

Multisource Feedback, Human Capital, and the Financial Performance of Organizations

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We investigated the relationship between organizations' use of multisource feedback (MSF) programs and their financial performance. We proposed a moderated mediation framework in which the employees' ability and knowledge sharing mediate the relationship between MSF and organizational performance and the purpose for which MSF is used moderates the relationship of MSF with employees' ability and knowledge sharing. With a sample of 253 organizations representing 8,879 employees from 2005 to 2007 in South Korea, we found that MSF had a positive effect on organizational financial performance via employees' ability and knowledge sharing. We also found that when MSF was used for dual purpose (both administrative and developmental purposes), the relationship between MSF and knowledge sharing was stronger, and this interaction carried through to organizational financial performance. However, the purpose of MSF did not moderate the relationship between MSF and employees' ability. The theoretical relevance and practical implications of the findings are discussed.

Keywords: multisource feedback, 360 feedback, purpose of multisource feedback, organizational performance

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Multisource feedback (MSF) refers to a process whereby subordinates, peers, supervisors, and/or customers provide recipients with feedback concerning their work behaviors and/or performance. The practice of using MSF became popular in the 1980s and continues today (Hedge, Borman, & Birkeland, 2001). It has been estimated that 90% of the Fortune 500 companies use MSF (Maylett, 2009). One rationale for using MSF is that feedback from multiple sources is more valid than feedback from a single source (typically, the supervisor) and helps a target be aware of his or her strengths and weaknesses, and motivates him or her to make positive changes (e.g., reinforcing strengths and improving weaknesses).

MSF has also been a research topic for many management scholars (Brett & Atwater, 2001; Smither, London, & Reilly, 2005). Since the 1980s, a number of scholars have investigated

factors influencing employees' behavioral change after receiving MSF, and whether MSF is associated with improvement in employee performance (by comparing MSF ratings over time; e.g., see London & Smither, 1995, and Smither et al., 2005, for reviews on MSF research and practice). Despite the widespread popularity of MSF among academicians and practitioners, little is known about whether or not MSF influences organizational outcomes.

The need for research concerning the effects of MSF on organizational performance has been noted for more than a decade (Atwater & Waldman, 1998; Smither & Walker, 2001). In fact, as far back as 1998, Atwater and Waldman called for research that addresses whether the use of MSF has any impact on organizational performance, beyond improvements in attitudinal measures such as employee engagement or job satisfaction (see Atwater & Brett, 2006). Atwater, Brett, and Waldman (2003, p. 103) stated that "we certainly need to investigate outcomes [of MSF] . . . for example how does multisource feedback impact sales, profits or quality indicators?" To our knowledge, this call has not been addressed. The first purpose of our study is therefore to investigate the effect of MSF on organizational performance.

In strategic human resource management, "understanding the relationship between human resource management (HRM) [practices] and organizational outcomes is one of the long standing goals of HRM research" (Jiang, Lepak, Hu, & Baer, 2012, p. 1265). Accordingly, a number of scholars have studied how human resource (HR) practices influence organizational performance. Strategic HR scholars typically bundle HR practices together (i.e.,

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high-performance work practices [HPWPs]) to examine the effect on organizational performance (Guthrie, Flood, Liu, & MacCurtain, 2009). Although MSF is typically not included in HPWPs (Posthuma, Campion, Masimova, & Campion, 2013), it may be more likely to be implemented in organizations that use HPWPs. Given the relationship of HPWPs with organizational performance (Jiang et al., 2012) and MSF, it is important to control for the effect of HPWPs in a study investigating the relationship between MSF and organizational performance. Empirically the effect of MSF on organizational performance may be spurious without controlling for HPWPs (e.g., omitted variable bias). It is also important from a practical standpoint. If MSF practices are not adding beyond HPWPs' effects, perhaps their usefulness should be reexamined. Thus, the second purpose of the study is to examine whether MSF (as an unbundled HR practice) contributes to organizational performance above and beyond HPWPs (i.e., controlling for HPWPs).

Another issue in the MSF literature is the need to describe the mechanism of how MSF influences performance. Because of the dearth of studies on the MSF/organizational-performance relationship, mechanisms through which MSF may influence organizational performance also remain unexplored. Strategic HR scholars have called for more research exploring the "black box" so that we can better understand *how* (and *why*) human resource practices contribute to organizational performance (e.g., B. Becker & Gerhart, 1996; B. E. Becker & Huselid, 2006). In a similar vein, to open the "black box" of the MSF-performance relationship, the third purpose of this study is to explore two mediating mechanisms through which MSF may contribute to organizational performance.

Based on our extensive literature review on MSF, we identified two potential mediating mechanisms of MSF: employee ability and knowledge sharing. Related to employee ability, MSF has been found to improve leadership, occupational and technical knowledge, job performance, and administrative and cognitive abilities (i.e., employee ability; Hazucha, Hezlett, & Schneider, 1993). This increased employee ability is likely to positively contribute to organizational performance (Jiang et al., 2012). Related to knowledge sharing, MSF has been found to encourage open communication, discussion, and interactions with other employees (e.g., Druskat & Wolff, 1999; Hazucha et al., 1993). The improved patterns of interactions and communication in the context of giving and receiving feedback are essentially knowledge sharing. Improved knowledge sharing can consequently increase organizational performance (Gibson, Porath, Benson, & Lawler, 2007). Thus, in this study, we propose that employee ability and knowledge sharing mediate the relationship between MSF and organizational performance.

The fourth purpose of our study is to explore the boundary conditions of the MSF/organizational-performance relationship. Although a majority of empirical studies in the MSF literature suggests that MSF improves job performance (e.g., Smither et al., 2005; Smither & Walker, 2001), some studies indicate that MSF may produce negative outcomes such as anger and discouragement (e.g., Brett & Atwater, 2001). Given that most MSF studies have been conducted in a single organization, how MSF is used in the organization may affect results across organizations (Atwater, Waldman, & Brett, 2002; Seifert, Yukl, & McDonald, 2003). For example, using MSF for purely development purposes versus administrative purposes (e.g., affecting decisions about compensation and promotion) may affect its outcomes. Administrative purposes could result in

fear and game-playing, whereas strictly development purposes could be ignored by the recipient entirely. Thus, the purpose of MSF—dual purpose [development and administrative] versus single purpose—could be a key organizational-level boundary condition in strengthening the proposed mediating effects of employee ability and knowledge sharing between MSF and organizational performance.

We expect that MSF is more effective when it is used for dual purposes (i.e., both developmental and administrative) than a single purpose, because dual-purpose MSF not only motivates employees to make positive changes (Kluger & DeNisi, 1996) but also holds them accountable for using the feedback to guide behavior change (Frink & Ferris, 1998). This purpose of the study is especially important, given a lively debate about the effects of the purpose of MSF (London, 2001). Despite scholars' conflicting views on the relevance of purpose of MSF, the role of the purpose of MSF has not been empirically investigated in the context of the relationship between MSF and organizational performance.

This study is important for several reasons. First, it is the first study investigating the effect of MSF on organizational performance. Despite calls for research (e.g., Atwater & Waldman, 1998), the relationship between MSF and organizational performance has remained "the most challenging area in need of research" for more than a decade (Atwater & Waldman, 1998, p. 424). Second, the present study unveils a mediating mechanism for the MSF/organizational-performance relationship. This examination advances our understanding of how MSF works to improve organizational performance. Third, the current study contributes to the MSF literature by identifying a key boundary condition for the effectiveness of MSF programs (i.e., the purpose of MSF). This examination of a boundary condition also contributes to a long and lively debate over the purpose of MSF.

Multisource Feedback

Although performance appraisals are widely used in organizations, such appraisals are usually completed by supervisors and seldom provide a holistic view of employee performance. Through MSF, a widely used form of appraisal, performance feedback is provided from multiple sources. Typically, MSF is provided in a report that includes descriptive statistics and graphical presentations of the MSF (along with narrative comments from the raters) as well as self-ratings. Feedback provided through MSF is particularly valuable, as it is provided by those (i.e., subordinates, peers, and supervisors) most proximal to the job context of an employee. Feedback from multiple sources is also viewed as more valid than that from a single source, so employees are more likely to take actions based on the feedback. Additionally, feedback from peers and subordinates is typically anonymous, allowing the rater to be more candid. Brooks (1998) suggested two additional benefits of MSF over more traditional performance appraisal; typically, a broader array of employee skills are rated, and it lends itself more readily to a deeper understanding of strengths and development needs than do traditional performance appraisals.

As noted in the introduction, MSF has rapidly grown in popularity over the past two decades. Many organizations are spending large sums of money implementing and maintaining MSF programs. However, as there is no scientific/empirical evidence that MSF actually leads to higher organizational performance, the organizations' decision over their investment in MSF is probably based on

anecdotal evidence. In this study, we empirically examine the MSF/organizational-performance relationship. Drawing upon the ability-motivation-opportunity (AMO) framework (MacInnis, Moorman, & Jaworski, 1991), we propose that MSF will be positively related to organizational performance (operationalized as workforce productivity) as mediated by the aggregate level of *employee ability* (ability) and *knowledge sharing* (opportunity for development), and as moderated by *dual purpose* (motivation). Our overall conceptual model encompassing a moderator and mediators is presented in Figure 1.

Ability-Motivation-Opportunity (AMO) Framework

The AMO framework, which was originally used in marketing research to study consumer information processing, has recently begun to be applied to management topics such as communication networks (e.g., Jiang et al., 2012; Kim, Pathak, & Werner, 2015; Reinholt, Pedersen, & Foss, 2011). For example, MacInnis et al. (1991) proposed that there are three ingredients to processing information: motivation, opportunity, and ability. Motivation is the desire or willingness to process information, opportunity is the chance to attend to the information, and ability is the skills or proficiencies to interpret the information. Similarly, MacInnis and Jaworski (1989) proposed that a person's motivation to engage in information processing behavior interacts with his or her ability and opportunity.

This framework is especially useful for studying mechanisms by which HR practices impact organizational performance because HR practices influence employees' motivation, ability, and opportunity (e.g., Jiang et al., 2012). For example, using an AMO framework, Jiang et al. (2012) conducted a meta-analysis of mediating mechanisms between HR practices and organizational outcomes. They proposed and found that HR practices influence organizational outcomes via motivation, ability, and opportunity. The AMO model they used to test the mediating mechanisms is also applicable to our study. We expand on the application of this model to MSF research by proposing ability and opportunity as two mediating mechanisms through which MSF influences organizational outcomes (i.e., productivity) and motivation as a moderator (dual-purpose MSF).

The AMO framework can be applied to the MSF–outcome relationship in the following way. First, MSF can play a role in the development of human capital (Atwater et al., 2002; Smither et al., 2005), and thus it should result in greater abilities (enhanced

human capital). The feedback provided helps individuals understand their strengths and weaknesses and provides useful information for areas in need of development. MSF reinforces individuals' strengths, and it helps employees further improve their skills and abilities, and eventually improve their job capability (Atwater et al., 2002). On the other hand, weaknesses or discrepancies between self and others' perceptions trigger a learning process (London & Smither, 1995). This disjuncture is a catalyst for learning to begin and motivates the person to change ineffective or less effective behaviors (Kluger & DeNisi, 1996). It results in self-learning. The added input the recipient gets from others involved in the rating process can also improve performance and promote learning from others. Moreover, by providing others with feedback as a rater, employees can "strengthen skills in observation, evaluation, and reinforcement" (Druskat & Wolff, 1999, p. 59). By repeatedly observing and evaluating ratees, employees may also be able to learn from their observations of ratees. In short, based on the feedback they receive, employees can develop and improve their skills and abilities, and eventually improve their job performance.

Consistently, MSF has been found to improve leadership behaviors (e.g., Walker & Smither, 1999), job performance (Reilly, Smither, & Vasilopoulos, 1996; Smither et al., 2005), employees' engagement (Atwater & Brett, 2006), and management skills. Management skills were measured as administrative and cognitive abilities, communication and interpersonal skills, leadership, and occupational and technical knowledge (Hazucha et al., 1993). For example, Dai, De Meuse, and Peterson (2010) conducted a longitudinal field study of 78 managers from a large financial services company in the United States. They assessed 67 managerial competencies over four time periods, three of which were following the delivery of MSF. After the third feedback delivery, managers' combined scores on the 67 competencies (as rated by peers, bosses, and direct reports) increased significantly with the greatest improvements seen for targeted competencies. Competencies included numerous relationship and managerial skills. Managers' self-reports (not included in the analysis) also suggested increased abilities in areas such as planning, communicating, and self-awareness.

These theoretical arguments and empirical results suggest that when organizations implement MSF, organizational members' ability (the aggregate level of employees' ability) improves. Thus, we hypothesize the following:

Hypothesis 1: MSF will be positively related to aggregate level employees' ability.

Second, MSF should facilitate knowledge sharing (opportunity) among employees in two ways. First, as an important opportunity for development and improvement, knowledge sharing involves providing other employees with information/knowledge (Wang, Noe, & Wang, 2014). MSF increases individuals' desire to share information with colleagues, particularly because the MSF process involves peers providing feedback to one another as well as receiving feedback from subordinates and one's supervisor. One of the goals of MSF is to increase self-awareness by providing feedback to employees. Employees should be motivated to seek additional feedback following MSF to better understand their strengths and weaknesses and to identify useful actions to improve

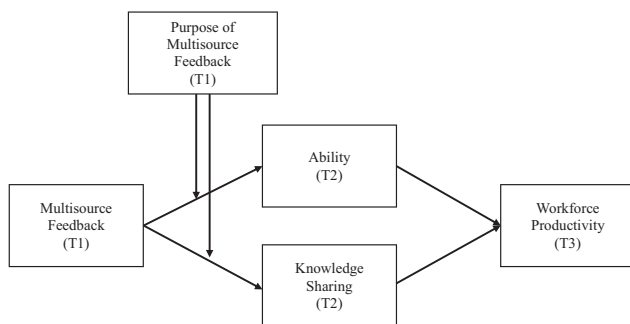


Figure 1. Proposed conceptual model of the relationship between MSF and organizational performance. T1 = Time 1; T2 = Time 2; T3 = Time 3.

their performance. This feedback-seeking behavior has the potential to improve patterns of interaction among employees, and facilitates discussion, consultation, and open communication (e.g., Hazucha et al., 1993; van Rensburg & Prideaux, 2006). The improved patterns of interaction and open communication in the context of giving and receiving feedback (i.e., MSF) are essentially knowledge sharing.

Second, MSF programs may also foster knowledge sharing via a supportive norm. As occurs in MSF programs, when employees participate in the processes of assessing and giving feedback to their team members, they develop a norm that is supportive of knowledge sharing (Bamberger, 2007). Under the supportive norm, employees are likely to form a favorable attitude toward knowledge sharing and develop good intentions about knowledge sharing (Bock, Zmud, Kim, & Lee, 2005). They can also be motivated to transfer and share knowledge with others in a team (Kirwan & Birchall, 2006) as well as to seek feedback (Maurer, Mitchell, & Barbeite, 2002; Whitaker, Dahling, & Levy, 2007), which consequently facilitates knowledge sharing. Supporting our argument about the positive relationship between MSF and knowledge sharing, van Rensburg and Prideaux (2006) found that following MSF, managers reported behavior changes, including improved interactions with employees, improved use of listening and questioning activities, and increased attention to, and being available for, discussion and consultation. Green (2002) interviewed 59 C-suite leaders about their MSF experience. Primary self-reported outcomes included improved communication within and between groups, greater openness in communication, more frequent communication among the executives, and improved communication with employees. Thus, based on the above argument and the empirical results, we propose that MSF programs encourage organizational members (employees aggregated across units) to engage in more knowledge sharing behaviors. As such, we hypothesize the following:

Hypothesis 2: MSF will be positively related to aggregate level employees' knowledge sharing.

There has been a lively debate about the purpose of MSF (administrative vs. developmental). Some scholars argue that MSF should be used for administrative purposes because of the increased accountability (e.g., London, Smither, & Adsit, 1997), whereas others disagree, arguing that administrative MSF can increase game-playing behavior (e.g., exchange of rewards for ratings; Atwater & Waldman, 2008). Reviewing advantages and disadvantages of administrative and developmental purposes of MSF, London (2001) noted that MSF can be used for dual purposes (administrative and developmental). Although there exist conflicting views and arguments concerning advantages or disadvantages of different purposes of MSF, the effects of dual-purpose MSF have not been empirically investigated. Consistent with London (2001), we propose that MSF for dual purposes (motivation) will be most effective in improving organization-wide human capital and knowledge sharing. Two reasons for this are gaps revealed between one's current and ideal behavior, and accountability.

Feedback intervention theory (FIT) proposes that when a gap exists between one's standards and feedback about where one is currently performing relative to those standards, individuals will be motivated

to behave in ways to decrease the gap (Kluger & DeNisi, 1996). When MSF is provided in part to help the individual improve him- or herself (developmental purpose), discrepancies in self and other ratings indicate a development need the recipient did not know existed. According to FIT, he or she should be motivated to make positive changes to decrease the discrepancy.

The motivation to address developmental needs may be strengthened by holding individuals accountable for their feedback and making changes (via use in administrative decision-making). When MSF is used for administrative purposes, MSF results are linked with employees' compensation and/or promotion decisions. For example, Dai et al. (2010) estimated that in organizations in which MSF is used for administrative purposes, about 20% of the manager's bonus was tied to satisfactory completion of the development plan that resulted from the feedback the manager received. Compensation and promotion are one of the most influential factors on employee motivation in the workplace (Gupta & Shaw, 2014). They have powerful incentive effects on employee motivation and thus shape employee behavior (Gerhart & Rynes, 2003; Gupta & Shaw, 2014). Given this, MSF for administrative purposes may motivate employees to act on the feedback and make changes by increasing their accountability. Thus, when MSF is used for an administrative purpose as well as a developmental purpose (i.e., dual purpose), employees may be motivated by both developmental needs and by the incentives and accountability associated with administrative consequences. When both purposes are used for MSF, because of the increased motivation of organizational members (employees aggregated across units), the MSF program should be more effective in improving employee ability and knowledge sharing than when only a single-purpose MSF (i.e., administrative purpose) is used.

Hypothesis 3: Dual-purpose MSF moderates the relationship between MSF and employee ability (Hypothesis 3a [H3a]) and knowledge sharing (Hypothesis 3b [H3b]), such that when MSF is used for dual purposes, ability and knowledge sharing will be higher than when it is used for a single purpose.

Ability, Knowledge Sharing, and Workforce Productivity

Ability and knowledge sharing improved by MSF are expected to enhance organizational performance, defined here as workforce productivity, by mediating the effect of MSF on workforce productivity. The effect of ability on organizational effectiveness has been widely recognized by management scholars. According to the resource-based view, employees' ability is an indicator of human capital and a key source of sustained competitive advantage when it is valuable, rare, imperfectly imitable, and nonsubstitutable. Ployhart (2012, p. 170) states, "Human capital is difficult to imitate because it is based on the aggregation of individuals, within a unique organizational structure and system that is difficult to articulate and takes a long time to build." Thus, increased ability resulting from MSF could lead to higher organizational performance such as workforce productivity (e.g., Jiang et al., 2012). In alignment with the resource-based view, human capital theory (G. S. Becker, 1962, 1964) also states that employee ability (human capital) is a key factor in a firm's workforce productivity. Therefore, by enhancing employees' ability (H1), MSF will indirectly improve the firm's productivity (i.e., mediating effect of employees' ability). We hypothesize a mediating role of employees' ability for the MSF/workforce-productivity relationship:

Hypothesis 4: Employees' ability mediates the relationship between MSF and workforce productivity.

Organizations are knowledge-acquiring and knowledge-integrating entities, and knowledge acquisition and integration activities increase organizational performance (Grant, 1996a). Knowledge-related activities are related to workforce productivity (Grant, 1996b). As knowledge sharing facilitates knowledge acquisition and integration among employees (Bartol & Srivastava, 2002; Ipe, 2003), it can contribute to workforce productivity. Srivastava, Bartol, and Locke (2006) found that knowledge sharing improved team performance because knowledge sharing helped team members make more comprehensive and sophisticated decisions and improved team coordination. In a similar vein, MSF should increase the opportunity for knowledge sharing and thereby allow employees to perform more effectively based on a richer collection of knowledge shared by organizational members. Thus, by enhancing knowledge sharing (H2), MSF will indirectly enhance the firm's workforce productivity (i.e., mediating effect of knowledge sharing). We hypothesize a mediating role of knowledge sharing for the MSF/workforce-productivity relationship:

Hypothesis 5: Knowledge sharing mediates the relationship between MSF and workforce productivity.

Taking Hypotheses 3 to 5 together, we propose the moderating role of dual-purpose MSF for the mediating relationship between MSF and workforce productivity through (a) employees' ability (Hypothesis 4), and (b) knowledge sharing (Hypothesis 5). In other words, based upon the rationales for Hypotheses 3 to 5 (moderation and mediation effects), the indirect effects of MSF on workforce productivity via the two mechanisms are expected to be conditional upon the purpose of MSF, such that the conditional indirect effects of MSF on workforce productivity would be stronger when MSF is used for dual purpose than when it is used for a single purpose. This is a case of first-stage mediated moderation (Edwards & Lambert, 2007) in which the moderator (dual purpose) influences the relationship between the independent variable (MSF) and the mediators (employees' ability and knowledge sharing) in the first stage. In the second stage, the mediators (employees' ability and knowledge sharing), in turn, influence the dependent variable (workforce productivity). Therefore, drawing from the combined arguments for Hypotheses 3 to 5, we hypothesize the following:

Hypotheses 6–7: The conditional indirect effect of MSF on workforce productivity via employee ability (H6) and knowledge sharing (H7) is stronger when MSF is used for dual purposes than when it is used for a single purpose.

Method

Sample

To test the proposed model, we drew on Human Capital Corporate Panel surveys conducted by the Korea Research Institute for Vocational Education and Training in cooperation with the Ministry of Labor in South Korea in 2005 and 2007. In 2005, all South Korean firms employing more than 100 employees were the population for this government-sponsored survey, except for firms in the forestry, mining, fishing, and agriculture sectors, and public service firms. Out of 1,899 organizations, 454 organizations were

stratified on industry membership, firm size, and firm type (e.g., listed firms). To administer the survey, the institute researchers visited each firm.

There was a firm-level survey and an employee-level survey. The firm-level survey was completed by the strategic planning manager and the human resource manager in each firm. Among the firms that took part in the survey in 2005, 13,101 employees were randomly selected to complete the employee-level survey. On average, about 29 employees from each firm participated in the employee survey. The participating employees were from various hierarchical levels (e.g., rank-and-file employees, general managers) and from various functional areas (e.g., research and development, sales).

The firms that participated in the survey in 2005 were surveyed again in 2007 (410 firms and 10,502 employees). At both times, employees in these firms were randomly selected to participate in the employee level survey. We measure our predictor (MSF) using the 2005 data set (Time 1 [T1]), our mediators (i.e., employees' ability and knowledge sharing) using 2007 survey data (Time 2 [T2]), and our dependent variable (i.e., workforce productivity) using 2008 archival financial data (Time 3 [T3]).

We matched the firm-level data with the employee-level data, and with archival financial performance data. The archival financial performance data were collected from Korea Information Services. In the final data set, in which firms with more than 50 full-time employees and with more than 10 employee survey participants were included, full data were available for 232 firms who participated in the survey in both 2005 and 2007. Employee-level data were available from, on average, 35 employees per firm in 2005 (a total of 8,879 employees) and 28 employees per firm in 2007 (a total of 7,146 employees).

Measures

The Appendix presents all the items for our ability and knowledge sharing measures.

MSF and its purpose (T1). Human resource managers at each firm indicated whether the firm administered MSF. We used this item to create a dummy variable for MSF (1 = yes, 0 = no). Human resource managers also indicated for which purpose(s) MSF was used (administrative purpose [e.g., compensation, promotion] and/or developmental purpose). Based on the purposes, we created a dummy variable. For the dual-purpose MSF dummy, firms using MSF for both development and administrative purpose were coded 1 (else = 0). Thirteen percent of the organizations implementing MSF used it for dual purpose, whereas the rest of them used it for either administrative or developmental purpose.

Employee ability (T2). MSF reinforces individuals' strengths, but when weaknesses or discrepancies between self and others' perceptions are identified, they can trigger a learning process (London & Smither, 1995). Although both reinforcement of strengths and the learning processes can enhance an individual's job capabilities, the learning process also improves an individual's learning capabilities. MSF can be used as both "reinforcement of past learning and also an opening for future learning" (Rosti & Shipper, 1998, p. 78). Additionally, an organization-wide MSF program can foster a continuous learning environment (London & Smither, 2002), which can consequently enhance employees' learning capability as well as job capability. Thus, to measure employee ability, we

considered both job capability and learning capability, two key abilities in the context of feedback (Goodman, Wood, & Hendrickx, 2004).

Individual employees were asked to rate the extent to which their organization's human capital is competitive in terms of their job capability in eight functional areas (e.g., finance, production-line, management) using a 5-point scale (1 = *below domestic industry average*, 5 = *world-class*). To measure the organization-wide job capability, we aggregated employees' answers on those eight questions to the organizational level. We calculated r_{wg} and intraclass correlations (ICCs) to determine the appropriateness for aggregation: r_{wg} was .97, ICC (1) was .26, and ICC (2) was .69, suggesting that there exists significant between-organization differences as well as high agreement among within-organization group members.

Using a 4-point scale, individual employees also assessed the extent to which learning by self is effective in performing one's duty and the extent to which learning from others is effective in performing one's duty. To measure the organization-wide learning capability, we aggregated employees' answers on those questions to the organizational level ($r_{wg} = .79$, ICC [1] = .07, ICC [2] = .66). We created an additive index of employee ability by standardizing and summing the organization-wide job capability and the organization-wide learning capability so that the measure of employee ability represents two critical abilities in the context of MSF.

Our measure of employee ability was significantly correlated with both employee tenure (experience; $r = .17$, $p < .01$) and education ($r = .20$, $p < .01$), which are proxies for ability or human capital (e.g., Dimov & Shepherd, 2005). It was also significantly and positively associated with employees' level of understanding of the flow of the overall work in the organization ($r = .22$, $p < .01$), and their level of understanding of problems when they occur while performing the work ($r = .15$, $p < .05$), all of which were rated by randomly selected employees in each organization. It was also significantly and positively associated with variables that may enhance a firm's employee ability (i.e., antecedents), such as the firm's retention of talented employees ($r = .66$, $p < .01$) and preference for talented employees ($r = .57$, $p < .01$). Moreover, it significantly predicted outcomes that high employee ability may result in, such as new product development capability ($r = .62$, $p < .01$), product quality ($r = .49$, $p < .01$), a decrease in the firm's production failure rate ($r = .61$, $p < .01$), new customer retention rate ($r = .56$, $p < .01$), and major customer retention rate ($r = .55$, $p < .01$). These results provide support for the construct validity of our measure of employee ability.

Knowledge sharing (T2). To measure knowledge sharing, we used four items that assessed knowledge sharing among employees in the organization. Individual employees were asked to rate the following four items using a 5-point scale (1 = *not at all*, 5 = *to a great extent*): (a) Employees actively develop new working knowledge and improve how they work; (b) New knowledge and new ways of working quickly spread among employees (by employees); (c) Employees actively and freely suggest opinions to managers¹; and (d) Employees actively engage in problem solving and decision making in teams. We aggregated these four items to the organizational level to measure knowledge sharing. Cron-

bach's alpha for the four items was .74, r_{wg} was .90, ICC (1) was .09, and ICC (2) was .73.

Firm financial performance: Workforce productivity (T3). We used workforce productivity as the firm financial performance measure because it is a widely used performance outcome from the human capital perspective (Shaw, Park, & Kim, 2013). Following the definition of labor productivity (Samuelson & Nordhaus, 1989), workforce productivity was measured as total sales per employee (Boubakri & Cosset, 1998). Total sales and the number of employees were based on archival information from Korea Information Services. As workforce productivity could vary across industries, we subtracted average industry workforce productivity based on workforce productivity at two-digit Korean Standard Industry Classification code (KSIC Rev. 9; Chang & Hong, 2000) from each firm's workforce productivity measure. We then standardized the workforce productivity, which makes it easy to compare across industries.

Control variables. We included a number of control variables to limit alternative explanations. As larger organizations are more likely to have efficacious human resource practices that could affect workforce productivity, we controlled for *organizational size*. Organizational size was measured as the logarithm of the total number of employees (Qian, Cao, & Takeuchi, 2013). As employees' general and firm-specific human capital could be positively related to employees' ability and workforce productivity, we included employees' average education and average tenure as controls. Employees' educational level (1 = *high school diploma*, 5 = *doctoral degree*) was averaged for each organization to measure employees' average education. Similarly, employees' tenure was averaged for each organization.

Since the seminal work of Huselid (1995), numerous studies and a meta-analysis (Combs, Liu, Hall, & Ketchen, 2006; Jiang et al., 2012) have established that organizations that use HPWPs tend to have higher financial performance. As MSF might be more likely to be implemented in organizations that use HPWPs, to limit omitted variable bias, we controlled for firms' HPWPs. Following previous studies (e.g., Wright, Gardner, Moynihan, & Allen, 2005), we created an HPWP index comprised of several indicators of the HPWP construct. This HPWP index is based on nine HR practices that encompass all three types of HR practices (skill-, motivation-, and opportunity-enhancing) as recommended by Jiang et al. (2012): training, staffing, pay for performance, pay level, benefits level, performance evaluation, communication, job rotation, and job autonomy (Shaw et al., 2013; Wright et al., 2005). Training was measured as the firm's investment in employee training programs (Shaw et al., 2013; Sung & Choi, 2014). Specifically, the total expenses for training programs were divided by the total number of employees. Consistent with the operationalization of training measure, staffing was measured as the firm's investment in staffing (i.e., per capita expenses on selection). Following Shaw et al. (2013), pay level was measured as the

¹ When we excluded the item, consistent results held: (conditional) indirect effects of MSF on workforce productivity via employee ability and knowledge sharing were significant.

average annual salary for employees. Benefits level was measured in a similar way (i.e., the average annual benefits provided to employees). HR managers were asked to rate (“yes” or “no”) if their organization has (a) team performance-based incentives, (b) departmental performance-based incentives, (c) employee stock ownership, and (d) gain sharing. We summed the four practices to create a measure of firms’ pay for performance.

Similarly, we used the following three practices (yes or no) and summed them to create a measure of performance evaluation: (a) balanced scorecard for performance evaluation, (b) competency evaluation, and (c) performance feedback. The data needed to create the measures of the six HR practices described above were available from the organizational-level survey. To measure job autonomy, employees were asked to rate the extent to which they have job autonomy using a 5-point scale. We aggregated individual employees’ ratings to the organizational level ($r_{wg} = .78$, ICC [1] = .05, ICC [2] = .25). Employees were also asked to assess two items concerning communication. A sample item was “Our company shares organization information (e.g., strategy, financial performance) with all employees through information systems.” We aggregated individual employees’ ratings to the organizational level ($r_{wg} = .82$, ICC [1] = .17, ICC [2] = .88). In our study, it is especially important to control for this communication system between the organization and employees because this control allows us to more clearly investigate the effect of MSF on the knowledge sharing among employees. To measure job rotation, employees were asked to evaluate the effectiveness of job rotation ($r_{wg} = .70$, ICC [1] = .10, ICC [2] = .64). We created a standardized score for each organization on each of the nine HR practices and then added up those scores to create the organization’s HPWP index ($\alpha = .68$).

Results

We standardized the indices of HPWP, employee ability, and workforce productivity to facilitate the interpretation based on our final data set. To test our hypotheses, we employed hierarchical linear modeling (HLM) because each organization is nested within each industry (Hough, 2006), and this nesting structure leads to lack of independence among observations (Kreft & de Leeuw,

1998). All variables were group (industry) mean centered (Enders & Tofighi, 2007). Following Chang and Hong (2000), we used the two-digit KSIC Rev. 9 to determine industry segment for group mean centering.

Test of Hypotheses

Table 1 presents descriptive statistics and correlations among the variables (see Supplemental Materials online). Consistent with our expectations, the use of MSF was positively associated with employees’ ability ($r = .31, p < .01$), knowledge sharing ($r = .37, p < .01$), and workforce productivity ($r = .26, p < .01$). Interestingly, the use of MSF was positively correlated with HPWP as well ($r = .38, p < .01$). Consistent with past studies (e.g., Jiang et al., 2012), HPWP was positively associated with employees’ ability ($r = .48, p < .01$), knowledge sharing ($r = .49, p < .01$), and workforce productivity ($r = .35, p < .01$). Finally, using MSF for dual purposes was positively related to HPWP ($r = .16, p < .01$).

The results of HLM analyses are presented in Tables 2, 3, and 4. Hypothesis 1 proposed that MSF is positively related to employees’ ability. As Table 2 shows, the use of MSF was positively associated with employees’ ability ($\gamma = .36$, standard error [SE] = .17, $p < .05$). Hypothesis 1 was therefore supported. Hypothesis 2 stated that MSF is positively related to knowledge sharing. Supporting Hypothesis 2, the use of MSF was positively associated with knowledge sharing ($\gamma = .10, SE = .04, p < .01$).

Hypothesis 3 proposed that dual-purpose MSF moderates the relationship between MSF and (H3a) employees’ ability and (H3b) knowledge sharing, such that when MSF is used for dual purposes, the effects of MSF on employees’ ability and knowledge sharing will be stronger than when used for a single purpose. To test this hypothesis, the moderator variable (i.e., dual purpose) was coded 1 for organizations that used MSF for dual purposes, and 0 for all other organizations (i.e., organizations that used MSF for only one purpose and organizations that did not use MSF). That is, the moderator (i.e., dual purpose) is a dummy variable of a subset of the independent variable (i.e., MSF), meaning that the moderator inclusively belongs to the independent variable. In other words, organizations that have 1 for the dual-purpose variable must have 1 for MSF as well. In such a case, the interaction term (i.e., the independent variable multiplied by the moderator variable; MSF × Dual Purpose) is

Table 1
Descriptive Statistics and Correlations of Study Variables

Variable	Mean	SD	1	2	3	4	5	6	7	8
1. Organizational size	2.69	.50	—							
2. Employees’ average tenure	8.78	4.39	.51***	—						
3. Employees’ average education	1.96	.52	-.07	-.24***	—					
4. HPWP (T1)	.00	1.00	.43***	.16***	.39***	—				
5. MSF (T1)	.30	.46	.32***	.18***	.17***	.38***	—			
6. Dual purpose MSF (T1)	.13	.34	.10	-.00	.07	.16***	.31***	—		
7. Ability (T2)	.00	1.00	.29***	.17***	.20***	.48***	.31***	.10	—	
8. Knowledge sharing (T2)	3.65	.31	.43***	.26***	.03	.49***	.37***	.25***	.56***	—
9. Workforce productivity (T3)	.00	1.00	.23***	.30***	-.02	.35***	.26***	.03	.29***	.30***

Note. $N = 253$. Mean and standard deviation for dual-purpose MSF are based on the subsample of organizations using MSF. HPWP = high-performance work practices; MSF = multisource feedback; T1 = Time 1; T2 = Time 2; T3 = Time 3.
** $p < .05$. *** $p < .01$.

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Table 2
Hierarchical Linear Modeling Results: Main Effect and Interaction Effect of MSF on Ability and Knowledge Sharing

Predictor	Hypothesis	Dependent variable					
		Ability (T2)			Knowledge sharing (T2)		
		Model 1 γ (SE)	Model 2 γ (SE)	Model 3 γ (SE)	Model 4 γ (SE)	Model 5 γ (SE)	Model 6 γ (SE)
Intercept		.03 (.08)	-.08 (.09)	-.08 (.09)	.02 (.02)	-.01 (.02)	-.01 (.02)
Control variables (T1)							
Organizational size		.35 (.22)	.30 (.22)	.30 (.22)	.14 (.05)***	.13 (.05)***	.12 (.05)***
Employees' average tenure		-.02 (.02)	-.02 (.02)	-.02 (.02)	-.00 (.00)	-.00 (.00)	-.00 (.00)
Employees' average education		.53 (.25)**	.50 (.25)**	.50 (.25)**	.03 (.05)	.02 (.05)	.02 (.05)
HPWP		.15 (.03)***	.14 (.03)***	.14 (.03)***	.03 (.01)***	.03 (.01)***	.03 (.01)***
Independent variables (T1)							
MSF	[H1 & H2]		.36 (.17)**	.36 (.18)**		.10 (.04)***	.07 (.04)*
Dual purpose MSF	[H3]			-.02 (.40)			.22 (.08)***
Pseudo R^2		.22	.24	.24	.27	.29	.31

Note. $N = 253$. SE = standard error; T1 = Time 1; T2 = Time 2; T3 = Time 3; HPWP = high-performance work practices; MSF = multisource feedback; H1 = hypothesis 1; H2 = hypothesis 2; H3 = hypothesis 3.

* $p < .10$. ** $p < .05$. *** $p < .01$.

perfectly correlated with the moderator variable (dual purpose); therefore, the independent variable and the moderator are interactive, not additive, even without an interaction term (Hair, Black, Babin, Anderson, & Tatham, 2006).² Thus, the test of the interaction effect requires the independent variable and the moderator, but not the multiplication of the independent variable and the moderator, because the interaction term is exactly the same as the moderator. The significant test of the moderator represents the significance of the interaction between MSF and dual purpose.

Models 3 and 6 in Table 2 show the test of the interaction between MSF and dual purpose.³ Although dual-purpose MSF did not enhance the effect of MSF on employees' ability ($\gamma = -.02$, $SE = .40$, ns), it strengthened the effect of MSF on knowledge sharing ($\gamma = .22$, $SE = .08$, $p < .01$). We plotted the interaction effect of MSF and dual purpose on knowledge sharing in Figure 2. Consistent with our expectation, although the use of MSF enhanced knowledge sharing, it more strongly improved knowledge sharing when it was used for dual purpose. Hypothesis 3a was not supported, but Hypothesis 3b was supported.

To test Hypothesis 4 (i.e., the mediating role of employee ability), we utilized the SAS macro PROCESS (Hayes, 2012). This bootstrapping approach is a more accurate method for testing (moderated) mediation effects because it is free from assumptions about the distribution of the indirect effect, which is typically from a non-normal distribution (Edwards & Lambert, 2007; Preacher & Hayes, 2008). The bootstrapping results are presented in Table 4. Hypothesis 4 proposed that employees' ability mediates the relationship between MSF and workforce productivity. As Table 3 shows, employees' ability was positively related to workforce productivity (Model 8: $\gamma = .10$, $SE = .05$, $p < .05$). Based on evidence that MSF significantly predicted employees' ability (H1), which, in turn, predicted workforce productivity, we then tested the indirect effect of MSF. The results show that the indirect effect of MSF via employees' ability is significant for workforce productivity, supporting Hypothesis 4.

Hypothesis 5 stated that knowledge sharing mediates the relationship between MSF and workforce productivity. As shown in

Table 3, using a two-tailed test, the relationship between knowledge sharing and workforce productivity approached, but did not reach, significance (Model 9: $\gamma = .41$, $SE = .23$, $p < .10$). However, because we specified the direction of this hypothesis, we note that the relationship was significant using a one-tailed test ($\gamma = .41$, $SE = .23$, $p < .05$; Hays, 1994). Thus, based on evidence of a positive relationship between MSF and knowledge sharing (H2), which in turn predicted workforce productivity, we tested the indirect effect of MSF. As shown in Table 4, the 95% confidence interval (CI) of bootstrapping results did not include zero (95% CI [.007, .116]), suggesting that the indirect effect of MSF on workforce productivity via knowledge sharing is significant and positive (Hays, 1994). Although this supported Hypothesis 5, we tested the mediating role of knowledge sharing again for single-purpose MSF and dual-purpose MSF separately in Hypothesis 7.

Hypotheses 6 and 7 stated that the mediation effect of ability and knowledge sharing for the MSF/organizational-performance relationship will be strengthened when firms use MSF for dual purpose. The interaction between MSF and dual-purpose MSF did not significantly predict employees' ability (H3a). Thus, Hypothesis 6 was not supported. However, based on evidence of significant interaction effects of MSF and dual-purpose MSF on knowledge sharing (H3b), which, in turn, predicted workforce productivity (Model 11: $\gamma = .46$, $SE = .23$, $p < .05$), we examined the conditional indirect effect of MSF via knowledge sharing. Table 4 presents the bootstrapping results for the conditional indirect effect of MSF on workforce productivity conditional on the purpose of MSF. As shown in Table 4, in support of Hypothesis 7, the

² The effect of MSF on employees' ability and knowledge sharing depends on the value of dual purpose. For example, in the simplified regression equation, $Y = aX + bZ$, where X is MSF dummy, Z is dual-purpose dummy, and Y is employees' ability, the effect of MSF on employees' ability is as follows: 0 for firms without MSF program, a for firms with non-dual-purpose MSF, and $a + b$ for firms with dual-purpose MSF.

³ Test of moderation indicates the significance of the interaction between MSF and dual-purpose MSF.

Table 3
Hierarchical Linear Modeling Results: Main Effect of Ability and Knowledge Sharing on Workforce Productivity

Predictor	Hypothesis	Dependent variable: Workforce productivity (T3)				
		Model 7 γ (SE)	Model 8 γ (SE)	Model 9 γ (SE)	Model 10 γ (SE)	Model 11 γ (SE)
Intercept		-.07 (.07)	-.06 (.07)	-.07 (.07)	-.06 (.07)	-.07 (.07)
Control variables (T1)						
Organizational size		-.04 (.16)	-.08 (.16)	-.10 (.17)	-.07 (.16)	-.10 (.17)
Employees' average tenure		.04 (.02)**	.04 (.02)**	.04 (.02)**	.04 (.02)**	.04 (.02)**
Employees' average education		-.04 (.19)	-.09 (.19)	-.05 (.19)	-.09 (.19)	-.05 (.19)
HPWP		.06 (.02)***	.04 (.02)**	.04 (.02)**	.04 (.02)**	.04 (.02)**
Independent variables						
Dual purpose MSF (T1)		-.32 (.31)			-.32 (.30)	-.42 (.31)
MSF (T1)		.32 (.14)**	.25 (.13)*	.24 (.13)*	.29 (.14)**	.29 (.14)**
Ability (T2)	[H4]		.10 (.05)**		.10 (.05)**	
Knowledge sharing (T2)	[H5]			.41 (.23)*		.46 (.23)**
Pseudo R^2		.12	.13	.13	.14	.13

Note. $N = 253$. $SE =$ standard error; T1 = Time 1; T2 = Time 2; T3 = Time 3; HPWP = high-performance work practices; MSF = multisource feedback; H4 = hypothesis 4; H5 = hypothesis 5.

* $p < .10$. ** $p < .05$. *** $p < .01$.

conditional indirect effect of MSF via knowledge sharing on workforce productivity was larger for dual-purpose MSF than for non-dual-purpose MSF. The total effect of MSF, the indirect effect of which is conditional upon the purpose of MSF, is presented in Figure 3.

Additional Analyses

In the main analysis, following P. R. Davis, Trevor, and Feng (2015), we tested the mediating roles of employees' ability and knowledge sharing separately. Drawing on extant theory on MSF, we are less able to explain the competing or complementary mediation effects of ability and knowledge sharing (Hayes, 2013; Preacher & Hayes, 2008). However, to inform future theory development, we examined simultaneous mediations. When both mediators were included in the model predicting workforce productivity, neither employees' ability ($\gamma = .08, SE = .05, ns$) nor knowledge sharing ($\gamma = .26, SE = .25, ns$) significantly predict workforce productivity, rejecting their simultaneous mediation effects (indirect effect via employees' ability: .028, 95% CI [-.001, .106]; indirect effect via knowledge sharing: .026, 95% CI [-.009,

.087]). We surmised that the high correlation between mediators ($r = .56, p < .01$), and their correlations with control variables (e.g., $r_{\text{knowledge sharing, HPWP}} = .49, p < .01$; $r_{\text{employees' ability, HPWP}} = .48, p < .01$), influence the significance of joint mediation effects. Thus, we reran the simultaneous mediation analysis without control variables (Carlson & Wu, 2012; Spector & Brannick, 2011). The results showed that both employees' ability (indirect effect: .071, 95% CI [.007, .182]) and knowledge sharing (indirect effect: .087, 95% CI [.015, .194]) significantly and simultaneously mediated the relationship between MSF and workforce productivity. These preliminary results call on future studies to further assess the joint effects of mediating mechanisms in explaining the influence of MSF on performance.

Although in our analysis model we controlled for HPWPs in which performance appraisal practices were one component, we reran the analysis specifically with traditional performance appraisal practices as a separate control variable (see Measures in the Method section). Consistent with the results of our main analysis, the use of MSF remained significant in predicting workforce productivity via employees' ability (indirect effect: .04, 95% CI

Table 4
Bootstrapping Results: (Conditional) Indirect Effect of MSF on Workforce Productivity via Ability and Knowledge Sharing

(Conditional) Indirect effect	Purpose of MSF	b	LLCI	ULCI
Indirect effect of MSF on workforce productivity via ability		.036**	.005	.110
Indirect effect of MSF on workforce productivity via knowledge sharing		.041**	.007	.116
Conditional indirect effect of MSF on workforce productivity via knowledge sharing	Non-dual-purpose	.034**	.005	.096
	Dual-purpose	.137**	.016	.298

Note. Confidence intervals are based on a significance level of .05. Number of bootstrap samples = 1,000. For the beta estimation of the conditional indirect effect of dual-purpose MSF, the sum of non-dual-purpose effect (.034) and dual-purpose effect (.103) is reported. For more information, please refer to how we test moderation effect in the Results section. LLCI = lower-limit confidence interval; ULCI = upper-limit confidence interval; MSF = multisource feedback.

** $p < .05$.

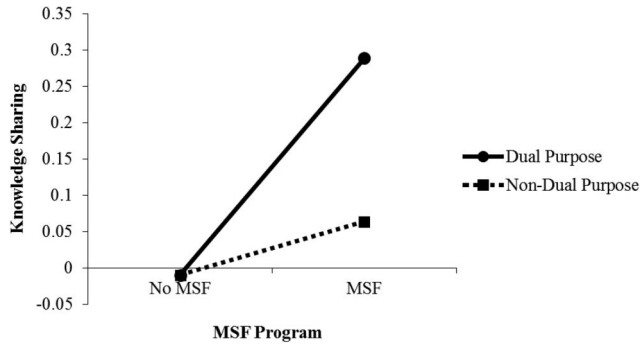


Figure 2. Knowledge sharing regressed on MSF and dual-purpose MSF. MSF = multisource feedback.

[.00, .14]) and knowledge sharing (indirect effect: .05, 95% CI [.01, .15]), even after controlling for performance appraisal practices as a separate control variable. Additionally, the conditional indirect effect of dual-purpose MSF via knowledge sharing on workforce productivity was significant (conditional indirect effect: .14, 95% CI [.03, .35]). Although performance appraisal practices were also significantly associated with employees' ability ($\gamma = .33$, $SE = .09$, $p < .01$) and knowledge sharing ($\gamma = .07$, $SE = .02$, $p < .01$), they did not significantly predict workforce productivity ($\gamma = .03$, $SE = .07$, ns) above and beyond MSF.

Although our main analysis substantiated the importance of dual purpose for MSF effectiveness (especially for knowledge sharing), we tested whether or not there were any differences between administrative and developmental conditions for single-purpose MSF. We ran the regression analysis using administrative-only purpose as a dummy variable (development-only purpose was the reference group). The results showed that MSF for administrative-only purpose was not significantly associated with employees' ability ($\gamma = .43$, $SE = .31$, ns) or knowledge sharing ($\gamma = .09$, $SE = .06$, ns). This suggests that there is no significant difference in single-purpose MSF (administrative-only vs. development-only) in terms of employees' ability and knowledge sharing.

Lastly, one question that can be raised about our main findings concerns the direction of causality. The logic underlying the hypotheses in the study presumes that MSF leads to higher workforce productivity. But an alternative explanation can be suggested. That is, perhaps firms with higher workforce productivity have more resources that can be devoted to HPWPs and to implementing MSF programs. Despite the longitudinal design of our main study, we could not rule out this alternative explanation. Hence, we employed a cross-lagged panel design to examine the causal relationships between MSF and workforce productivity. The cross lagged-panel design involves the estimation and comparison of partial regression coefficients between variables measured at Time 1 and those at Time 2 (Finkel, 1995). It offers evidence concerning the most plausible direction of causality between a pair of variables, specifically, whether X likely causes Y, Y likely causes X, or the relationship between X and Y is reciprocal (Finkel, 1995; Zapf, Dormann, & Frese, 1996). This technique is regarded as "the optimal way to understand causality in field settings" (Lang, Bliese, Lang, & Adler, 2011, p. 605).

We ran the cross-lagged panel design using MSF and workforce productivity measured at two different time points (T1 and T3).

For the analysis, we utilized HLM (SAS proc mixed and proc glimmix). The results showed that the presence of an MSF program at Time 1 was positively associated with workforce productivity at Time 3 ($\gamma = .13$, $p < .05$, one-tailed test). However, workforce productivity at Time 1 was not associated with the presence of an MSF program at Time 3 ($\gamma = .00$, ns). This is consistent with our expectation.

Discussion

We found that organizations that use MSF had higher levels of employee ability (i.e., the extent to which the organization's human capital is competitive in several functional areas) and knowledge sharing (e.g., employees developing and communicating new ways to improve work performance) than organizations that do not use MSF. We also found that using MSF for both administrative and developmental purposes (i.e., dual-purpose MSF) enhanced the effect of MSF on knowledge sharing, but not on employee ability. This may be explained by FIT. This theory suggests that discrepancies between current performance and a standard will motivate individuals to improve their performance to meet the standard. When MSF suggests deficiencies (e.g., lower ratings than expected), it could motivate individuals to improve their capabilities. So, for ability, perhaps this discrepancy is sufficient to motivate improvement, and thus the relationship between MSF and ability is positive yet not moderated by purpose. With respect to knowledge sharing, additional motivators such as accountability are needed to encourage individuals to use their MSF for the betterment of the team or the organization.

We also found that employee ability and knowledge sharing were both positively related to workforce productivity (i.e., total sales per employee adjusted for the industry average). Also noteworthy was our finding that the use of MSF had a positive and direct effect on workforce productivity. Our results also showed that the use of MSF had indirect effects (through employee ability and knowledge sharing) on workforce productivity. Finally, the conditional indirect effect of MSF via knowledge sharing on workforce productivity was larger for dual-purpose MSF than for non-dual-purpose MSF.

These findings were observed after controlling for a number of HPWPs, including investments (per employee) in training and staffing, average salary and benefits, and performance-based in-

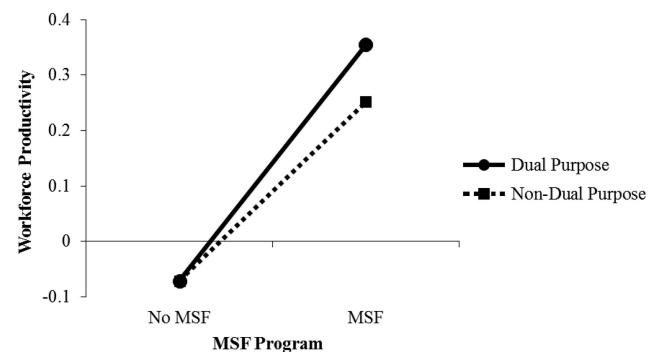


Figure 3. The effect of MSF on workforce productivity by purpose of MSF. 0 is the average of workforce productivity. MSF = multisource feedback.

centives. Importantly, the positive effects of MSF occurred after controlling for performance appraisal practices, such as providing performance feedback, evaluating employee competencies, and the use of balanced scorecards. Finally, we also found that the use of MSF positively predicted workforce productivity 4 years later, whereas the reverse was not true (i.e., workforce productivity was unrelated to the use of MSF 4 years later). This finding suggests that the positive relationship between MSF and workforce productivity was not merely the result of firms with higher productivity being more likely than other firms to invest in MSF.

Theoretical Contribution

The current study contributes to the literature by bridging the MSF and strategic HR literatures. Very little attention has been directed to firm-level effects of MSF. Although numerous studies have examined the relationship between MSF and individual-level outcomes that can potentially aid organizational outcomes, organizational-level outcomes are, in general, statistically and conceptually different from individual-level outcomes (Kozlowski & Klein, 2000). It is committing an atomistic fallacy to generalize findings from individual-level studies to organizational levels (Klein & Kozlowski, 2000). Only a few studies have examined unit-level effects of MSF. Exceptions include Smither and Walker (2001), who followed over 200 managers from branches of a regional bank over five annual administrations of upward feedback from subordinates, and found that upward feedback ratings were positively associated with branch-level measures of customer loyalty (which was, in turn, related to revenue). In addition, Walker, Smither, and Waldman (2008) found that in two of the three time periods they examined, improvements (declines) in team leadership, as measured using MSF, were related to improvements (declines) in customer satisfaction. To our knowledge, the current study is the first to examine links between MSF and a firm-level financial outcome (workforce productivity).

MSF has traditionally not been included in studies of HPWPs. The current study is the first to examine the relationships between MSF and organizational outcomes beyond well-established HPWPs (e.g., training, compensation, incentives). It also contributes to the literature using the AMO framework by identifying two mechanisms (enhancing employee ability and knowledge sharing) that mediate the positive relationship between MSF and firm outcomes. In the strategic HRM literature, the relationship between HPWPs (and other HR practices) and organizational performance has been considered a “black box” because the underlying mechanisms of how such practices affect organizational performance have not been clearly elaborated (e.g., B. Becker & Gerhart, 1996; B. E. Becker & Huselid, 2006; Messersmith, Patel, Lepak, & Gould-Williams, 2011). The current study indicates that employee ability and knowledge sharing play important roles in explaining the link between the use of MSF and workforce productivity.

Another contribution of this work is showing that using MSF for both developmental and administrative purposes can enhance its influence on knowledge sharing and organizational performance. Previously, researchers have suggested that using MSF for administrative purposes might lead to less accurate ratings or game-playing (e.g., trading rewards for ratings; Atwater & Waldman, 2008). For example, Greguras, Robie, Schleicher, and Goff (2003)

concluded that subordinates’ ratings of supervisors were of better quality (i.e., higher interrater reliability) when used for developmental than for administrative purposes. But the results of the current study paint a different picture. Apparently, using MSF for both administrative and developmental purposes has the potential to simultaneously (a) capture the value of feedback as a guide to set goals and focus performance improvement efforts, and (b) motivate employees to take the feedback seriously because their use of the feedback (and the extent of their performance improvement) has tangible consequences. In sum, the findings seem to suggest that developmental and administrative purposes are complementary.

In the MSF literature, a majority of empirical studies show a positive relationship between MSF and job performance (e.g., Smither & Walker, 2001), but some studies show a negative effect of MSF (e.g., Brett & Atwater, 2001). These mixed findings in the MSF literature may be partly explained by the significant and positive role of dual purpose for the MSF program. Although most MSF studies have been conducted in a single organization, we used a sample of 253 organizations across various industries and showed that dual purpose is a key boundary condition for the effect of MSF on knowledge sharing, a key opportunity for development. The results suggest that the mixed findings in the MSF literature may partly be because of the sampling characteristics and the purpose of MSF (dual purposes vs. a single purpose).

The findings also contribute to the international human resource literature by demonstrating positive effects of MSF in South Korea, a culture that differs significantly from the United States. It is reasonable to ask whether MSF would be expected to be related to measures of human capital (such as employee ability and knowledge sharing) and firm performance in a culture such as South Korea that is high on power distance and collectivism (The Hofstede Center, 2013). For example, based on a priori theory, Rabl, Jayasinghe, Gerhart, and Kühlmann (2014) hypothesized that the positive relationship between HPWP and firms’ financial performance would be *weaker* in cultures that are high on power distance and collectivism. In this context, we note that, in high-power-distance cultures (in which people accept an unequal distribution of power across hierarchical levels in organizations), those with higher status (e.g., supervisors) are likely to resist receiving feedback from those with lower status (e.g., subordinates; D. D. Davis, 1998). In contrast, in low-power-distance cultures, those with higher status (e.g., supervisors) are more likely to accept feedback from those with lower status (e.g., subordinates) and subordinates are correspondingly more likely to be more comfortable providing feedback to supervisors (Peretz & Fried, 2008). At first glance, these cultural patterns hint that the impact of MSF might be limited in South Korea. Yet our results showed that the use of MSF in South Korea was positively related to indicators of human capital (employee ability and knowledge sharing) and workforce productivity. Perhaps results would be even stronger in lower power distance or more individualistic cultures such as that found in the United States.

This somewhat counterintuitive result for South Korea might be explained in part by Bae and Lawler’s (2000) argument that South Korean firms began to implement HPWPs to become more *globally* competitive (regardless of the fit of such practices with *national* culture). Indeed, despite their initial hypothesis, Rabl et al.’s (2014) meta-analysis found that (a) the relationship between

HPWP and firm performance was *stronger and more positive* in countries high on power distance and collectivism; (b) in countries with a tight, rather than loose, culture (such as South Korea; Gelfand et al., 2011), the relationship between HPWP and firm performance was less positive when power distance was high; and (c) even in national cultures that are high on power distance (such as South Korea), the HPWP-firm performance effect size was positive.

Crook, Todd, Combs, Woehr, and Ketchen (2011) noted that most studies examining the relationship between human capital and organizational performance have used cross-sectional designs. Cross-sectional studies cannot capture the lagged effects of investing in human capital (Rouse & Daellenbach, 1999). In addition, studies conducted in a single organization or within a single industry have limited generalizability and also may be unable to capture sufficient variance in HR practices and human capital. The current study addresses these shortcomings by studying the relationship between MSF, two indicators of human capital (employee ability and knowledge sharing), and an important organizational outcome across multiple industries and over time (thereby allowing for lagged effects of MSF): MSF was measured at T1, employee ability and knowledge sharing were measured at T2, and workforce productivity was measured at T3. Also, our data came from multiple sources, HR leaders indicated whether the organization used MSF, employees in each firm provided data concerning employee ability and knowledge sharing, and workforce productivity was assessed using archival financial data.

Practical Implications

Our findings also have implications for managers and practitioners. In recent years, the value of MSF has been questioned. A meta-analysis by Smither et al. (2005) found that, on average, MSF had positive effects on subsequent employee performance, but these effects tended to be small and quite variable. By focusing on a more macrolevel outcome (workforce productivity), the current study found positive effects for MSF. Additional implications are that investments in other mechanisms to develop human capital competitiveness could also be expected to increase organizational performance (Crook et al., 2011). Unfortunately, when organizations begin to suffer financially, they often cut training and development programs and other investments in their human capital. These types of cuts may be ill-advised.

In addition, our results suggest that organizations should consider using MSF for both developmental and administrative purposes. Some of the positive relationships we found between MSF and other variables were stronger when MSF was used for dual purposes rather than a single purpose.

Limitations and Future Research

The present study has several limitations. First, despite the benefits of non-U.S. data, the generalizability of our findings might be limited by the fact that all our data were collected from organizations in South Korea. The use of stratified random sampling, along with the diversity of firm size and age in our sample, improves sample representativeness and thus might reduce such a concern (Särndal, Swensson, & Wretman, 2003). Still, future research should examine the impact of MSF in other countries and

cultures, especially those that differ from South Korea on key cultural dimensions such as power distance and collectivism. It would be interesting to examine whether countries lower in power distance might see greater effects from the use of MSF, and whether similar mediating and moderating mechanisms hold.

Second, although some studies have used dummy-coded variables as their main independent variable (e.g., Hoque, 2003; Shrader, 2001), our use of dichotomous variables for MSF imposes limitations on the present study. Because we relied on comprehensive and longitudinal data gathered by the Korea Research Institute for Vocational Education and Training, there are additional details about the use of MSF in our sample that we could not measure. For example, it would be desirable to know how long each organization had been using MSF, the percent of the workforce that received MSF, the exact foci of MSF (e.g., does MSF focus on knowledge, skills, or both?), the differences in the source of MSF (e.g., does MSF include feedback from customers?), and the exact administrative purposes for which MSF was used (e.g., to influence changes in compensation and/or for promotion decisions). It is possible that the relationship between MSF and employee ability and knowledge sharing would be stronger in organizations in which a large proportion of the workforce receives MSF regularly and the intensity of the incentives attached to MSF is substantial. Additionally, the foci of MSF, the differences in the source of MSF, and the number of years of MSF may influence the effectiveness of MSF. Thus, our results should be interpreted with some caution. Because we could not include potential moderators for the effectiveness of MSF, our results should be interpreted as an *average* effect of MSF. Specifically, our results suggest that, *on average*, the use of MSF significantly improves employees' ability and knowledge sharing, and dual purpose strengthens the relationships for knowledge sharing.

Third, we examined employees' ability and knowledge sharing as mediating mechanisms for the MSF/organization-performance relationship at the organizational level, but our theoretical argument draws from MSF research at the individual level. Although a meta-analysis shows that MSF has positive outcomes such as performance improvement (Smither et al., 2005), there is no universal support for the effect of MSF at the individual level. Thus, we encourage scholars to replicate and expand our model using multilevel modeling in which, for example, individuals' ability at the individual level mediates the relationship between MSF and organizational performance at the organizational level. We also encourage studies examining other meaningful mediating variables, because we only considered employees' ability and knowledge sharing as mediators. It is possible that specific attitudinal variables such as goal commitment (Walker & Smither, 1999) and organizational commitment (Luthans & Peterson, 2003) mediate the relationship between MSF and organizational performance.

In addition to the need for replication and tests of generalizability of our findings, we suggest several additional avenues for future research. It would be interesting to examine whether the impact of MSF is influenced by firm strategy (e.g., differentiation vs. cost leadership) or the configuration of other HR practices in organizations. For example, the impact of MSF might be influenced by the characteristics of a firm's performance management practices. Future research can also examine other aspects of human capital that might be influenced by MSF, such as employees'

interest in and frequency of participation in formal development initiatives.

Conclusion

In a large sample of organizations in South Korea, and after controlling for the use of other HPWPs, we found that organizations that used MSF had higher levels of employee ability, knowledge sharing, and workforce productivity than organizations that did not use MSF. In addition, the relationship between MSF and workforce productivity was mediated by employee ability and knowledge sharing. Finally, the relationships between MSF and these outcomes were generally enhanced when the feedback was used for both developmental and administrative purposes.

References

- Atwater, L. E., & Brett, J. F. (2006). 360-degree feedback to leaders: Does it relate to changes in employee attitudes? *Group & Organization Management, 31*, 578–600. <http://dx.doi.org/10.1177/1059601106286887>
- Atwater, L. E., Brett, J. F., & Waldman, D. (2003). Understanding the benefits and risks of multisource feedback within the leadership development process. In S. E. Murphy & R. E. Riggio (Eds.), *The future of leadership development* (pp. 85–106). Mahwah, NJ: Erlbaum.
- Atwater, L., & Waldman, D. (1998). 360 degree feedback and leadership development. *The Leadership Quarterly, 9*, 423–426. [http://dx.doi.org/10.1016/S1048-9843\(98\)90009-1](http://dx.doi.org/10.1016/S1048-9843(98)90009-1)
- Atwater, L. E., & Waldman, D. A. (2008). *Leadership, feedback, and the open communication gap*. New York, NY: Taylor & Francis.
- Atwater, L. E., Waldman, D. A., & Brett, J. F. (2002). Understanding and optimizing multisource feedback. *Human Resource Management, 41*, 193–208. <http://dx.doi.org/10.1002/hrm.10031>
- Bae, J., & Lawler, J. J. (2000). Organizational and HRM strategies in Korea: Impact on firm performance in an emerging economy. *Academy of Management Journal, 43*, 502–517. <http://dx.doi.org/10.2307/1556407>
- Bamberger, P. A. (2007). Competitive appraising: A social dilemma perspective on the conditions in which multi-round peer evaluation may result in counter-productive team dynamics. *Human Resource Management Review, 17*, 1–18. <http://dx.doi.org/10.1016/j.hrmr.2006.11.001>
- Bartol, K. M., & Srivastava, A. (2002). Encouraging knowledge sharing: The role of organizational reward systems. *Journal of Leadership & Organizational Studies, 9*, 64–76. <http://dx.doi.org/10.1177/107179190200900105>
- Becker, B., & Gerhart, B. (1996). The impact of human resource management on organizational performance: Progress and prospects. *Academy of Management Journal, 39*, 779–801. <http://dx.doi.org/10.2307/256712>
- Becker, B. E., & Huselid, M. A. (2006). Strategic human resource management: Where do we go from here? *Journal of Management, 32*, 898–925. <http://dx.doi.org/10.1177/0149206306293668>
- Becker, G. S. (1962). Investment in human capital: A theoretical analysis. *Journal of Political Economy, 70*, 9–49. <http://dx.doi.org/10.1086/258724>
- Becker, G. S. (1964). *Human capital: A theoretical and empirical analysis, with special reference to education*. Chicago, IL: University of Chicago Press.
- Bock, G. W., Zmud, R. W., Kim, Y. G., & Lee, J. N. (2005). Behavioral intention formation in knowledge sharing: Examining the roles of extrinsic motivators, social-psychological forces, and organizational climate. *Management Information Systems Quarterly, 29*, 87–111.
- Boubakri, N., & Cosset, J. (1998). The financial and operating performance of newly privatized firms: Evidence from developing countries. *The Journal of Finance, 53*, 1081–1110. <http://dx.doi.org/10.1111/0022-1082.00044>
- Brett, J. F., & Atwater, L. E. (2001). 360 degree feedback: Accuracy, reactions, and perceptions of usefulness. *Journal of Applied Psychology, 86*, 930–942.
- Brooks, J. H. (1998). *Personal characteristics and congruence in multi-rater feedback ratings* (Unpublished master's thesis). DePaul University, Chicago, IL.
- Carlson, K. D., & Wu, J. (2012). The illusion of statistical control: Control variable practice in management research. *Organizational Research Methods, 15*, 413–435. <http://dx.doi.org/10.1177/1094428111428817>
- Chang, S. J., & Hong, J. (2000). Economic performance of group-affiliated companies in Korea: Intragroup resource sharing and internal business transactions. *Academy of Management Journal, 43*, 429–448. <http://dx.doi.org/10.2307/1556403>
- Combs, J., Liu, Y., Hall, A., & Ketchen, D. (2006). How much do high-performance work practices matter? A meta-analysis of their effects on organizational performance. *Personnel Psychology, 59*, 501–528. <http://dx.doi.org/10.1111/j.1744-6570.2006.00045.x>
- Crook, T. R., Todd, S. Y., Combs, J. G., Woehr, D. J., & Ketchen, D. J., Jr. (2011). Does human capital matter? A meta-analysis of the relationship between human capital and firm performance. *Journal of Applied Psychology, 96*, 443–456. <http://dx.doi.org/10.1037/a0022147>
- Dai, G., De Meuse, K. P., & Peterson, C. (2010). Impact of multi-source feedback on leadership competency development: A longitudinal field study. *Journal of Managerial Issues, 22*, 197–219.
- Davis, D. D. (1998). International performance measurement and management. In J. W. Smither (Ed.), *Performance appraisal: State-of-the-art in practice* (pp. 95–131). San Francisco, CA: Jossey-Bass.
- Davis, P. R., Trevor, C. O., & Feng, J. (2015). Creating a more quit-friendly national workforce? Individual layoff history and voluntary turnover. *Journal of Applied Psychology, 100*, 1434–1455. <http://dx.doi.org/10.1037/apl0000012>
- Dimov, D. P., & Shepherd, D. A. (2005). Human capital theory and venture capital firms: Exploring “home runs” and “strike outs.” *Journal of Business Venturing, 20*, 1–21. <http://dx.doi.org/10.1016/j.jbusvent.2003.12.007>
- Druskat, V. U., & Wolff, S. B. (1999). Effects and timing of developmental peer appraisals in self-managing work groups. *Journal of Applied Psychology, 84*, 58–74. <http://dx.doi.org/10.1037/0021-9010.84.1.58>
- Edwards, J. R., & Lambert, L. S. (2007). Methods for integrating moderation and mediation: A general analytical framework using moderated path analysis. *Psychological Methods, 12*, 1–22. <http://dx.doi.org/10.1037/1082-989X.12.1.1>
- Enders, C. K., & Tofighi, D. (2007). Centering predictor variables in cross-sectional multilevel models: A new look at an old issue. *Psychological Methods, 12*, 121–138. <http://dx.doi.org/10.1037/1082-989X.12.2.121>
- Finkel, S. E. (1995). *Causal analysis with panel data*. Thousand Oaks, CA: Sage. <http://dx.doi.org/10.4135/9781412983594>
- Frink, D., & Ferris, G. (1998). Accountability impression management, and goal setting in the performance evaluation process. *Human Relations, 51*, 1259–1283. <http://dx.doi.org/10.1177/001872679805101003>
- Gelfand, M. J., Raver, J. L., Nishii, L., Leslie, L. M., Lun, J., Lim, B. C., . . . Yamaguchi, S. (2011). Differences between tight and loose cultures: A 33-nation study. *Science, 332*, 1100–1104. <http://dx.doi.org/10.1126/science.1197754>
- Gerhart, B., & Rynes, S. L. (2003). *Compensation: Theory, evidence, and strategic implications*. Thousand Oaks, CA: Sage.
- Gibson, C. B., Porath, C. L., Benson, G. S., & Lawler, E. E., III. (2007). What results when firms implement practices: The differential relationship between specific practices, firm financial performance, customer service, and quality. *Journal of Applied Psychology, 92*, 1467–1480. <http://dx.doi.org/10.1037/0021-9010.92.6.1467>

- Goodman, J. S., Wood, R. E., & Hendrickx, M. (2004). Feedback specificity, exploration, and learning. *Journal of Applied Psychology, 89*, 248–262. <http://dx.doi.org/10.1037/0021-9010.89.2.248>
- Grant, R. M. (1996a). Toward a knowledge-based theory of the firm. *Strategic Management Journal, 17*, 109–122. <http://dx.doi.org/10.1002/smj.4250171110>
- Grant, R. M. (1996b). Prospering in dynamically-competitive environments: Organizational capability as knowledge integration. *Organization Science, 7*, 375–387. <http://dx.doi.org/10.1287/orsc.7.4.375>
- Green, B. (2002). Listening to leaders. *Organization Development Journal, 20*, 8–16.
- Greguras, G. J., Robie, C., Schleicher, D. J., & Goff, M., III. (2003). A field study of the effects of rating purpose on the quality of multisource ratings. *Personnel Psychology, 56*, 1–21. <http://dx.doi.org/10.1111/j.1744-6570.2003.tb00141.x>
- Gupta, N., & Shaw, J. D. (2014). Employee compensation: The neglected area of HRM research. *Human Resource Management Review, 24*, 1–4. <http://dx.doi.org/10.1016/j.hrmr.2013.08.007>
- Guthrie, J. P., Flood, P. C., Liu, W., & MacCurtain, S. (2009). High performance work systems in Ireland: Human resource and organizational outcomes. *The International Journal of Human Resource Management, 20*, 112–125. <http://dx.doi.org/10.1080/09585190802528433>
- Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2006). *Multivariate data analysis* (Vol. 6). Upper Saddle River, NJ: Pearson Prentice Hall.
- Hayes, A. F. (2012). *PROCESS: A versatile computational tool for observed variable mediation, moderation, and conditional process modeling* [White paper]. Retrieved from <http://www.afhayes.com/public/process2012.pdf>
- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York, NY: Guilford Press.
- Hays, W. L. (1994). *Statistics* (5th ed.). Belmont, CA: Wadsworth.
- Hazucha, J. F., Hezlett, S. A., & Schneider, R. J. (1993). The impact of 360-degree feedback on management skills development. *Human Resource Management, 32*, 325–351. <http://dx.doi.org/10.1002/hrm.3930320210>
- Hedge, J. W., Borman, W. C., & Birkeland, S. A. (2001). History and development of multisource feedback as a methodology. In D. W. Bracken, C. W. Timmreck, & A. H. Church (Eds.), *The handbook of multisource feedback* (pp. 15–32). San Francisco, CA: Jossey-Bass.
- Hoque, K. (2003). All in all, it's just another plaque on the wall: The incidence and impact of the investors in people standard. *Journal of Management Studies, 40*, 543–571. <http://dx.doi.org/10.1111/1467-6486.00350>
- Hough, J. R. (2006). Business segment performance redux: A multilevel approach. *Strategic Management Journal, 27*, 45–61. <http://dx.doi.org/10.1002/smj.498>
- Huselid, M. A. (1995). The impact of human resource management practices on turnover, productivity, and corporate financial performance. *Academy of Management Journal, 38*, 635–672. <http://dx.doi.org/10.2307/256741>
- Ipe, M. (2003). Knowledge sharing in organizations: A conceptual framework. *Human Resource Development Review, 2*, 337–359. <http://dx.doi.org/10.1177/1534484303257985>
- Jiang, K., Lepak, D. P., Hu, J., & Baer, J. C. (2012). How does human resource management influence organizational outcomes? A meta-analytic investigation of mediating mechanisms. *Academy of Management Journal, 55*, 1264–1294. <http://dx.doi.org/10.5465/amj.2011.0088>
- Kim, K. Y., Pathak, S., & Werner, S. (2015). When do international human capital enhancing practices benefit the bottom line? An ability, motivation, and opportunity perspective. *Journal of International Business Studies, 46*, 784–805. <http://dx.doi.org/10.1057/jibs.2015.10>
- Kirwan, C., & Birchall, D. (2006). Transfer of learning from management development programmes: Testing the Holton model. *International Journal of Training and Development, 10*, 252–268. <http://dx.doi.org/10.1111/j.1468-2419.2006.00259.x>
- Klein, K. J., & Kozlowski, S. W. (2000). From micro to meso: Critical steps in conceptualizing and conducting multilevel research. *Organizational Research Methods, 3*, 211–236. <http://dx.doi.org/10.1177/109442810033001>
- Kluger, A., & DeNisi, A. (1996). The effects of feedback interventions on performance: A historical review, a meta-analysis and a preliminary feedback intervention theory. *Psychological Bulletin, 119*, 254–284. <http://dx.doi.org/10.1037/0033-2909.119.2.254>
- Kozlowski, S. W. J., & Klein, K. J. (2000). A multilevel approach to theory and research in organizations. In K. J. Klein & S. W. J. Kozlowski (Eds.), *Multilevel theory, research, and methods in organizations* (pp. 3–90). San Francisco, CA: Jossey-Bass.
- Kreft, I., & de Leeuw, J. (1998). *Introducing multilevel modeling*. London, UK: Sage. <http://dx.doi.org/10.4135/9781849209366>
- Lang, J., Bliese, P. D., Lang, J. W., & Adler, A. B. (2011). Work gets unfair for the depressed: Cross-lagged relations between organizational justice perceptions and depressive symptoms. *Journal of Applied Psychology, 96*, 602–618. <http://dx.doi.org/10.1037/a0022463>
- London, M. (2001). The great debate: Should multisource feedback be used for administration or development only? In D. W. Bracken, C. W. Timmreck, & A. H. Church (Eds.), *The handbook of multisource feedback* (pp. 368–385). San Francisco, CA: Jossey-Bass.
- London, M., & Smither, J. W. (1995). Can multi-source feedback change perceptions of goal accomplishment, self-evaluations, and performance-related outcomes? Theory-based applications and directions for research. *Personnel Psychology, 48*, 803–839. <http://dx.doi.org/10.1111/j.1744-6570.1995.tb01782.x>
- London, M., & Smither, J. W. (2002). Feedback orientation, feedback culture, and the longitudinal performance management process. *Human Resource Management Review, 12*, 81–100. [http://dx.doi.org/10.1016/S1053-4822\(01\)00043-2](http://dx.doi.org/10.1016/S1053-4822(01)00043-2)
- London, M., Smither, J. W., & Adsit, D. (1997). Accountability: The Achilles' heel of multisource feedback. *Group & Organization Management, 22*, 162–184. <http://dx.doi.org/10.1177/1059601197222003>
- Luthans, F., & Peterson, S. J. (2003). 360-degree feedback with systematic coaching: Empirical analysis suggests a winning combination. *Human Resource Management, 42*, 243–256. <http://dx.doi.org/10.1002/hrm.10083>
- MacInnis, D. J., & Jaworski, B. J. (1989). Information processing from advertisements: Toward an integrative framework. *Journal of Marketing, 53*, 1–23. <http://dx.doi.org/10.2307/1251376>
- MacInnis, D. J., Moorman, C., & Jaworski, B. J. (1991). Enhancing and measuring consumers' motivation, opportunity. *Journal of Marketing, 55*, 32–53. <http://dx.doi.org/10.2307/1251955>
- Maurer, T. J., Mitchell, D. R., & Barbeite, F. G. (2002). Predictors of attitudes toward a 360-degree feedback system and involvement in post-feedback management development activity. *Journal of Occupational and Organizational Psychology, 75*, 87–107. <http://dx.doi.org/10.1348/096317902167667>
- Maylett, T. (2009). 360-degree feedback revisited: The transition from development to appraisal. *Compensation and Benefits Review, 41*, 52–59. <http://dx.doi.org/10.1177/0886368709337922>
- Messersmith, J. G., Patel, P. C., Lepak, D. P., & Gould-Williams, J. (2011). Unlocking the black box: Exploring the link between high-performance work systems and performance. *Journal of Applied Psychology, 96*, 1105–1118. <http://dx.doi.org/10.1037/a0024710>
- Peretz, H., & Fried, Y. (2008). *National values, performance appraisal and organizational performance: A study across 21 countries*. Paper presented at the annual meeting of the Academy of Management, Anaheim, CA.

- Ployhart, R. E. (2012). Personnel selection and the competitive advantage of firms. In G. P. Hodgkinson & J. K. Ford (Eds.), *International review of industrial and organizational psychology* (Vol. 27, pp. 153–195). New York, NY: Wiley.
- Posthuma, R. A., Campion, M. C., Masimova, M., & Campion, M. A. (2013). A high performance work practices taxonomy: Integrating the literature and directing future research. *Journal of Management*, *39*, 1184–1220. <http://dx.doi.org/10.1177/0149206313478184>
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, *40*, 879–891. <http://dx.doi.org/10.3758/BRM.40.3.879>
- Qian, C., Cao, Q., & Takeuchi, R. (2013). Top management team functional diversity and organizational innovation in China: The moderating effects of environment. *Strategic Management Journal*, *34*, 110–120. <http://dx.doi.org/10.1002/smj.1993>
- Rabl, T., Jayasinghe, M., Gerhart, B., & Kühmann, T. M. (2014). A meta-analysis of country differences in the high-performance work system-business performance relationship: The roles of national culture and managerial discretion. *Journal of Applied Psychology*, *99*, 1011–1041. <http://dx.doi.org/10.1037/a0037712>
- Reilly, R. R., Smither, J. W., & Vasilopoulos, N. L. (1996). A longitudinal study of upward feedback. *Personnel Psychology*, *49*, 599–612. <http://dx.doi.org/10.1111/j.1744-6570.1996.tb01586.x>
- Reinholt, M. I. A., Pedersen, T., & Foss, N. J. (2011). Why a central network position isn't enough: The role of motivation and ability for knowledge sharing in employee networks. *Academy of Management Journal*, *54*, 1277–1297. <http://dx.doi.org/10.5465/amj.2009.0007>
- Rosti, R. T., Jr., & Shipper, F. (1998). A study of the impact of training in a management development program based on 360 feedback. *Journal of Managerial Psychology*, *13*, 77–89. <http://dx.doi.org/10.1108/02683949810369147>
- Rouse, M. J., & Daellenbach, U. S. (1999). Rethinking research methods for the resource-based perspective: Isolating sources of sustainable competitive advantage. *Strategic Management Journal*, *20*, 487–494. [http://dx.doi.org/10.1002/\(SICI\)1097-0266\(199905\)20:5<487::AID-SMJ26>3.0.CO;2-K](http://dx.doi.org/10.1002/(SICI)1097-0266(199905)20:5<487::AID-SMJ26>3.0.CO;2-K)
- Samuelson, P. A., & Nordhaus, W. D. (1989). *Economics* (13th ed.). New York, NY: McGraw-Hill.
- Särndal, C. E., Swensson, B., & Wretman, J. H. (2003). *Model assisted survey sampling*. New York, NY: Springer.
- Seifert, C. F., Yukl, G., & McDonald, R. A. (2003). Effects of multisource feedback and a feedback facilitator on the influence behavior of managers toward subordinates. *Journal of Applied Psychology*, *88*, 561–569.
- Shaw, J. D., Park, T., & Kim, E. (2013). A resource-based perspective on human capital losses, HRM investments, and organizational performance. *Strategic Management Journal*, *34*, 572–589. <http://dx.doi.org/10.1002/smj.2025>
- Shrader, R. C. (2001). Collaboration and performance in foreign markets: The case of young high-technology manufacturing firms. *Academy of Management Journal*, *44*, 45–60. <http://dx.doi.org/10.2307/3069336>
- Smither, J. W., London, M., & Reilly, R. R. (2005). Does performance improve following multisource feedback? A theoretical model, meta-analysis, and review of empirical findings. *Personnel Psychology*, *58*, 33–66. http://dx.doi.org/10.1111/j.1744-6570.2005.514_1.x
- Smither, J. W., & Walker, A. G. (2001). Measuring the impact of multisource feedback. In D. W. Bracken, C. W. Timmreck, & A. H. Church (Eds.), *The handbook of multisource feedback* (pp. 256–274). San Francisco, CA: Jossey-Bass.
- Spector, P. E., & Brannick, M. T. (2011). Methodological urban legends: The misuse of statistical control variables. *Organizational Research Methods*, *14*, 287–305. <http://dx.doi.org/10.1177/1094428110369842>
- Srivastava, A., Bartol, K. M., & Locke, E. A. (2006). Empowering leadership in management teams: Effects on knowledge sharing, efficacy, and performance. *Academy of Management Journal*, *49*, 1239–1251. <http://dx.doi.org/10.5465/AMJ.2006.23478718>
- Sung, S. Y., & Choi, J. N. (2014). Multiple dimensions of human resource development and organizational performance. *Journal of Organizational Behavior*, *35*, 851–870. <http://dx.doi.org/10.1002/job.1933>
- The Hofstede Center. (2013). Tools: Compare countries. Retrieved November 4, 2013 from <http://geert-hofstede.com/south-korea.html>
- van Rensburg, T., & Prideaux, G. (2006). Turning professionals into managers using multisource feedback. *Journal of Management Development*, *25*, 561–571. <http://dx.doi.org/10.1108/02621710610670128>
- Walker, A. G., & Smither, J. W. (1999). A five-year study of upward feedback: What managers do with their results matters. *Personnel Psychology*, *52*, 393–423. <http://dx.doi.org/10.1111/j.1744-6570.1999.tb00166.x>
- Walker, A. G., Smither, J. W., & Waldman, D. A. (2008). A longitudinal examination of concomitant changes in team leadership and customer satisfaction. *Personnel Psychology*, *61*, 547–577. <http://dx.doi.org/10.1111/j.1744-6570.2008.00122.x>
- Wang, S., Noe, R. A., & Wang, Z. M. (2014). Motivating knowledge sharing in knowledge management systems a quasi-field experiment. *Journal of Management*, *40*, 978–1009. <http://dx.doi.org/10.1177/0149206311412192>
- Whitaker, B. G., Dahling, J. J., & Levy, P. (2007). The development of a feedback environment and role clarity model of job performance. *Journal of Management*, *33*, 570–591. <http://dx.doi.org/10.1177/0149206306297581>
- Wright, P. M., Gardner, T. M., Moynihan, L. M., & Allen, M. R. (2005). The relationship between HR practices and firm performance: Examining causal order. *Personnel Psychology*, *58*, 409–446. <http://dx.doi.org/10.1111/j.1744-6570.2005.00487.x>
- Zapf, D., Dormann, C., & Frese, M. (1996). Longitudinal studies in organizational stress research: A review of the literature with reference to methodological issues. *Journal of Occupational Health Psychology*, *1*, 145–169. <http://dx.doi.org/10.1037/1076-8998.1.2.145>

(Appendix follows)

Appendix

Scale Descriptions: Measurement Items

Variables	Measurement items	
Employees' ability	Job capability	<ul style="list-style-type: none"> • The extent to which human capital of research and development department is competitive in terms of their job capability. • The extent to which human capital of sales and service department is competitive in terms of their job capability. • The extent to which human capital of engineering department is competitive in terms of their job capability. • The extent to which human capital of management department is competitive in terms of their job capability. • The extent to which human capital of production line is competitive in terms of their job capability. • The extent to which human capital of product development and planning department is competitive in terms of their job capability. • The extent to which human capital of finance and investment department is competitive in terms of their job capability. • The extent to which human capital of core professionals (e.g., lawyer and accountants) is competitive in terms of their job capability.
	Learning capability	<ul style="list-style-type: none"> • The extent to which learning by self is effective in performing one's duty. • The extent to which learning from others is effective in performing one's duty.
Knowledge sharing		<ul style="list-style-type: none"> • Employees actively develop new working knowledge and improve how they work. • New knowledge and new ways of working quickly spread among employees. • Employees actively and freely suggest opinions to managers. • Employees actively engage in problem solving and decision making in teams.

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