenges arising from the inclusion of employees with varying ages and education (Cho & Mor Barak, 2008).

As we seek to link diversity with firm performance, prior research has identified two critical challenges. First, although the effects of workforce diversity on firm performance have been identified, the mechanisms that explain the effects remain unclear, especially at the firm level. The impacts of workforce diversity are broad and complex, resulting in varied perspectives on its effects (Jehn, Northcraft, & Neale, 1999). For instance, diversity presents implications for various processes such as cooperation, complex problem solving, conflict management, and effective communication (Harrison, Price, Gavin, & Florey, 2002; Kochan et al., 2003). Consequently, a growing number of researchers have called for theoretical clarity and empirical investigation into potential mediating processes that may link diversity to firm performance (Pelled, 1996; Van Knippenberg & Schippers, 2007). Second, contextual factors matter. Inconsistencies among research findings on diversity suggest that contextual variables should be considered (Joshi & Roh, 2009). Notably, human resource (HR) practices can develop a work context that encourages a diverse workforce to exert remarkable effort into interpersonal coordination (Ely, 2004; Kochan et al., 2003; Rico, Molleman, Sánchez-Manzanares, & Van der Vegt, 2007; Triana & Garcia, 2009). Surprisingly, however, the moderating effects of HR practices on the diversity–firm performance relationship have not been extensively explored. The successful utilization of HR practices has a great potential to integrate diverse members and improve firm performance.

This study aims to advance our understanding of how and when diversity affects firm performance. Initially, we suggest that, at the firm level, relational coordination is a mediating process through which diversity in age and education indirectly affects firm performance. The central construct in relational coordination theory is “a mutually reinforcing process of interaction between communication and relationships [of shared goals, shared knowledge, and mutual respect] carried out for the purpose of task integration” (Gittell, 2002, p. 301). As a form of coordination across diverse perspectives, relational coordination is well suited to serve as the mechanism through which workforce diversity affects firm performance (Gittell, 2011). Literature development on diversity suggests that its effects incorporate multiple and interdependent aspects. Thus, diversity scholars have corroborated that a comprehensive framework is necessary to understand the impact of diversity on firm performance (e.g., Van Knippenberg, De Dreu, & Homan, 2004; Van Knippenberg & Schippers, 2007). Relational coordination theory meets this need because it conceptualizes coordination as consisting of two mutually reinforcing components: a communication component of information integration and a relational component of mutual respect, shared

goals, and shared knowledge (Gittell, 2011). We claim that relational coordination is thus a potential mechanism for understanding how diversity can enhance or undermine firm performance.

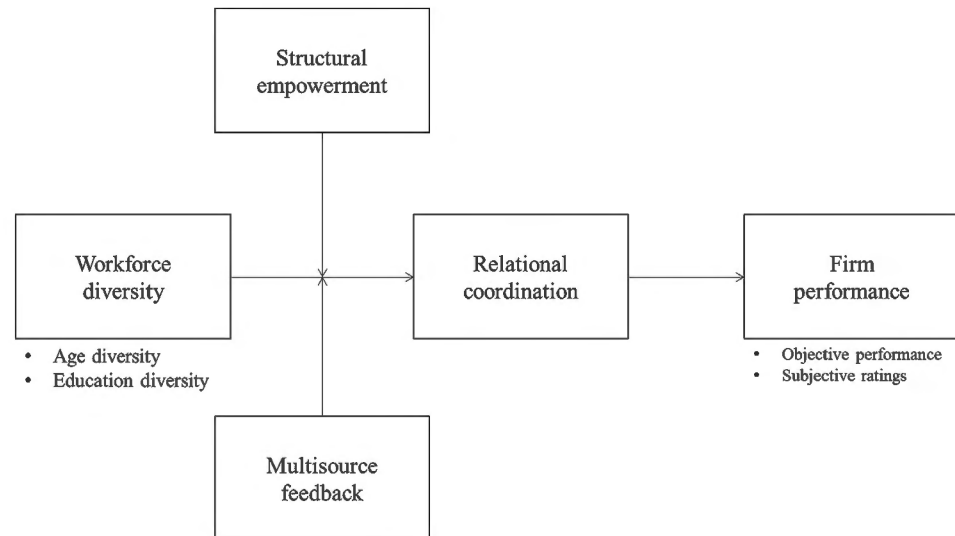
Of similar importance, we identify two HR practices that can help promote successful coordination among the diverse workforce: (a) structural empowerment (i.e., HR practices that structurally delegate authority and responsibility to employees; Leach, Wall, & Jackson, 2003; Mintzberg, 1979) and (b) multisource feedback (i.e., HR practices that utilize multiple sources such as subordinates, peers, and supervisors as part of feedback systems; Bassett-Jones, 2005; London & Smither, 1995). As methods to manage workforce diversity, these two types of HR practices have a great potential because they promote the importance of others' contributions (i.e., structural empowerment) and a mutual understanding among organizational members (i.e., multisource feedback). With the recent movement toward greater autonomy and flexible organizational design, structural empowerment and multisource feedback have become increasingly popular (e.g., Avery, Wang, Volpone, & Zhou, 2013; Maylett, 2009; Smither, London, & Reilly, 2005). As more firms seek to improve their functioning by adopting these HR practices (e.g., Avery et al., 2013; K. Y. Kim, Atwater, Patel, & Smither, 2016), their effectiveness for managing workforce diversity is worth investigating.

Specifically, when firms implement HR practices that structurally empower employees, work processes require a considerable exchange of information and communication among members (Avery et al., 2013; Spreitzer, 2008). The performance benefits of a diverse workforce are expected to be most evident in situations that require consultation across multiple perspectives. Two possible reasons are that the unique perspectives of diverse employees are valued and that employees have opportunities to share their different viewpoints (Kirkman & Rosen, 1999; Spreitzer & Doneson, 2005; Wegge, Roth, Neubach, Schmidt, & Kanfer, 2008). Moreover, HR practices that require employees to receive feedback from multiple people with different backgrounds (as opposed to supervisors only) can promote an in-depth understanding of individual differences in the workplace and provide opportunities to address such differences. Multisource feedback motivates organizational members to understand the dynamics of working with diverse colleagues and change their behaviors to reduce discrepancies between self-perceptions and the ratings of others (London & Smither, 1995, 2002; Zemke, Raines, & Filipczak, 2000). Overall, structural empowerment and multisource feedback encourage employees to improve their work relationships with diverse members, which contribute to firm performance. Investigating the moderating effects of these two HR practices, therefore, can extend our understanding of contextual factors that enable positive impacts of diversity. Our research model is depicted in Figure 1.

## 2 | THEORY AND HYPOTHESES

### 2.1 | Relational coordination of workforce diversity

We draw on relational coordination theory to provide a comprehensive framework that may link workforce diversity with firm

**FIGURE 1** Proposed model

performance. Firm performance is an overall outcome of firms, such as corporate financial performance and firm competitiveness, that is well captured by a general and inclusive framework (e.g., Gittell, Seidner, & Wimbush, 2010; Jiang, Lepak, Hu, & Baer, 2012). As detailed below, literature development on diversity suggests that its effects are comprehensive and incorporates multiple and interdependent aspects. Notably, the successful integration of the diverse workforce to improve organizational functioning is dependent on high-quality coordination among employees to best utilize diversity (Bond & Haynes, 2014). As an indicator of effective, high-quality coordination among diverse employees, relational coordination may play a pivotal role in explaining the underlying mechanism through which workforce diversity affects firm performance (Gittell, 2011).

Conceptualizations and empirical findings regarding the relationship between workforce diversity and firm performance have been far from conclusive (Joshi & Roh, 2009; Van Knippenberg & Schippers, 2007). Several scholars have posited the adverse effects of diversity, such as biases, misunderstandings, and interpersonal conflicts (Chatman & Flynn, 2001), based on similarity-attraction theory by Byrne (1971) and social identity theory by Tajfel and Turner (1986). According to these theories, people tend to form strong relationships with individuals with whom they share common characteristics but develop prejudices and stereotypes against those who differ from themselves (Van Knippenberg et al., 2004). Diversity in salient characteristics, therefore, can lead to interaction problems (e.g., biases, misunderstandings, and conflicts) among different subgroups and hinder workforce performance (e.g., De Dreu & Weingart, 2003). In contrast, others have proposed the positive effects of workforce diversity based on information and decision-making theories. The heterogeneous perspectives and high information levels found in a diverse workforce should increase task-related discussions, deepen the understanding of work issues, and lead to a mutual interchange of fresh ideas (Ancona & Caldwell, 1988; Bantel & Jackson, 1989; Olson, Parayitam, & Bao, 2007; Van Knippenberg et al., 2004; Williams & O'Reilly, 1998).

To address this inconsistency, researchers have distinguished between two types of diversity with differential mechanisms in shaping work processes (Jehn et al., 1999; Joshi & Roh, 2009; Kearney & Gebert, 2009; Milliken & Martins, 1996). The first type is social category diversity (synonym: relations-oriented diversity), which assesses readily observable demographic attributes that are less job-related, such as age, gender, and race (Pelled, 1996; Van Knippenberg et al., 2004). Social category diversity has been proposed to negatively affect relational aspects, such as identification with the entire group, commitment, and cohesion (e.g., Chatman & Flynn, 2001; Harrison et al., 2002; Van Knippenberg et al., 2004; Williams & O'Reilly, 1998). The second type is informational diversity (also called task-oriented diversity), which includes less easily discernible and more job-related attributes, such as education, company tenure, and functional area. These attributes are directly related to the tasks and problems faced by the group (Pelled, 1996). Informational diversity is argued to promote elaboration-based processes that refer to the exchange, discussion, and integration of knowledge and perspectives (Jehn et al., 1999; Jehn, Chadwick, & Thatcher, 1997; Simons, Pelled, & Smith, 1999; Van Knippenberg et al., 2004).

However, this typology approach is insufficient to present a comprehensive view of the effects of diversity. According to the categorization elaboration model (CEM; Van Knippenberg et al., 2004), both types of diversity may elicit relational categorization and informational elaboration simultaneously, although in varying degrees, and these processes may mutually influence each other. Integrating the insights from the development of the diversity literature, we draw three conclusions: (a) the effects of diversity are comprehensive, covering relational and informational processes; (b) dominant processes may differ according to the characteristics of diversity; and (c) relational and informational aspects may not be independent but may mutually influence each other instead. In sum, the success of utilizing diversity to enhance firm performance may depend on the advancement of relational and informational processes that mutually reinforce each other.

In this regard, relational coordination theory has significant potential to integrate the existing perspectives and provide a

comprehensive view on the effects of diversity. First, relational coordination comprises two components: high-quality communication and the relationships of shared goals, shared knowledge, and mutual respect. The communication component deals with informational processes, whereas the relationship component deals with relational processes. The quality of communicating and relating is theorized to contribute equally to the successful coordination of work, leading to enhanced overall performance (Gittell, 2000, 2002).

Second, relational coordination theory suggests that relational and informational processes influence each other. The mutual influence between communicating and relating is at the core of this theory (Gittell, 2011; Smidts, Pruyn, & Van Riel, 2001). For instance, the distinct "thought-worlds" of diverse members diminish when they communicate and develop a collective identity, purpose, and knowledge (Smidts et al., 2001). Communication is a basis for developing respectful relations because it helps employees to understand each other's distinct roles and contributions to the group (Gittell, 2011). Task-focused interactions tend to develop high levels of cohesion and trust among group members (Tekleab, Quigley, & Tesluk, 2009).

Briefly, these elements suggest novel mechanisms to explain the broad and complex effects of workforce diversity on firm performance. The dynamics between relational and informational processes determine the level of relational coordination that affects firm performance. Therefore, relational coordination helps to capture the effects of diversity comprehensively by suggesting a mediating process that covers relational and informational aspects simultaneously. Building on the discussion thus far, we claim that diversities in age and education are now examined as the representatives of the two types of diversity, namely, social category or relational diversity and informational diversity. Our theoretical arguments are then hypothesized and tested.<sup>1</sup>

## 2.2 | Age diversity and relational coordination

Defined as the extent to which a group or organization is heterogeneous with respect to the age of its members (Li, Chu, Lam, & Liao, 2011; Rabl & del Carmen Triana, 2014), age diversity is classified under the social category diversity for its high visibility and low job relatedness (Pelled, 1996). Age, as a type of phenotypic attribute, is readily observable (Wegge et al., 2008). The similarity-attraction and social identity paradigms suggest that diversity in salient characteristics hinders workplace interactions. Specifically, highly visible diversity is apt to activate social categorization, promoting the classification of individuals in distinct social groups (Williams & O'Reilly, 1998). Humans prefer to build and maintain relationships with those similar to themselves; thus, divisions in social groups formed by highly visible attributes (e.g., age) are likely to be clear and long-lasting. The combined effects can result in stereotyping, interpersonal biases, and prejudices, which lead to negative consequences in workgroup dynamics.

Moreover, age diversity is low in job relatedness, capturing only a part of job experiences and task perspectives (Zenger & Lawrence, 1989). Job relatedness is the key dimension of diversity that decides its positive effects on work processes and communications (Pelled,

1996). Heterogeneity in job-related attributes has been suggested to help the focal actors communicate with one another frequently, gather new information, delve deeply into task-related issues, and develop a comprehensive understanding of problems (Simons et al., 1999). Meanwhile, differences in attributes that are low in job relatedness are less influential on task-related communications and interactions. In this regard, age diversity arguably diminishes social integration, causing difficulty in sharing a purpose, establishing a common understanding, and trusting one another (Kunze, Böhm, & Bruch, 2011; C. A. O'Reilly, Caldwell, & Barnett, 1989).

Finally, considering that our research context of South Korea may also play a role in facilitating social categorization among employees is important. In South Korea, authority and social order are stratified by age (A.E. Kim & Park, 2003). Korea also exhibits high power distance (e.g., higher than in India and the United States; Christie, Kwon, Stoeberl, & Baumhart, 2003). Thus, employees with diverse age ranges likely form subgroups rather than socialize across groups.

Overall, age diversity is likely to undermine the social integration of diverse employees due to strong social categorization-based processes. Under conditions characterized by such low-quality relationships, employees feel less psychologically linked with the other members of their group and thus become hesitant to participate in communication and discussions (Milliken & Martins, 1996; Zenger & Lawrence, 1989). Poor communication, along with low-quality relationships at work, impairs successful work coordination (Smith et al., 1994).

**Hypothesis 1** *Age diversity is negatively related to relational coordination.*

## 2.3 | Education diversity and relational coordination

Education diversity is defined as the extent to which a group or organization is heterogeneous with respect to educational levels (Williams & O'Reilly, 1998). This factor is low in visibility, high in job relatedness, and classified as informational diversity (Pelled, 1996). Diversity in education can bring informational benefits to organizations (Seong, Kristof-Brown, Park, Hong, & Shin, 2015; Van Knippenberg et al., 2004). Diverse employees provide different task-related perspectives and information that promote new insights and enrich problem-solving processes (De Dreu & West, 2001). In addition, a workforce with diverse educational backgrounds enables a firm to efficiently operate a broad array of tasks (Hsieh & Chao, 2004). Accordingly, Seong et al. (2015) affirmed that employees in a group with education diversity develop perceptions of knowledge-based, skill-based, and ability-based (KSA) complementary fit. Specifically, educationally diverse members introduce considerable informational resources that enhance the perception of the growing workgroup ability to meet the demands of its tasks (Phillips & Loyd, 2006; Seong et al., 2015). Employees appreciate and exchange the multiplicity of the cognitive resource base, leading to mutual learning and stimulating discussions and task-elaboration processes (Milliken & Martins, 1996;

Van Knippenberg et al., 2004). Therefore, education diversity is expected to increase informational communication (Ancona & Caldwell, 1988; Jehn et al., 1999). Moreover, informational diversity increases the capabilities of employees to communicate with other organizational members beyond their own workgroups, thereby facilitating boundary-spanning and interdepartmental communications (Ancona & Caldwell, 1988, 1992; Milliken & Martins, 1996).

With continued communications over time, employees gain a better understanding of the company-wide mission and form a collective identity, leading to the development of shared goals. Increased overlaps in knowledge also reduce distinct thought worlds (Zenger & Lawrence, 1989). Finally, a deep understanding of the unique contributions of others naturally develops trust and respect for the value of diversity (Swann, Polzer, Seyle, & Ko, 2004). Thus, despite potential social categorization among people with different educational backgrounds, the low visibility of education prevents such negative effects from becoming salient. Given the multitude of benefits from education diversity, we propose that employees develop high-quality relationships of shared goals, shared knowledge, and mutual respect, which are conducive to successful coordination.

**Hypothesis 2** *Education diversity is positively related to relational coordination.*

## 2.4 | Relational coordination and firm performance

Communication- and relationship-intensive relational coordination is expected to lead to high performance, particularly in the high levels of task interdependence, uncertainty, and time constraints (Gittell, 2002). Relational coordination was originally developed in transportation and service settings (Gittell, 2000), and this study is one of the early attempts to present evidence of its effect in manufacturing contexts (see also, Pagell, Klassen, Johnston, Shevchenko, & Sharma, 2015). Although traditionally weak in the above characteristics, manufacturing organizations have undertaken massive transformations not only in adopting new technologies but also in reshaping their work designs (Dean & Snell, 1991). The primary tendency has been to adopt integrated manufacturing practices that emphasize collective effort, professionalism, and flexibility. These practices similarly increase workplace autonomy to maximize adaptability in fast-changing work environments while simultaneously attempting to increase workforce commitment and workplace humanization (Klein, 1991). Therefore, coordination is becoming increasingly important in the manufacturing sector (Cutcher-Gershenfeld, 1991; MacDuffie, 1995).

We propose that relational coordination significantly improves the performance of manufacturing firms. First, shared goals and mutual respect generate supportive working relationships, creating a powerful bond among employees. With shared goals, workers are likely to engage in collective action rather than categorize themselves into subgroups. They also become willing to exert efforts on behalf of one another without expecting immediate repayments. Therefore,

employees come together and work for the success of the larger organization.

Second, a shared understanding of the overall value chain may minimize process losses and improve efficiency. By placing individual work in the context of the larger process, employees develop a holistic perspective on how their tasks integrate with the overall value chain and whom they must consult when problems arise (Moreland, 2006). They can avoid suboptimal resource combinations by aiming for the ultimate benefits of the larger group and reducing redundant investments (Crowston & Kammerer, 1998). In addition, overlapping knowledge allows organizational members to communicate effectively, which facilitates the absorption and spread of new information and perspectives (Gittell, 2002).

Third, increased communication helps employees discuss emerging issues and obtain new, diverse information. Communication activities directed toward solving problems could adequately address the divergent perspectives that arise during discussions (Bunderson & Sutcliffe, 2002), thereby creating the basis for elaborate, high-quality decisions (Van Knippenberg et al., 2004). Furthermore, company-wide communications beyond workgroups and departments enable employees to access the perspectives of individuals with diverse expertise and subsequently enhance their problem-solving and decision-making abilities (Ancona & Caldwell, 1988; Clark, Amundson, & Cardy, 2002).

These implications demonstrate the importance of forming relational coordination at work. By establishing supportive relationships, organizational members feel psychologically satisfied and committed, whereas problematic intersubgroup relations are diminished (De Dreu & Weingart, 2003; Gaertner, Mann, Dovidio, Murrell, & Pomare, 1990). Understanding the overall work process helps employees combine scattered resources in an optimal manner to achieve their shared goals (Gittell, 2011; Moreland, 2006). Furthermore, communication encourages task-related discussions and improves access to new information. Positive relationships include benefits such as promoting high-quality communication that, in turn, reinforces productive relationships (Smith et al., 1994). Relational coordination leads to improved firm performance through this virtuous circle between high-quality relationships and communication.

**Hypothesis 3** *Relational coordination is positively related to firm performance.*

## 2.5 | HR practices as moderators

Influenced by contingency theory, studies on the relationship between workforce diversity and performance have increasingly recognized contextual factors (Kearney & Gebert, 2009; Pelled, 1996; Rabl & del Carmen Triana, 2014; Richard, 2000; Triana et al., 2010; Wegge et al., 2008). HR practices also shape the social contexts of firms (Gittell et al., 2010) and are therefore proposed as significant contextual factors that may influence the diversity-performance relationship (Kochan et al., 2003). However, existing studies focus on the

effects of specific types of HR practices that are directly related to workplace diversity or applied only to specific groups of employees, such as affirmative action programs for minorities (e.g., Heilman, McCullough, & Gilbert, 1996), diversity education programs (e.g., Ely, 2004), and diversity-oriented HR practices (e.g., Jehn & Bezrukova, 2004; Richard & Johnson, 2001; Triana & Garcia, 2009). Other general HR practices that apply for all the employees of a firm have received limited attention. However, the productivity potential of general HR practices is fairly strong given that they are commonly used in organizations and can therefore be easily implemented.

We propose HR practices of structural empowerment and multisource feedback as significant contextual factors for the effects of diversity on relational coordination for two reasons. First, these HR practices are highly relevant to workforce diversity. With its potential for managing workforce diversity, structural empowerment has recently gained interest in diversity research (e.g., Avery et al., 2013). For instance, Prasad (2001) proposed that structural empowerment could promote the participation and inclusion of diverse individuals in organizational processes. Yang and Konrad (2011) also argued that structural empowerment can lead to organizational effectiveness by enhancing the participation of minority groups, such as female and ethnic groups. Notably, structural empowerment requires consultation across multiple perspectives, while the performance benefits of a diverse workforce are expected to be the most evident (Pelled, 1996; Wegge et al., 2008).

Moreover, the introduction and subsequent popularity of multisource feedback were driven by a need to reflect different perspectives in the diverse and global workplace of today (Hazuka, Hezlett, & Schneider, 1993; Tornow, 1993). For instance, Nowack (1993) summarized the reasons for the increased use of multisource feedback in firms. The study contended that one major reason is the need to maximize employee potential in the face of increased workforce diversity. Hazuka et al. (1993) proposed that the value of multisource feedback resides in its ability to gather multiple perspectives and important opinions, each of which can provide relevant, yet different, information. In addition, the literature on performance appraisal has espoused the use of multisource feedback due to its ability to provide an unbiased assessment for diverse employee groups. In this research stream, multisource appraisal and feedback are proposed to reduce the bias against minorities due to their likely high participation in these processes (Bernardin, Konopaske, & Hagan, 2012; Edwards & Ewen, 1996).

Second, the two types of HR practices above have been suggested as the key factors that shape the workplace interactions of employees and affect firm performance. Structural empowerment and multisource feedback are strongly associated with the five job characteristics (i.e., variety, identity, significance, autonomy, and feedback) that influence employee attitudes and behaviors (Hackman & Oldham, 1976). For instance, structural empowerment potentially improves job performance by allowing workgroups to explore the different ways of task completion (i.e., variety), develop a comprehensive understanding of the work process (i.e., identity) and the final outcome (i.e., significance), and make independent decisions (i.e., autonomy).

Multisource feedback also influences employee interaction through the motivation to reduce perceptual gaps and engage in positive work relationships (London & Smither, 1995; Seifert, Yukl, & McDonald, 2003; Smither et al., 1995). As these HR practices have been identified as significant contextual influencers of firm performance (e.g., K. Y. Kim et al., 2016; Smither et al., 2005; Spreitzer, 2008), we therefore propose structural empowerment and multisource feedback as significant contextual factors in the integration of diverse members to promote successful relationship coordination and firm performance.

## 2.6 | Structural empowerment

With structural empowerment, firms structurally delegate authority and responsibility to employees in lower positions of the organizational hierarchy (Leach et al., 2003; Mintzberg, 1979). Structural empowerment is a postbureaucratic organizational initiative that creates a workplace where everyone feels responsible for the success of the company and shares the need to coordinate their actions effectively (Gittel et al., 2010; Heckscher, 1994). This environment serves as a means to address the limitations of bureaucratic organizational practices that restrict communication among employees involved in the different parts of work processes (Piore, 1993). Structural empowerment has been confirmed as a context that encourages employees to participate in organizational processes and initiative workplace improvements (e.g., Mathieu, Gilson, & Ruddy, 2006; Mills & Ungson, 2003; Spreitzer, 2008; Spreitzer & Doneson, 2005). In addition, the autonomy, potency, impact, and job fulfillment of the employees are enhanced (Kirkman & Rosen, 1999). By designing work in a way that allows and motivates employees to participate in important decision-making processes, firms can facilitate communications and interactions (i.e., relational coordination) even among diverse members. Therefore, we suggest that structural empowerment is a salient work context that promotes relational coordination among a diverse workforce.

To begin with, structural empowerment highlights the advantages of diversity and motivates employees to learn new skills and knowledge from diverse members. Recognizably, workforce diversity has advantages in terms of a broad set of knowledge, expertise, and insights. When organizations emphasize the importance of these benefits, diversity produces an even greater impact. Specifically, as Van Knippenberg et al. (2004) validated, diversity leads to effective task-relevant elaboration processes when the tasks require the pooling and processing of diverse perspectives and when employees are provided the motivation to share different opinions. When organizations delegate authority and responsibility, the employees who gain ownership of their work are motivated to initiate changes and innovations (Spreitzer & Doneson, 2005). The need for innovation, in turn, induces employees to integrate a broad set of knowledge and perspectives by interacting with and learning from diverse members (Olson et al., 2007). Therefore, structural empowerment invites organizational members to communicate and build relationships with other individuals with different backgrounds and perspectives.

Furthermore, organizations with empowering structures enable various employees to participate and become involved in important decision-making processes (Spreitzer, 2008). This situation encourages mutual influence and shared understanding. Social categorization among different employees limits their interactions, intensifies misunderstandings, and prevents mutual understandings (Williams & O'Reilly, 1998). However, these negative effects of social categorization are likely to be mitigated through employee participation (Larkey, 1996). When the participation of diverse employees is encouraged, diverse members gain opportunities to express their voices and influence organizational decisions, which help members in embracing different viewpoints (De Dreu & West, 2001; Jehn & Bezrukova, 2004). Moreover, in this type of environment, diverse members have a considerable willingness to cooperate and share their knowledge freely (Campion, Medsker, & Higgs, 1993; Evans & Davis, 2005). Therefore, we infer that, through employee participation, the work design of structural empowerment reinforces shared understanding and mutual respect among a diverse workforce.

Overall, workforce diversity is more likely to cause successful coordination when organizations are structured to encourage employee empowerment. We argue that structural empowerment is expected to moderate the relationship between the two types of diversity (i.e., age and education diversity) and relational coordination in a manner that highlights benefits (e.g., diverse and abundant sources of knowledge and information) and lessens adverse effects (e.g., social categorization and misunderstanding). First, a great mix of age and education in the workplace may be beneficial by comprising a larger pool of informational resources based on different life and job experiences (e.g., age diversity; Skirbekk, 2008; Wegge & Schmidt, 2009), heterogeneous knowledge, and task expertise (e.g., education diversity; Milliken & Martins, 1996; Rico et al., 2007). In addition to the diversity in education, workgroups composed of age-diverse members have potential informational advantages because older and younger employees have distinct social experiences, knowledge, and social networks (Bantel & Jackson, 1989; Kearney & Gebert, 2009). Age diversity is deduced to positively influence performance when tasks are complex or highly dependent on knowledge-based judgments (Warr, 1994; Wegge et al., 2008). Empowering structures lead employees to develop the beneficial aspects of diversity by providing the motivation to learn and develop.

Second, organizational structures that encourage empowerment can suppress categorization and misunderstanding among diverse members. Empowering work environments creates more opportunities for employees to participate in task processes and interact with the members of different social groups. These opportunities induce open employee interactions and cooperative behaviors, which then promote the formation of shared goals, shared knowledge, and mutual respect (i.e., relational coordination). Thus, employees who are diverse in age and education are expected to collaborate well at the high levels of structural empowerment.

**Hypothesis 4a** *Structural empowerment moderates the relationship between age diversity and relational coordination, such that the negative relationship becomes weaker when organizations have a higher level of structural empowerment.*

**Hypothesis 4b** *Structural empowerment moderates the relationship between education diversity and relational coordination, such that the positive relationship becomes stronger when organizations have a higher level of structural empowerment.*

## 2.7 | Multisource feedback

We suggest multisource feedback, also known as 360° feedback, as another important HR practice that facilitates the integration of a diverse workforce. Multisource feedback is provided by multiple sources such as subordinates, peers, supervisors, and customers (London & Smither, 1995). Individuals commonly receive multisource feedback to reflect on themselves and plan for their development (Smither et al., 2005). This feedback contrasts with the traditional performance appraisal wherein employees are evaluated only by their supervisors (Bernardin et al., 2012).

Multisource feedback can help cultivate high-quality working relationships among diverse employees by promoting a mutual understanding. First, multisource feedback can help employees reach a better understanding of individual differences in work styles and social interactions (B. O'Reilly, 1994). A diverse workforce is likely to have different opinions about job responsibilities and expected behaviors because of different lifestyles, job experiences, or viewpoints (Chubin et al., 2005; Zemke et al., 2000). Ambiguity and uncertainty embedded in differences create opportunities for stereotype-based expectations to result in bias. Therefore, creating consistent and frequent informational exchanges is critical to reducing conflict associated with misunderstandings and mistrust (Bond & Haynes, 2014; Heilman & Haynes, 2008). Multisource feedback provides employees with opportunities to understand the discrepancies between themselves and others (London & Smither, 2002). Receiving feedback from diverse others, employees can view the perspectives of others and gain a considerable understanding of how they can work well with people from different backgrounds (Seifert et al., 2003).

Second, multisource feedback can motivate individuals to change their behaviors to reduce such discrepancies (London & Smither, 1995; Seifert et al., 2003). According to control theory (Carver & Scheier, 1990) and feedback intervention theory (Kluger & DeNisi, 1996), individuals are motivated to change their behavior when they detect its discrepancy from a personal standard. Employees in a diverse workforce encounter various discrepancies and, at times, are surprised at learning the views of others. Thus, diverse employees increasingly become aware of their own developmental needs and adjust their efforts to reduce the gap (Mabey, 2001). For instance,

London and Smither (2002) corroborated that employees perceive a greater need for behavioral change when they recognize discrepancies between self-ratings and the feedback ratings of others. Studies have affirmed that multisource feedback improved the positive forms of behaviors such as consideration, collaboration (Atwater & Brett, 2006; Seifert et al., 2003), and social skills (Hazuka et al., 1993).

Third, multisource feedback can promote positive workplace perceptions by providing employees with opportunities to speak up. With multisource feedback, individuals could express their opinions on various aspects of workplace issues, which might otherwise have been suppressed (Garavan, Morley, & Flynn, 1997; Smither et al., 1995). For instance, Mabey (2001) affirmed that multisource feedback increases the perceptions of employees about discretion. Moreover, such feedback enables employees to voice their opinions to their superiors (i.e., supervisors and senior employees) and different social groups, such as older and highly educated members (Atwater & Brett, 2006; Hazuka et al., 1993; Seifert et al., 2003; Walker & Smither, 1999). Overall, multisource feedback that provides opportunities to express opinions improves the overall satisfaction in the workplace by enhancing the sense of autonomy and relationships among different groups (Korsgaard & Roberson, 1995; Mabey, 2001).

All of these effects enhance relational coordination among a diverse workforce. We contend that multisource feedback effectively improves relational coordination among workgroups with age and education diversity. A diverse workforce composition creates different expected behaviors and performance standards. These varied thought worlds can hinder members from fully understanding one another (Zemke et al., 2000). In this regard, multisource feedback is conducive to managing workforce diversity by helping to reduce perceptual gaps and facilitating efforts toward social integration. With this finding, Bond & Haynes, 2014 claimed that multisource feedback can promote the integration of a diverse workforce by holding workers accountable for their impact on others.

**Hypothesis 5a** *Multisource feedback moderates the relationship between diversity in age and relational coordination such that the negative relationship becomes weaker when organizations implement a higher level of multisource feedback.*

**Hypothesis 5b** *Multisource feedback moderates the relationship between diversity in education and relational coordination such that the positive relationship becomes stronger when organizations implement a higher level of multisource feedback.*

Theoretical advances in the contingency models of workforce diversity have called for research on moderators between diversity and outcomes (Joshi & Roh, 2009; Triana et al., 2010; Wegge et al., 2008). As such, we propose that HR practices moderate the indirect effects of age and education diversity on firm performance via relational coordination. Congruent with the theoretical expectation that age diversity produces an adverse impact on relational coordination,

we hypothesize that the negative, indirect relation of age diversity with firm performance is weak at high levels of either structural empowerment or multisource feedback. Moreover, given the positive effect of education diversity on relational coordination, we propose that the positive, indirect relation of education diversity with firm performance is strong at high levels of either structural empowerment or multisource feedback. This scenario represents a moderated mediation, wherein a mediated effect is strong or weak at the different levels of a third variable.

**Hypothesis 6a** *Structural empowerment positively moderates the relationship between age diversity and firm performance as mediated by relational coordination such that the mediated relationship is less negative when structural empowerment is high than when it is low.*

**Hypothesis 6b** *Structural empowerment positively moderates the relationship between education diversity and firm performance as mediated by relational coordination such that the mediated relationship is more positive when structural empowerment is high than when it is low.*

**Hypothesis 7a** *Multisource feedback positively moderates the relationship between age diversity and firm performance as mediated by relational coordination such that the mediated relationship is less negative when multisource feedback is high than when it is low.*

**Hypothesis 7b** *Multisource feedback positively moderates the relationship between education diversity and firm performance as mediated by relational coordination such that the mediated relationship is more positive when multisource feedback is high than when it is low.*

### 3 | METHODS

#### 3.1 | Data and sample

Data were obtained from the Human Capital Corporate Panel (HCCP). The Korea Research Institute for Vocational Education & Training (KRIVET) collected data in collaboration with the Korea Ministry of Labor. The KRIVET used stratified random sampling from 3,187 manufacturing firms registered at the Korea Investors Service (KIS) to recruit participating companies. The distribution of industry, size, ownership types, and public listing status were considered.<sup>2</sup> A total of 367 manufacturing firms participated in the survey (the reference year being 2010), and the respondent companies were matched to the financial statements from the KIS corporate data, which is the Korean equivalent of COMPUSTAT.

The HCCP survey data were completed by multiple groups of respondents. First, senior directors for strategy and top HR officers



completed the survey items within their managerial sphere. For instance, strategic planning directors responded to the items related to environmental change and firm strategy. HR officers responded to the items related to age and educational composition, multisource feedback, number of total employees, and labor/management relationship. Second, managers with supervisory roles answered the items related to the level of structural empowerment in their work units. Third, department directors completed the survey items related to the perceived competitiveness of their firms. Fourth, employees completed the survey items related to relational coordination. The employment of multiple participants from different sources improved internal validity (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Our use of subjective ratings and objective financial measures of firm performance is also noteworthy.

Small firms may not operationalize HR functions in a systematic way (Datta, Guthrie, & Wright, 2005; Huselid, 1995), and as such, we only included firms that employed over 100 full-time workers. After eliminating missing data and single respondents from managers, department directors, or employees, 189 companies in the manufacturing sector were considered for our final analysis. Our survey participants reached a total of 6,179 employees, which included an average of 32.69 ( $SD = 15.65$ ) members from each firm. On average, 2.7 managers and 5.5 department directors from each firm responded to the survey. Male respondents comprised 82% of the respondents. In terms of education, 39.6% of the respondents finished high school or less, 17.8% finished vocational school, 36.6% finished a bachelor's degree, 4.9% finished a master's degree, and 0.4% finished a doctoral degree. The average age and tenure of the respondents were 37.53 ( $SD = 8.51$ ) and 9.61 ( $SD = 8.18$ ) years, respectively.

## 3.2 | Measures

### 3.2.1 | Age and education diversity

Following previous studies (Ancona & Caldwell, 1992; Jehn et al., 1999), an entropy-based diversity index was used to measure age and education diversity. This index shows the degree of distribution in selected groups, which is calculated using the mathematical equation  $H = -\sum P_i (\ln P_i)$ , where  $P_i$  represents the proportion of the group with this demographic characteristic. The HR officers reported the overall workforce composition of their respective firms. Age diversity was measured by categorizing the organizational members into four age groups, namely, below 29, 30–39, 40–49, and over 50 years. Education diversity was operationalized as the education level (Jehn & Bezrukova, 2004; Kearney & Gebert, 2009; Seong et al., 2015), which was measured using five categories, namely, high school or less, 2-year college, bachelor's degree, master's degree, and doctoral degree.

### 3.2.2 | Relational coordination

Relational coordination theory has been validated in service settings (Gittell et al., 2000; Gittell et al., 2010). In the present study, we

utilized existing and widely available data on Korean manufacturing firms. Thus, the newly constructed items are a proxy measure for a validated psychometric measure, which is relational coordination, and is justified for use in this exploratory study to test relational coordination for the first time in Korean manufacturing firms. Responses were measured with a 5-point Likert scale, ranging from (1) completely disagree to (5) completely agree.

Our items differ from the previously validated theory in three ways. We measured the quality of communication using two available items. As a measure of company-wide communication between departments, the interdepartmental (or interwork unit) communication level was determined with the item "In our organization, we have favorable inter-departmental communications." At the organization level, communication was measured with the item "In our organization, employees freely talk to their superiors about their opinions." Second, the dimension of shared knowledge was measured with the single item "In our organization, employees are informed about the overall company issues." Third, the level of collective identity was measured instead of directly testing the level of shared goals. Shared goals and collective identity are closely related in that both constructs essentially pertain to collective orientation or the willingness to cooperate and engage in collective action. Therefore, the level of collective identity was measured with the item "In our organization, unity and collective identity are important." Finally, mutual trust was measured with the item "In our organization, employees trust one another."

As a provisional proxy measure, we believe that our instrument approximates the relational coordination construct reasonably well given the current lack of relational coordination data in the Korean manufacturing sector (see also Carmeli & Gittell, 2009). An average of 32.69 ( $SD = 15.65$ ) employees from each firm responded to the survey items. The factor analysis based on the principal factors method proved that the five items loaded onto one factor obtained an eigenvalue of 3.22. Thereafter, by following the procedures used in other relational coordination studies (e.g., Gittell et al., 2000), we created a composite index of relational coordination and achieved Cronbach's alpha of 0.86. We used  $r_{wg(j)}$  and intra-class correlation (ICC) statistics to justify the organizational-level aggregation of the relational coordination index. The average within-organization agreement ( $r_{wg(j)}$ ) coefficient was 0.91, which was above the usual 0.70 criterion. The ICC (1) for relational coordination was 0.16, and the ICC(2) value for the same variable was 0.87. Therefore, we aggregated this index to the organizational level.

### 3.2.3 | HR practices

Previous studies on organizational structure, HR implementation, and structural empowerment have identified unit and middle managers as key actors who implement job design practices and strategies of organizations (e.g., Dean & Snell, 1991; Lee, Pak, Kim, & Li, 2019; Mills & Ungson, 2003; Sikora & Ferris, 2014). Thus, in the present study, we measured structural empowerment by asking managers to estimate the extent to which their business units delegate authority and responsibility in decision-making regarding (a) workload, (b) work

methods, (c) work pace, (d) working hours, (e) task allocation, (f) job rotation, (g) training activities, and (h) hiring unit members. A 4-point response scale was used for these questions, from 1: *almost none* to 4: *very much*. An average of 2.7 managers from each firm responded to the survey. For these eight items, the mean  $r_{wg(j)}$  was 0.96, the ICC (1) was 0.28, and the ICC(2) was 0.51, which justified data aggregation. Therefore, we aggregated the data to create an organizational-level variable. Cronbach's alpha was 0.91.

Multisource feedback was measured using two separate items that were answered by HR officers. First, we asked the degree to which a firm actually used multisource feedback (0: *not used at all*, 4: *heavily used*). Second, the intensity of utilizing multisource feedback was measured (0: *not used at all*, 1: *used as a reference*, 2: *used for promotion or compensation*). We conducted separate analyses for each item.<sup>3</sup>

### 3.2.4 | Firm performance

We used the objective corporate financial performance and the subjective ratings of firm competitiveness. First, we utilized the 2011 operating profit data that were provided by KIS in a 1-year corporate performance comparison to the survey reference year (2010). In presenting the effect of relational coordination on firm performance, we argued that the former is conducive to improve not only employee labor productivity but also the optimal combination of the resources of firms. Operating profit equals revenue (sales) minus sales and operating expenses, which well reflect improved labor productivity (revenue) and the efficient use of the resources of firms (sales and operating expenses) (e.g., Bhattacharya, Gibson, & Doty, 2005).<sup>4</sup> Raw data were used in the analyses because the distribution of the operating profit was not highly skewed. Second, the department directors (an average of 5.5 participants from each firm) answered the items on how they perceived the extent to which their firms outperformed their competitors. The following five areas were rated on the basis of the performance criteria suggested by Ancona and Caldwell (1992): (a) new product development, (b) efficiency in work procedures and processes, (c) cost savings, (d) product quality, and (e) reduced error rates and increased yields. Each item was rated on a 5-point scale, ranging from 1: *much lower than the industry average* to 5: *much higher than the industry average*. To ensure the adequacy of the data aggregation, we calculated mean  $r_{wg(j)}$ , which was 0.94. ICC(1), and ICC (2) were 0.35 and 0.75. Therefore, the five ratings were aggregated to create a composite index of firm competitiveness. Cronbach's alpha was 0.84.

### 3.2.5 | Control variables

We controlled for various firm characteristics in our models. First, the average age and education values were included as control variables to separate the effects of diversity from the associated levels of age and education.<sup>5</sup> Second, we controlled for workforce gender composition. Despite not being a focus of this study, gender has been corroborated to be one of the most influential bases for social categorization

(Van Knippenberg et al., 2004). Thus, we controlled for gender diversity to test the unique effects of age and education diversity above and beyond the effects of gender composition. Third, we controlled for the effect of organization size, which was typically known to affect employee interaction patterns. This variable was measured as the log number of total employees in each firm. Fourth, environmental change was considered an external factor that imposed a profound need for coordinated efforts (Hsieh & Chao, 2004). Two items were operationalized to measure the environmental change in the last 2 years in product and technology (0: *not at all*, 4: *heavily changed*) and were then averaged to generate an index of environmental change ( $\alpha = .72$ ). Fifth, we included the chosen competitive strategy of a firm as a variable that substantially affects the interdependency in interdepartmental and interpersonal relationships and firm growth (Miles, Snow, Meyer, & Coleman, 1978). Firm strategy was included as a dummy code based on whether the firms had a first-mover strategy by heavily investing in new products, a performance-oriented strategy by selectively developing new products, or a relatively stable strategy by trying to maintain the status quo. Finally, the labor-management relationship was also controlled because of its effect on relational coordination (Gittell, 2000). This variable was measured on a 5-point scale ranging from 1: *very negative* to 5: *very positive*.

## 4 | RESULTS

Table 1 presents the means, SDs, and correlations for all the variables. The predictions were tested via hierarchical multiple regression analysis. The predictor variables were standardized to analyze the effects of interactions, which were clarified via simple slope analyses (Aiken & West, 1991).

Hypotheses 1 and 2 refer to the main effects of workforce diversity on relational coordination. Model 2 in Table 2 shows that age diversity ( $\beta = -.14$ ,  $p < .05$ ) is significantly and negatively related to relational coordination, whereas education diversity ( $\beta = .19$ ,  $p < .05$ ) is significantly and positively related to relational coordination, which further explained the 3% variance in relational coordination. Therefore, Hypotheses 1 and 2 are supported.

Hypothesis 3 refers to the performance benefits of relational coordination. First, relational coordination is significantly and positively related to operating profit ( $\beta = .24$ ,  $p < .05$ ; Model 5 in Table 2), which further explains 4% of the variance in the productivity measure. Second, the subjective ratings of firm competitiveness as measured by the heads of department were tested as our dependent variable. Relational coordination exerts a positive effect on the subjective perception of firm competitiveness ( $\beta = .30$ ,  $p < .01$ ; Model 7 in Table 2), which further explains 6% of the variance in the subjective ratings. Overall, these results support Hypothesis 3.

Model 3 in Table 2 demonstrates that the interactions between age diversity and structural empowerment ( $\beta = .13$ ,  $p < .05$ ) and between education diversity and structural empowerment ( $\beta = .14$ ,  $p < .05$ ) are both significant. Figure 2 shows that age diversity is negatively related to relational coordination when the structural

**TABLE 1** Means, SDs, and correlations

|                                 | Mean           | SD            | 1       | 2      | 3       | 4       | 5       | 6      | 7       | 8      | 9      | 10     | 11    | 12     | 13     | 14     |
|---------------------------------|----------------|---------------|---------|--------|---------|---------|---------|--------|---------|--------|--------|--------|-------|--------|--------|--------|
| 1 Firm size (log)               | 5.91           | 0.88          |         |        |         |         |         |        |         |        |        |        |       |        |        |        |
| 2 Labor relation                | 3.99           | 0.86          | −0.21** |        |         |         |         |        |         |        |        |        |       |        |        |        |
| 3 Average age                   | 38.69          | 3.59          | −0.03   | −0.05  |         |         |         |        |         |        |        |        |       |        |        |        |
| 4 Average education             | 13.81          | 0.78          | 0.09    | −0.04  | −0.29** |         |         |        |         |        |        |        |       |        |        |        |
| 5 Gender diversity              | 0.41           | 0.18          | −0.12   | 0.15*  | −0.15*  | −0.18*  |         |        |         |        |        |        |       |        |        |        |
| 6 Environmental change          | 2.55           | 0.73          | 0.27**  | 0.05   | −0.21** | −0.23** | 0.03    |        |         |        |        |        |       |        |        |        |
| 7 First-mover strategy          | 0.31           | 0.46          | 0.16*   | −0.02  | −0.10   | −0.15*  | 0.09    | 0.31** |         |        |        |        |       |        |        |        |
| 8 Performance-oriented strategy | 0.43           | 0.50          | −0.04   | 0.11   | 0.04    | 0.09    | −0.07   | 0.08   | −0.58** |        |        |        |       |        |        |        |
| 9 Structural empowerment        | 2.57           | 0.52          | 0.14    | 0.09   | −0.15*  | 0.07    | −0.11   | 0.21** | 0.11    | 0.01   |        |        |       |        |        |        |
| 10 Multisource feedback         | 0.81           | 1.39          | 0.26**  | −0.10  | 0.02    | 0.04    | 0.06    | 0.16*  | 0.13    | −0.06  | 0.01   |        |       |        |        |        |
| 11 Age diversity                | 1.20           | 0.14          | 0.04    | −0.04  | 0.44**  | −0.09   | −0.05   | −0.03  | −0.05   | 0.07   | −0.08  | 0.04   |       |        |        |        |
| 12 Education diversity          | 1.01           | 0.20          | 0.20**  | −0.01  | −0.25** | 0.56**  | −0.23** | 0.29** | 0.12    | 0.10   | 0.05   | 0.10   | −0.01 |        |        |        |
| 13 Relational coordination      | 3.39           | 0.32          | 0.33**  | 0.11   | 0.06    | 0.16*   | −0.08   | 0.25** | 0.23**  | −0.09  | 0.23** | 0.18*  | −0.06 | 0.25** |        |        |
| 14 Operating profit             | 217,898,111.46 | 58,588,458.98 | 0.54**  | −0.17* | 0.04    | 0.15    | −0.09   | 0.18*  | 0.11    | −0.11  | 0.11   | 0.30** | 0.04  | 0.28** | 0.41** |        |
| 15 Firm competitiveness         | 3.49           | 0.42          | 0.35**  | 0.09   | −0.04   | 0.14    | 0.04    | 0.24** | 0.33**  | 0.21** | 0.16*  | 0.11   | −0.06 | 0.16*  | 0.46** | 0.37** |

Notes: N = 189 (firms). Operating profit is measured in Korean monetary unit (1,000 won; \$1 = approximately 1,000–1,200 won).

\* $p < .05$ ; \*\* $p < .01$ .

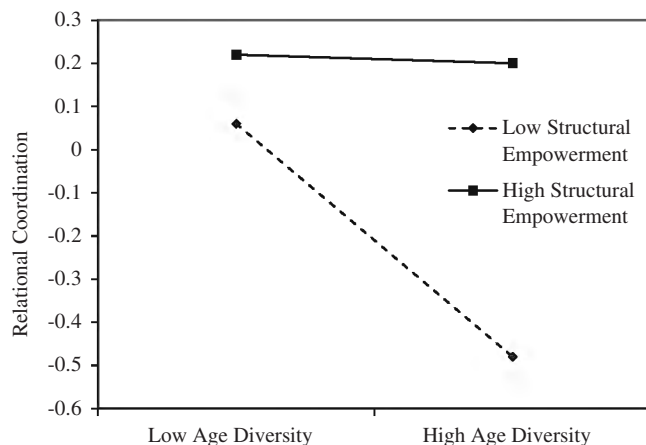
**TABLE 2** Hierarchical regression results predicting relational coordination and firm performance

| Variables                                    | Dependent variable:<br>Relational coordination |         |         | Dependent variable:<br>Operating profit |         | Dependent variable:<br>Firm competitiveness |         |
|--|--|---------|---------|---|---------|---|---------|
|  | Model 1  | Model 2 | Model 3 | Model 4                                 | Model 5 | Model 6                                     | Model 7 |
| Firm size                                    | 0.27**   | 0.26**  | 0.24**  | 0.46**                                  | 0.40**  | 0.33**                                      | 0.25**  |
| Labor relation                               | 0.19**   | 0.17*   | 0.19**  | −0.05                                   | −0.09   | 0.16*                                       | 0.11    |
| Average age                                  | 0.17*  | 0.26**  | 0.25**  | 0.15*                                   | 0.09    | 0.12  | 0.04    |
| Average education                            | 0.15*  | 0.07    | 0.08    | 0.06                                    | 0.04    | 0.08  | 0.06    |
| Gender diversity                             | −0.03  | 0.01    | 0.01    | 0.04                                    | 0.05    | 0.09  | 0.08    |
| Environmental change                         | 0.11   | 0.09    | 0.08    | 0.04                                    | 0.02    | 0.07  | 0.05    |
| First-mover strategy                         | 0.08   | 0.07    | 0.06    | −0.15                                   | −0.16*  | 0.16  | 0.14    |
| Performance-oriented strategy                | −0.08  | −0.09   | −0.11   | −0.21**                                 | −0.19*  | −0.13                                       | −0.11   |
| Structural empowerment                       | 0.15*  | 0.16*   | 0.21**  | 0.08                                    | 0.03    | 0.08  | 0.03    |
| Multisource feedback                         | 0.08   | 0.07    | 0.08    | 0.15*                                   | 0.14*   | −0.02                                       | −0.04   |
| Age diversity                                |  | −0.14*  | −0.14*  | −0.02                                   | 0.01    | −0.08                                       | −0.04   |
| Education diversity                          |  | 0.19*   | 0.18*   | 0.21*                                   | 0.19*   | 0.07  | 0.02    |
| Relational coordination                      |  |         |         |   | 0.24*   |   | 0.30**  |
| Age diversity × structural empowerment       |  |         | 0.13*   |   |         |   |         |
| Education diversity × structural empowerment |  |         | 0.14*   |   |         |   |         |
| Age diversity × multisource feedback         |  |         | −0.04   |   |         |   |         |
| Education diversity × multisource feedback   |  |         | 0.15*   |   |         |   |         |
| Total $R^2$                                  | 0.25   | 0.28    | 0.34    | 0.38                                    | 0.42    | 0.27  | 0.33    |
| $\Delta R^2$                                 |  | 0.03    | 0.06    |   | 0.04    |   | 0.06    |

Notes:  $N = 189$  (firms). Standardized coefficients ( $\beta$ ) are reported.

\* $p < .05$ ; \*\* $p < .01$ .

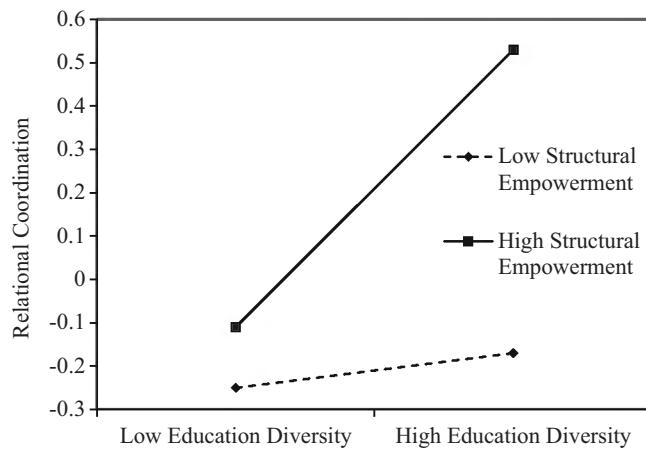
empowerment is low, but the negative effect disappears when structural empowerment is high. The simple slope analysis results also corroborate that the relationship between age diversity and relational coordination is significant when structural empowerment is low (estimate =  $-0.27$ ,  $t = -2.91$ ,  $p < .05$ ) but neutral when structural empowerment is high (estimate =  $-0.01$ ,  $t = -0.15$  n.s.). Figure 3 shows that education diversity is positively related to relational coordination when the structural empowerment is high. The simple slope analysis



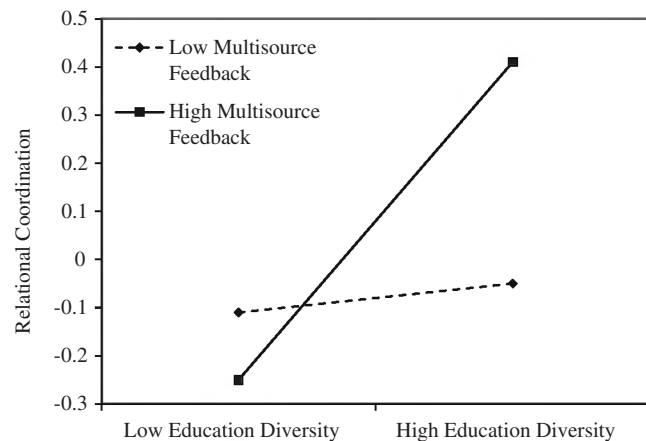
**FIGURE 2** Interaction of age diversity and structural empowerment on relational coordination. Notes:  $N = 189$ . We standardized all focal variables to plot this graph

results confirm that the relationship between education diversity and relational coordination is significant and positive when the structural empowerment is high (estimate =  $0.32$ ,  $t = 3.32$ ,  $p < .01$ ) but insignificant when structural empowerment was low (estimate =  $0.03$ ,  $t = 0.32$ , n.s.). Therefore, Hypotheses 4 and 5 are supported. However, Hypothesis 6 is not supported because the interaction between age diversity and multisource feedback was insignificant ( $\beta = -.04$ , n.s.). In contrast, the interaction between education diversity and multisource feedback was significant ( $\beta = .15$ ,  $p < .05$ ). Figure 4 shows that, when multisource feedback is high, education diversity is positively related to relational coordination. The simple slope analysis results also confirm the positive moderating role of multisource feedback, namely, the effect of education diversity on relational coordination is positive at high levels of multisource feedback (estimate =  $0.33$ ,  $t = 2.88$ ,  $p < .01$ ) but is neutral at low levels of multisource feedback (estimate =  $0.13$ ,  $t = 1.43$ , n.s.). Therefore, Hypothesis 7 is supported.

Hypotheses 6a, 6b and 7a, 7b required the testing of our model for its entirety. Moderated mediation occurs when the strength of the mediated relationship depends on the level of a moderator. Following a procedure conducted by Preacher, Rucker, and Hayes (2007), we calculated bootstrap confidence intervals in estimating the effects. Table 3 shows the estimates and 95% confidence intervals for the conditional indirect effects using 5,000 bootstrap resamples. The results affirm that the indirect effect of age diversity



**FIGURE 3** Interaction of education diversity and structural empowerment on relational coordination. Notes:  $N = 189$ . We standardized all focal variables to plot this graph



**FIGURE 4** Interaction of education diversity and multisource feedback on relational coordination. Notes:  $N = 189$ . We standardized all focal variables to plot this graph

on firm competitiveness via relational coordination was significant and negative only at low structural empowerment but became statistically insignificant under high structural empowerment. Moreover, the indirect effect of education diversity on firm competitiveness via relational coordination is significant and positive only at high structural empowerment but insignificant at low structural empowerment. Finally, the indirect effect of education diversity on firm competitiveness via relational coordination is significant and positive only at high multisource feedback but insignificant at low multisource feedback. The results are consistent when the operating profit is used as an outcome. The results support Hypotheses 6a, 6b, and 7b but not Hypothesis 7a.

## 5 | DISCUSSION

### 5.1 | Theoretical implications

Our results confirm that age and education diversity are significantly related to relational coordination, which in turn contributes to firm

performance. In particular and consistent with our predictions, relational coordination was negatively affected by age diversity but positively affected by education diversity. Moreover, the results validate that two HR practices, structural empowerment and multisource feedback, have potential for shaping the effects of workforce diversity on relational coordination and firm performance. Specifically, the relationship between age diversity and relational coordination is more negative at low structural empowerment levels than at high levels. Furthermore, as predicted, the relationship between education diversity and relational coordination is positive only when employees are structurally empowered and provided with feedback from multiple sources.

The current study extends our knowledge about the effects of diversity by examining the underlying processes and moderators. Initially, this study provides a robust examination of relational coordination as a mediator between workforce diversity and firm performance. Although diversity scholars have suggested the importance of understanding the impact of a diverse workforce within a firm (Kossek et al., 2006; Milliken & Martins, 1996), the mechanism by which the two types of workforce diversity (i.e., age and education diversity) affect firm performance has received limited attention. This limitation is problematic because, without knowing its mechanism, we do not know why diversity results in functional or dysfunctional outcomes, and theory development in this field remains largely speculative. By examining relational coordination as an intervening process, the current study advances the understanding of the relationship between workforce diversity and firm performance.

Relational coordination is a promising concept to improve our understanding of how workforce diversity affects firm performance. In previous studies, the information processing/decision-making perspectives focus on task/informational processes, whereas the social categorization/similarity-attraction perspectives mainly consider relational processes (Van Knippenberg & Schippers, 2007). Rather than arguing that one type of diversity is purely relational and that the other type is purely task-related, relational coordination theory suggests the importance of investigating the interplay of informational and relational processes when seeking to understand diversity. Van Knippenberg et al. (2004) also suggest that each diversity dimension shares informational and relational attributes. By using relational coordination theory as a framework, the present study argues and supports that social category diversity (e.g., age diversity), which is visible and less related to job attributes, negatively affects the overall relational coordination of a firm (Van Knippenberg et al., 2004). In contrast, informational diversity (e.g., education), which is less visible and highly job-related, facilitates relational coordination (Smidts et al., 2001). On the whole, as a highly comprehensive framework for understanding the effects of diversity, relational coordination theory opens up new avenues for future research on diversity and firm performance.

Notably, the present study also contributes to the relational coordination literature by testing the theoretical framework in the manufacturing context. Although previous studies have confirmed the benefits of relational forms of coordination in service settings (Gittell, 2002; Gittell et al., 2010), the productive potential of relational

**TABLE 3** Moderated mediation results across levels of HR practices

| IVs                 | Moderators             | Levels | Dependent variable: Firm competitiveness |               |               | Dependent variable: Operating profit |               |               |
|---------------------|------------------------|--------|--|---------------|---------------|--------------------------------------|---------------|---------------|
|                     |                        |        | Conditional indirect effect              | CI (lower)    | CI (upper)    | Conditional indirect effect          | CI (lower)    | CI (upper)    |
| Age diversity       | Structural empowerment | High   | −0.004                                   | −0.079        | 0.070         | −0.004                               | −0.070        | 0.062         |
|                     |                        | Low    | <b>−0.087</b>                            | <b>−0.173</b> | <b>−0.001</b> | <b>−0.077</b>                        | <b>−0.150</b> | <b>−0.005</b> |
|                     | Multisource feedback   | High   | −0.059                                   | −0.117        | 0.000         | −0.052                               | −0.110        | 0.006         |
|                     |                        | Low    | −0.033                                   | −0.105        | 0.039         | −0.029                               | −0.095        | 0.037         |
| Education diversity | Structural empowerment | High   | <b>0.103</b>                             | <b>0.001</b>  | <b>0.205</b>  | <b>0.092</b>                         | <b>0.003</b>  | <b>0.181</b>  |
|                     |                        | Low    | 0.011                                    | −0.070        | 0.092         | 0.010                                | −0.062        | 0.082         |
|                     | Multisource feedback   | High   | <b>0.106</b>                             | <b>0.010</b>  | <b>0.202</b>  | <b>0.094</b>                         | <b>0.011</b>  | <b>0.178</b>  |
|                     |                        | Low    | 0.008                                    | −0.065        | 0.082         | 0.007                                | −0.058        | 0.073         |

Note: N = 189 (firms). Indirect relationships are bolded if they are significant (i.e., confidence intervals do not include zero).

coordination in manufacturing was rarely examined (see Pagell et al., 2015). As work processes have become integrated in manufacturing firms, employees are increasingly required to exchange knowledge, recombine their existing resources, and develop new understandings and work methods (Gittell et al., 2010; Heckscher, 1994). Thus, as a conceptual tool that incorporates the relational and informational aspects of human interactions, relational coordination deserves research attention because it provides a pathway through which organizations can produce successful adjustments in the fast-changing work contexts of today.

Furthermore, we extend the contingency approach of the diversity literature by identifying the moderating effects of two HR practices, namely, structural empowerment and multisource feedback. Structural empowerment strengthens the positive effect of education diversity on relational coordination and neutralizes the negative effect of age diversity. Multisource feedback also enhances the positive effect of education diversity, but its moderating role on the effect of age diversity remains unsupported. This unexpected finding is understandable when social categorizations are based on salient characteristics, such as age differences, and employees are less likely to accept the feedback of others (Gaertner et al., 1990). Evaluation from other subgroup members may be perceived as a threat or challenge to the values of the focal group, thereby nullifying the beneficial effect of multisource feedback (Van Knippenberg et al., 2004). Despite the nonsignificant finding of the moderating effect of multisource feedback, the current study corroborates that, in general, HR practices play important roles in facilitating the successful coordination of diverse organizational members (Gittell, 2000; Gittell et al., 2010). By identifying HR practices as contextual enhancers or minimizers of diversity effects, we determine the need for future focus on other relevant HR practices such as contingency factors.

Diversity scholars have recommended that diversity-oriented HR practices be used in managing workforce diversity (Ely, 2004; Richard & Johnson, 2001; Triana & Garcia, 2009). However, our findings on structural empowerment and multisource feedback as management tools for diversity elucidate the productive potential of using

general HR practices for diversity. Compared with the specific diversity-focused practices that may require great efforts to adjust to the distinct needs of organizations that face distinct types of workforce diversity (e.g., diversity in education and affirmative action programs), structural empowerment and multisource feedback are common in organizations and are thus easy to implement. Given the practical value of such HR practices, we call for future research on other management plans for diversity.

## 5.2 | Practical implications

The results of this study offer practical insights for managing workforce diversity. We stress the importance of a comprehensive understanding of diversity's effects. Practitioners are encouraged to consider the double-sided character of diversity and the potential interaction between its informational benefits and relational disadvantages and determine which side would be dominant in this particular context. Given that diversity itself is neither purely positive nor negative, this integrative understanding may enable practitioners to make more nuanced judgments regarding diversity's implications on firm performance.

Understanding these dual and interdependent aspects of diversity may also help practitioners develop plans to leverage its positive potential. We propose two HR practices as a means to enable high-quality interaction among a diverse workforce. One possibility is to design tasks such that diverse members are authorized and empowered to make decisions regarding their own operations. Structural empowerment encourages diverse members to communicate actively under this type of work design, wherein employees are accountable for integrating diverse perspectives and information to reach good decisions. The participation and communication of diverse members benefit the firm performance by improving decision-making qualities and work processes. Our findings prove that such a work design can effectively manage social category diversity (e.g., age diversity) and informational diversity (e.g., education diversity).

With regard to designing performance appraisals, our findings affirm the benefits of implementing multisource feedback. In a broad range of work-related behaviors, feedback is given to individuals from multiple sources. Employees then seek to accept opinions and improve work relationships with diverse members to improve their performance ratings. Moreover, multisource feedback is likely to improve overall satisfaction and positive perceptions of the workplace by providing diverse members with an opportunity to speak up. All of the effects of multisource feedback lead to high-quality relationships among diverse members, which in turn contribute to firm performance. However, while determined to be effective in managing education diversity, multisource feedback should be carefully used for age-based diverse groups. If subgroup categories are formed on the basis of salient characteristics with highly visible boundaries, such as age, then employees may dismiss the diverse opinions as criticism from opponents and ignore the feedback from others who are in apparently different subgroups. Consequently, multisource feedback may not work effectively when firms are composed of diverse age subgroups.

Overall, our results highlight the role of general HR practices (e.g., work design and performance appraisal) in diversity management. The results contend that the two HR practices, structural empowerment and multisource feedback, which can be implemented for all employees rather than applied only to a specific employee group, have potential for moderating the effects of workforce diversity on workplace relationship and firm performance. Given its applicability and generalizability, the current study asserts that such HR practices present a practical value for harnessing the benefits of workforce diversity.

### 5.3 | Limitations and future research

This study has limitations that pave the way for meaningful future research. First, the cultural context of Korea may affect the results of our analyses. For instance, age diversity may trigger further social categorization in a specific cultural context such as Korea, which places hierarchical values across different age levels. This cultural characteristic might confound the effects determined in this study. However, considering that the majority of diversity studies have been conducted in Western countries (Shore et al., 2009) and still supported the strong social categorization effects of age diversity (e.g., in Australia, Ali, Ng, & Kulik, 2014; in Germany, Kunze et al., 2011; in the U.S., C. A. O'Reilly et al., 1989), we believe that the cultural context does not unduly influence our findings. Moreover, the relative lack of diversity research in non-Western countries necessitates the study in these contexts. For instance, recent studies examined diversity effects in China (e.g., Li et al., 2011) and Japan (e.g., Gong, 2006). However, the empirical findings are far from conclusive. In this regard, we claim that future research may replicate our study in similar or other cultural settings to identify the influence of culture on the relationship between workforce diversity and firm performance.

Second, we examine limited measures as the indicators of workforce diversity. Specifically, only age is used to assess social category

diversity and only education to assess informational diversity. Other characteristics, such as race and gender, can also be used to represent social category diversity, while tenure and function can be used to assess informational diversity. We cannot investigate such characteristics empirically given our limitation of data. In particular, the racial homogeneity in Korea and the overrepresentation of males (e.g., 82%) in our data preclude the meaningful testing on the effects of race and gender diversity. Our relatively homogeneous sample similarly raises a question about how likely it is for employees to create "diversity faultlines" (i.e., group membership alignment with multiple characteristics; Rico et al., 2007) and determine the implications for firm performance. Theoretical and empirical questions remain unanswered on whether other diversity characteristics would result in similar patterns of effects on relational coordination. Future studies are encouraged to expand the current framework by using the additional attributes of workforce diversity.

## 6 | CONCLUSION

In response to the increasing attention on workforce diversity and the need to further understand its effective management, our research answers the question of which HR practices firms can use to manage workforce diversity and improve firm performance. The results confirm the negative moderation of age diversity and the positive moderation of education diversity on relational coordination, which in turn has positive mediating effects on firm performance. Notably, our investigation on structural empowerment and multisource feedback as significant HR practices demonstrates their potential to contribute to effective working relationships across a diverse workforce. Our hope is that the current study can be useful in rendering an organization a more welcoming workplace for diverse groups.

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## ENDNOTES

<sup>1</sup>Although gender diversity has been also identified as an important type of social category diversity, we exclude gender diversity because the low representation of female workers in Korean manufacturing firms, in the context of this study, does not allow for the robust analyses of its impact on firm performance.

<sup>2</sup>The Korea National Statistical Office has officially approved the representativeness of the KIS corporate data. Prior research has also confirmed the representativeness and reliability of the HCCP data (e.g., Y. Kim & Ployhart, 2014; Shaw, Park, & Kim, 2013).

<sup>3</sup>We utilized the latter instrument to determine the similarity of results. No essential differences were found in the pattern of results.

<sup>4</sup>Relevant data were available for 186 firms, but we removed two extreme outliers. Therefore, our final sample comprised 184 firms. We used the full-information maximum likelihood (FIML) technique to impute missing values. FIML estimation has advantages over other imputation techniques (e.g., listwise deletion) because it provides unbiased and more efficient estimates and provides near-optimal Type 1 error rates (Enders & Bandalos, 2001). We used Mplus 7.11 for all analyses using operating profit as an outcome.

<sup>5</sup>For the average age score, we took a median value of each category (e.g., 35 for the age group 30–39 years) and multiplied the value with the number of employees in the category. We then averaged these multiplied values from each group to calculate the average age score. For the average education score, we converted each degree to the number of years taken to complete the degree in the Korean education system (e.g., 12 years for high school and 16 years for bachelor's degree) and multiplied the value with the number of employees in the category. Finally, we averaged the multiplied values from each group to calculate the average education score.

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