Fostering organizational learning through leadership and knowledge sharing

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Abstract

Purpose – The purpose of this study is to examine the relationships among transformational leadership, knowledge sharing climate and behavior, interpersonal trust and organizational learning.

Design/methodology/approach – Data from 209 participants from a manufacturing company in Korea were analyzed using the structural equation modeling method.

Findings – The findings of the study indicated that transformational leadership directly affected the knowledge sharing climate and behavior, interpersonal trust and organizational learning of an organization. Transformational leadership also indirectly affected organizational learning through knowledge climate and behavior, and interpersonal trust. In addition, a knowledge sharing climate directly affected interpersonal trust and knowledge sharing behavior and indirectly affected organizational learning through interpersonal trust and knowledge behavior. Interpersonal trust directly affected knowledge sharing behavior and indirectly affected organizational learning through knowledge sharing behavior. Finally, knowledge sharing behavior positively affected organizational learning.

Research limitations/implications – The results highlight the important role of transformational leadership to enhance the knowledge sharing climate and behavior of employees, interpersonal trust and organizational learning. This study also indicated that transformational leadership, interpersonal trust and knowledge sharing behavior are antecedents of organizational learning.

Practical implications – The study’s findings could motivate practitioners to place more emphasis on leadership support, knowledge sharing and organizational learning in the manufacturing sector.

Originality/value – The study provided diverse paths indicating how transformational leadership can impact organizational learning by examining both the direct and indirect paths between transformational leadership, multiple mediators and organizational learning. It also suggested a research framework for supporting transformational leadership, knowledge sharing and organizational learning, as well as their relationships by examining the three variables in one research model.

Keywords Organizational learning, Transformational leadership, Interpersonal trust, Knowledge sharing behavior, Knowledge sharing climate

Organizational learning has been recognized as a critical intervention to gain and maintain a sustainable competitive advantage for organizations in a business environment (Guinot et al., 2016). In other words, organizational learning can play a significant role in acquiring, disseminating and using knowledge to adapt to a changing external environment (Hoe and McShane, 2010). Through a process of cognitive and behavioral changes, organizational learning leads to expected outcomes in the current value system (e.g. trial-and-error; Argyris and Schon, 1996). This process also includes reflection on values/norms and social structures to examine the appropriateness of the final desired outcomes (e.g. innovation).

Considerable attention has been paid to organizational learning. In particular, many scholars have discussed the significant antecedents of organizational learning including individual behavior, attitudinal variables and leadership factors (Argote and Miron-Spektor, 2011; Hoe and McShane, 2010). For instance, interpersonal trust, open communication and
knowledge sharing, an organizational culture and climate and transformational leadership have been shown to significantly predict organizational learning (Flores et al., 2012; Hsu and Chang, 2014; Sattayaraks and Boon-itt, 2016; Swift and Hwang, 2013). Among the various factors, transformational leadership has been recognized as a key determinant of organizational learning because it has a critical impact on illustrating appropriate attitudes and behaviors for employees (Flores et al., 2012).

Although previous studies have explored the roles of diverse antecedents of organizational learning, few studies have given empirical evidence to support the mediating role of a knowledge sharing climate and behavior as well as interpersonal trust on the relationship between transformational leadership and organizational learning. More research is needed to understand the diverse functions that knowledge sharing and trust play in organizational learning. This knowledge is particularly needed because organizational learning can help employees become active members of the organization and can ultimately contribute to organizational performance (Hoe and McShane, 2010; Somech and Drach-Zahavy, 2004). Therefore, the purpose of this study is to examine the structural relationships among transformational leadership, knowledge sharing climate and behavior, interpersonal trust and organizational learning. The research question guiding this study is as follows:

RQ1. What are the relationships among transformational leadership, knowledge sharing climate and behavior, interpersonal trust and organizational learning?

This study makes three meaningful contributions to the literature on organizational learning. First, we empirically analyzed how leadership, trust and climate factors influence organizational learning. In particular, this study viewed a knowledge sharing climate and behavior as mediators of transformational leadership affecting organizational learning for a richer understanding of the link between leaders’ behavior and employees’ behavior. Second, we provided diverse paths to show how transformational leadership can impact organizational learning by examining both the direct and indirect paths between transformational leadership, multiple mediators and organizational learning. Third, we suggested a research framework for supporting transformational leadership, knowledge sharing and organizational learning, and their relationships. This study is unique in that we examined the three variables in one research model as against previous studies that have mostly discussed only two out of the three possible variables (Jamalzadeh, 2012; Le and Lei, 2017; Sattayaraks and Boon-itt, 2016). By incorporating all three variables into one model, this study will help researchers more fully understand the dynamics among transformational leadership, organizational learning and other mediators.

**Literature review and hypotheses**

**Transformational leadership**

Transformational leadership concerns whether leaders create empowered working environments and help followers achieve higher performance through four dimensions:

1. idealized influence (being an excellent role model);
2. inspirational motivation (communicating expectations and purposes);
3. intellectual stimulation (promoting intelligence and rationality); and

Transformational leaders recognize the need for change in organizations. Thus, they create a vision for the change, focus on various types of exchange among followers, strive to gain commitment from followers and support the change throughout the process (Bass, 1990). In addition, transformational leaders encourage followers to challenge their traditional ways of doing things and adopt innovative methods to deal with complex work situations (Sosik, 2006).
Transformational leaders also inspire followers to transcend their own interests for the good of the organization. In this study, transformational leadership is viewed as a unidimensional construct (Garcia-Morales et al., 2012; Schaubroeck et al., 2007).

Scholars have discussed transformational leadership as a significant predictor of various outcomes and performance (Choudhary et al., 2013; Wang et al., 2011; Yao et al., 2007). By supporting, challenging and inspiring employees, transformational leaders positively and significantly influence employees’ interpersonal trust (Chen et al., 2011; Goodwin et al., 2011), encourage knowledge sharing (Fullwood et al., 2013; Le and Lei, 2017; Noruzy et al., 2013), create a knowledge sharing climate (Yao et al., 2007) and promote organizational learning (Choudhary et al., 2013; Garcia-Morales et al., 2012; Sattayaraks and Boon-itt, 2016).

Transformational leadership plays a critical role in cultivating knowledge sharing climate and behavior by supporting activities related to knowledge sharing and, thus, being a role model for knowledge sharing, and providing opportunities for knowledge sharing (Fullwood et al., 2013; Yao et al., 2007). In addition, transformational leaders significantly influence interpersonal trust and organizational learning (Noruzy et al., 2013). When transformational leaders demonstrate role-modeling and personal commitment to achieving vision, their employees are likely to gain interpersonal trust because they have observed it in their leaders and feel the interpersonal ties between employees and between leaders and employees (Goodwin et al., 2011). Transformational leadership can also enhance organizational learning by allowing the organization to learn through experimentation, communication and knowledge creation (Salas-Vallina et al., 2017).

**Knowledge sharing climate**

Knowledge sharing climate can be defined as “social interactions involving the exchange of employee knowledge, experience, and expertise to all departments within the organization” (Lin, 2007, p. 315). Knowledge sharing climate is related to the organizational climate where trust is high and employees feel that sharing of knowledge is meaningful because an organizational culture and climate affect employees’ behavior and actions (Connelly and Kelloway, 2003; Gupta, 2008). A knowledge sharing climate – an organizational climate that is supportive of knowledge sharing activities – has been shown to be a critical factor influencing knowledge-related activities (Bock et al., 2005; Janz and Prasarnphanich, 2003; Peralta and Saldanha, 2014; Radaelli et al., 2011; Riege, 2005). For instance, an organizational climate that does not provide sufficient support for knowledge sharing practices is a key barrier to individual knowledge sharing (Baporikar, 2014; Riege, 2005). On the other hand, a knowledge sharing climate can encourage and promote employees’ knowledge sharing behavior by emphasizing the value of knowledge and creating an environment for knowledge exchange and accessibility (Janz and Prasarnphanich, 2003; Michailova and Minbaeva, 2012; Peralta and Saldanha, 2014; Radaelli et al., 2011).

A knowledge sharing climate also affects interpersonal trust and organizational learning (Kivrik et al., 2014; Kumaraswamy and Chitale, 2012; Lee et al., 2016; Zakaria et al., 2004). In particular, it contributes to an increased level of trust and helps develop trust and relationships between teams and between team members (Kivrik et al., 2014; Zakaria et al., 2004). By encouraging organizational members to discuss their ideas and establish collaborative relationships, a knowledge sharing climate can enhance organizational learning capacity (Kumaraswamy and Chitale, 2012). An organizational climate that supports employees’ collaborative and collective knowledge sharing can also increase the level of organizational learning (Lee et al., 2016).

**Interpersonal trust**

Interpersonal trust is “a belief about the dependability of the partner and the extent to which the partner cares about the group’s interests” (Dirks, 1999, p. 446). Interpersonal trust can
be categorized into cognitive and affective dimensions (McAllister, 1995). Cognitive aspects of trust reflect the reliability, integrity, honesty and fairness issues of the partners, while affective aspects are related to a special relationship and emotional bond between individuals, including empathy, affiliation and rapport (McAllister, 1995). Another approach to interpersonal trust is combining the cognitive and affective dimensions into one dimension: overall trust (Dirks and Ferrin, 2002). In this study, interpersonal trust focuses more on trust between coworkers and colleagues than on trust in the leaders.

Researchers have suggested that interpersonal trust is a dynamic concept that may promote individual and organizational outcomes (Whitener et al., 1998; Zhu et al., 2013). In particular, interpersonal trust positively affects knowledge sharing behavior and organizational learning (Hoe and McShane, 2010; Holste and Fields, 2010; Hsu and Chang, 2014). When employees have strong interpersonal trust in their colleagues and coworkers, they are more likely to acquire, share and distribute their knowledge, experience organizational learning and have positive learning experiences (Carmeli et al., 2011; Hoe and McShane, 2010; Hsu and Chang, 2014; Swift and Hwang, 2013).

Specifically, interpersonal trust has been regarded as a valuable means to facilitate and enhance knowledge sharing (McEvily et al., 2003; McInerney, 2002; Quigley et al., 2007). Interpersonal trust also is a critical social resource that facilitates cooperation and social interactions (Husted and Michailova, 2002; Lemon and Sahota, 2004). When employees have strong interpersonal relationships with coworkers, the relationships create interpersonal trust between employees and coworkers (McAllister, 1995). Employees who trust their coworkers are more likely to be willing to share tacit knowledge with coworkers because they are regarded as trusted recipients and sources of knowledge (Holste and Fields, 2010). Contexts where members trust each other also have enhanced organizational learning (Argote and Miron-Spektor, 2011; Levin and Cross 2004). Thus, fostering interpersonal trust is a necessary prerequisite to support and encourage organizational learning (Gray et al., 2017; Guinot et al., 2016).

**Knowledge sharing behavior**

Knowledge sharing can be viewed as “the provision or receipt of task information, feedback and know-how to help others and to collaborate with others to solve problems or develop new ideas, products or procedures” (Park and Kim, 2015, p. 773). Knowledge sharing occurs when people ask for knowledge from others to solve their problems, are willing to assist others and can learn skills and develop competencies from others (Davenport and Prusak, 2000; Yang, 2007). Knowledge sharing can also occur through communication and networking with other experts, or by documenting, organizing and capturing knowledge that they pass on to others (Cummings, 2004; Sousa et al., 2015).

Many scholars have argued that there is a close connection between knowledge sharing behavior and organizational learning (Jamalzadeh, 2012; Kumaraswamy and Chitale, 2012; Swift and Hwang, 2013; Yang, 2007). In general, learning is viewed as the outcome of processing valuable knowledge (Swart and Kinnie, 2010). In other words, knowledge sharing can be a basis for organizational learning (Kumaraswamy and Chitale, 2012) and knowledge sharing behavior can enhance organizational learning through knowledge creation, transfer and sharing (Lee et al., 2012). By providing opportunities to learn from each other, knowledge sharing can reinforce organizational learning (Swift and Hwang, 2013). In addition, knowledge sharing enables employees to maintain their learning flow throughout the organization and to integrate their learning for practical applications at the organizational level (Yang, 2007).
Organizational learning

Organizational learning can be defined as “the process of improving actions through better knowledge and understanding” (Fiol and Lyles, 1985, p. 803). It is a change process occurring over time in organizational knowledge and is obtained when organizations gain experience (Argote and Miron-Spektor, 2011). Huber (1991) identified four constructs of organizational learning: knowledge acquisition, information distribution, information interpretation and organizational memory. Knowledge acquisition is related to learning from experience, observation and grafting. Information distribution focuses on how units that possess information and units that need this information can find each other quickly (Huber, 1991). Information interpretation is the organizational process through which information is given meaning. Organizational memory is related to storing and retrieving information and making decisions at the organizational level (Huber, 1991).

Many scholars have discussed the various aspects of organizational learning including its processes and antecedents (Argote and Miron-Spektor, 2011; Argyris and Schon, 1996; Flores et al., 2012; Peschl, 2007). For instance, Argote and Miron-Spektor (2011) illustrated how experience with task performance is converted into knowledge through organizational learning processes by explaining different contexts (environmental context, organizational context and the context to create knowledge). Flores et al. (2012) identified information acquisition, interpretation and integration as sub-processes of organizational learning and emphasized participative decision-making, openness, learning orientation and transformational leadership as critical influencers of organizational learning. By reviewing organizational learning research trends, Lien et al. (2007) categorized organizational learning into behavioral approaches (emphasizing an adaptive capacity of organizations related to their environment) and cognitive approaches (a focus on the evolution of knowledge).

Organizational learning is also regarded as a prerequisite of organizational change (Baker and Sinkula, 1999; Choi and Ruona, 2011). By supporting diverse learning activities at the individual level, organizations can facilitate organizational learning as a collective learning experience. Thus, organizational learning leads to organizational change by impacting relationships, vision and meaning and mental models in organizations (Garavan and McCarthy, 2008; Watkins and Marsick, 1996). Furthermore, organizational learning can be an intervention of organization development (Lien et al., 2007). Studies on organization development have suggested that organizational learning, as a planned effort and set of interventions (Beckhard, 1969), is effective to maintain the strength of an organization, to overcome and solve organizational issues and to promote innovation (Lien et al., 2007).

These arguments from literature lead us to posit that there are a positive relationships among transformational leadership, a knowledge sharing climate, interpersonal trust, knowledge sharing behavior and organizational learning. In this study, we selected these five variables as the key antecedents of organizational learning, based on the findings from Argote and Miron-Spektor (2011) and Flores et al. (2012). Given the review of the extant literature, this study suggests the following four hypotheses related to the variables of the study (Figure 1).

H1. Transformational leadership is related to interpersonal trust, knowledge sharing climate and behavior and organizational learning.

H2. A knowledge sharing climate is related to interpersonal trust, knowledge sharing behavior and organizational learning.

H3. Interpersonal trust is related to knowledge sharing behavior and organizational learning.

H4. Knowledge sharing behavior is related to organizational learning.
Methods

Data collection and sample demographics

The target population of the study consisted of employees who had participated in any type of learning programs or activities offered by the participating company. The sample organization was selected through a convenience sampling procedure and participants were solicited based on their availability for the study. A cross-sectional online survey design was used to collect data from employees in a large for-profit Korean organization. All participation was voluntary and each survey was independently collected within four weeks of distribution. Approximately 300 questionnaires were distributed with the help of the human resources department. A total of 209 responses were included for the final analyses after excluding 38 incomplete responses, resulting in a final response rate of 69.7 per cent. With regard to the demographic distribution of our sample, 132 (63 per cent) were male and 77 (37 per cent) were female.

Respondents ranged in age from 24 to 61 years with an average age of 37, and the majority of the respondents were in their 30s (46.9 per cent), followed by 53 respondents in their 20s (25.3 per cent), 42 in their 40s (20.9 per cent) and 16 over 50 years (7.6 per cent). With respect to the education level, most participants (84.7 per cent) had four-year bachelor’s degrees or higher. In terms of organizational tenure, 54 per cent (113) of the respondents had worked for less than 10 years at the current organization, followed by 10 to 15 years (36.3 per cent, 76) and over 15 years (14.3 per cent, 30).

Measures

All multi-item measures used in this study were adapted from previously validated instruments in the literature. All constructs were measured using a self-report approach with a five-point Likert-type scale from strongly disagree (1) to strongly agree (5). All of the measurement items went through backward translation (translated from English into Korean and back into English) to ensure consistency and to resolve discrepancies between the two versions of the instrument (Mullen, 1995). The initial questionnaire was refined through a pilot-test with 57 members of the participating organization to better fit the context.

To measure the transformational leadership characteristics of the current supervisors of the participants in the organization, we used the scale developed by Podsakoff et al. (1996). The internal consistency reliability (Cronbach’s alpha) was 0.91. A sample item is, “My organization has leaders who are capable of motivating and guiding their colleagues on the
job.” The knowledge sharing climate was measured with the six-item scale adapted from Li et al. (2010). A sample item is, “This organization/unit provides an atmosphere to exchange work related knowledge with each other”. To measure employees’ interpersonal trust, this study used six items adapted from the measurement by Wu et al. (2009). This scale consisted of items asking if employees had faith and confidence in the trustworthy intentions of colleagues. The internal consistency reliability of the items was 0.77 in this study. A sample item is, “My peers are trustworthy to work with”. Knowledge sharing behavior was measured with eight items adapted from the measures of Van den Hooft and Van Weenen (2004), and Cabrera et al. (2006), which assess the degree of employees’ willingness to share knowledge with colleagues. The reliability in this study was 0.91. A sample item is, “I share my work knowledge and know-how if my colleague asks”. To measure the level of organizational learning, the four-item organizational learning scale (García-Morales et al., 2012) was adapted for the present study. This scale asked respondents if their organizations were learning organizations, and if organizational members had acquired critical capacities, knowledge and skills. The reliability coefficient of the items was 0.79. A sample item is, “The organization has acquired and used much new and relevant knowledge that has provided a competitive advantage over the last three years”. To eliminate any possible spurious relationships among the variables of the study, demographic variables were controlled for in the analyses: gender, age and organizational tenure.

Results
To test the relationships among the variables, basic reliability and validity tests were performed including item-internal consistency estimates and model-data fit analyses. Structural equation modeling followed, and the results of the hypothesis testing were addressed. Before testing the hypotheses, correlations among the different variables were analyzed, as shown in Table I. The analysis demonstrated that no case showed a level of correlation high enough to jeopardize the fitness of the model. To check whether the correlation would cause a major bias, we examined the variance inflation factors (VIF). All VIFs were below the critical value of 10 (Hair et al., 1998). The VIFs appeared to suggest that there was no serious multicollinearity problem. In terms of data distribution and normality, the results showed that the collected data had a normal distribution range according to the values of skewness and kurtosis among the variables used in the data (see Table I).

A pilot test was conducted to explore the reliability of the questionnaire, and Cronbach’s alphas ranged from 0.77 to 0.94. All Cronbach’s alpha coefficients were highly satisfactory:

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<tr>
<th>Table I Descriptive statistics and correlations</th>
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<tr>
<td>Variables</td>
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<td>1. Gender</td>
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<td>2. Age</td>
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<td>3. Tenure</td>
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<td>4. TL</td>
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<td>5. KC</td>
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<td>6. TR</td>
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<td>7. KS</td>
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<td>8. OL</td>
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<td>Mean</td>
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<td>Standard Deviation</td>
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<td>Skewness</td>
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<td>Kurtosis</td>
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Notes: n = 209, *p < 0.05 **p < 0.01; Transformational leadership (TL), knowledge sharing climate (KC), interpersonal trust (TR), knowledge sharing behavior (KS) and organizational learning (OL)
above 0.70. Owing to a weakness of the Cronbach’s alpha method of considering the same values for all statements of a component (Zumbo et al., 2007), composite reliability (CR) was also used. Our validity analysis involved both convergent and discriminant validity. The standardized factor loadings of all the elements measured were between 0.74 and 0.89, which was higher than 0.6, indicating statistical significance for all elements (Hair et al., 2006). The values of average variance extracted (AVE) and CR are presented in Table II. The components with a CR of more than 0.60 (Raykov, 1998) and AVE of more than 0.50 had acceptable reliability and validity, respectively (Table III).

**Structural equation modeling**

Using structural equation modeling, we assessed how well this hypothesized model fit the data. Overall confirmatory factor analysis (CFA) was performed to estimate the convergent and discriminate validity of the indicators of the five constructs. CFA is the most suitable to confirm whether construct measures load on their respective a priori-defined constructs (Browne and Cudek, 1993). The results of the overall CFA indicated that all factor loadings

<table>
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<tr>
<th>Table II</th>
<th>Models comparison between hypothesized model and alternative model</th>
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<tr>
<td></td>
<td>$\chi^2$</td>
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<tr>
<td>Hypothesized model</td>
<td>176.29</td>
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<td>Alternative model</td>
<td>176.42</td>
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<td>Fit criteria</td>
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<th>Table III</th>
<th>Reliability and validity</th>
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<td>Construct</td>
<td>Factor loading</td>
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<td>Transformational leadership (TL)</td>
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<td>TL1</td>
<td>0.81</td>
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<tr>
<td>TL2</td>
<td>0.88</td>
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<td>TL3</td>
<td>0.86</td>
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<td>TL4</td>
<td>0.80</td>
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<td>TL5</td>
<td>0.78</td>
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<td>TL6</td>
<td>0.79</td>
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<td>Organizational learning (OL)</td>
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<td>OL1</td>
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<td>OL2</td>
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<td>OL3</td>
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<td>OL4</td>
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<td>Interpersonal trust (TR)</td>
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<td>TR1</td>
<td>0.86</td>
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<td>TR2</td>
<td>0.83</td>
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<td>TR3</td>
<td>0.74</td>
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<tr>
<td>Knowledge-sharing climate (KC)</td>
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<tr>
<td>KC1</td>
<td>0.73</td>
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<tr>
<td>KC2</td>
<td>0.69</td>
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<tr>
<td>KC3</td>
<td>0.72</td>
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<tr>
<td>Knowledge-sharing behavior (KS)</td>
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<tr>
<td>KB1</td>
<td>0.85</td>
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<td>KB2</td>
<td>0.79</td>
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<td>KB3</td>
<td>0.83</td>
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Notes: CR = Composite reliability; AVE = Average variance extracted
were over 0.60, and the measurement model indicated a good fit to the data ($\chi^2 = 142.9; \text{df} = 67; \chi^2/\text{df} = 2.13; \text{TLI} = 0.95; \text{RMR} = 0.017; \text{CFI} = 0.96; \text{RMSEA} = 0.074$).

As the fitness index of the measurement model satisfied the fitness index criteria and the estimate possibility of the structural model was theoretically confirmed, the fitness of the initial research model was estimated through the maximum likelihood estimation method. To evaluate the adequacy of the model, the study examined the fit indices using chi-square, comparative fit index (CFI), standardized root mean square residual (SRMR) and root mean square error of approximation (RMSEA; Hu and Bentler, 1999; Kline, 2011). The initial structural model provided an acceptable fit to the data ($\chi^2 = 176.29; \text{df} = 67; \chi^2/\text{df} = 2.631; \text{TLI} = 0.94; \text{SRMR} = 0.04; \text{CFI} = 0.95; \text{RMSEA} = 0.08$). The adequacy of the structural model was determined based on consideration of three criteria: goodness-of-fit to the data, the effect size of the estimated parameters and the law of parsimony (Hair et al., 2010). The research hypotheses in the hypothesized model were supported, except for the direct path between knowledge sharing climate and organizational learning, showing statistically significant path coefficients ($t > 1.96, p < 0.05$). The hypothesized model shows that knowledge sharing climate indirectly affects organizational learning through knowledge sharing behavior.

In addition to the hypotheses proposed in the research model, an alternative model deleting the direct path from knowledge sharing climate and organizational learning was examined for statistical relations. The results of comparing the fit of the two nested models are shown in Table IV. The alternative model exhibited an almost equivalent fit to the data to the hypothesized model, and there was no significant difference between the nested models ($\Delta \chi^2 = 0.13, \Delta \text{df} = 1$). This model comparison indicates that the alternative model better reflects the conceptual model, as shown in Table IV, and it was more parsimonious than the hypothesized model (Yuan and Bentler, 2004). In other words, knowledge sharing behavior turned out to play a role as a full mediator in the relationship between knowledge sharing climate and organizational learning. To sum up, the alternative model was accepted as the final model for this study.

**Hypothesis testing**

To test the hypotheses, the statistical significance of the path coefficient among the variables was examined. With respect to the predicted paths, our hypotheses were generally supported. In other words, $H1$ was supported: transformational leadership directly affected interpersonal trust ($\beta = 0.45, t = 4.99, p < 0.01$), knowledge sharing climate ($\beta = 0.67, t = 9.90, p < 0.01$), knowledge sharing behavior ($\beta = 0.15, t = 2.21, p < 0.05$) and organizational learning ($\beta = 0.33, t = 3.58, p < 0.01$). This set of predictors accounted for a combined 84 per cent of the variance in organizational learning. $H2$ was supported: knowledge sharing climate had a direct effect on trust and knowledge sharing behavior ($\beta = 0.36, t = 4.12, p < 0.01$ and $\beta = 0.46, t = 6.81, p < 0.01$, respectively), while it had an

| Table IV Decomposition of estimated effects among the variables in the structural model |
|---------------------------------------------|-----------------|----------------|----------------|
| **Paths**                        | **Direct effect** | **Indirect effect** | **Total effect** |
| Transformational leadership →       | Knowledge sharing climate | 0.67** | – | 0.67** |
| → Interpersonal trust              | 0.45**            | 0.24**        | 0.69**        |
| → Knowledge sharing behavior       | 0.15*             | 0.61**        | 0.76**        |
| → Organizational learning          | 0.33**            | 0.49**        | 0.82**        |
| Knowledge sharing climate →        | Interpersonal trust | 0.36** | – | 0.36** |
| → Knowledge sharing behavior       | 0.46**            | 0.16*         | 0.62**        |
| → Organizational learning          | –                 | 0.39**        | 0.39**        |
| Interpersonal trust →              | Knowledge sharing behavior | 0.44** | – | 0.44** |
| → Organizational learning          | –                 | 0.28**        | 0.28**        |
| Knowledge sharing behavior →       | Organizational learning | 0.64** | – | 0.64** |

Notes: *$p < 0.05$; **$p < 0.01$
indirect effect on organizational learning ($\beta = 0.39, p < 0.01$). $H3$ was also supported: interpersonal trust directly and significantly affected knowledge sharing behaviors ($\beta = 0.44, t = 5.22, p < 0.01$), and it had an indirect effect on organizational learning ($\beta = 0.28, p < 0.01$). $H4$, stating that knowledge sharing behaviors positively affect organizational learning ($\beta = 0.64, t = 6.52, p < 0.01$), was supported.

We also examined the indirect relationships among the variables of the study. To test these hypotheses, bias-corrected bootstrapping was conducted, and the results of the bootstrapping tests showed that the indirect effects of transformational leadership on organizational learning through knowledge sharing climate, interpersonal trust and knowledge sharing behavior were statistically significant at the 0.01 or 0.05 levels, respectively. Specifically, knowledge sharing climate, interpersonal trust and knowledge sharing behavior had mediating roles in linking transformational leadership and organizational learning. In addition, knowledge climate positively and indirectly influenced organizational learning through interpersonal trust and knowledge behavior. Finally, interpersonal trust positively and indirectly influenced organizational learning through knowledge sharing behavior. The path coefficients in the model are summarized in Table IV.

Discussion and implications

This study was undertaken to enhance our understanding of the relationships among transformational leadership, interpersonal trust, a knowledge-sharing climate and behavior and organizational learning in a manufacturing company context. Detailed discussion and implications of the findings are provided below.

This study extends our understanding of the connections between transformational leadership and organizational learning by showing a positive association. Our prediction that the relationship between transformational leadership and organizational learning is positively mediated by trust, a knowledge sharing climate and behavior was also supported. Specifically, this study indicated that fostering a knowledge sharing climate through transformational leadership could increase employees’ levels of knowledge sharing behaviors and eventually increase organizational learning. In addition, transformational leadership directly affected interpersonal trust, a knowledge sharing climate, knowledge sharing behavior and organizational learning. These positive and significant results indicate that leadership plays a substantial role in the organizational learning process and employees may expect their leaders to be transformational leaders who foster an organizational climate for knowledge sharing. More specifically, a transformational leader, as a facilitator, prompts continuous organizational learning by promoting intellectual stimulation and providing inspirational motivation among employees (García-Morales et al., 2012).

This study also identified transformational leadership, interpersonal trust and knowledge sharing behavior as antecedents of organizational learning (squared multiple correlations (SMC), 84.3 per cent), with knowledge sharing behavior ($\beta = 0.64$) being the strongest antecedent. This result adds a layer of evidence to previous studies that have examined the linkages between knowledge sharing behaviors and organizational learning (Jamalzadeh, 2012; Swift and Hwang, 2013). By providing opportunities to learn from each other, knowledge sharing enables employees to maintain their learning flow throughout the organization and to integrate their learning and use it for practical applications at the organizational level (Yang, 2007) and, thus, reinforce organizational learning (Swift and Hwang, 2013).

Interestingly, the results of this study indicated that a knowledge sharing climate did not directly contribute to enhancing organizational learning. Organizational efforts require extended periods of time and considerable support before outcomes materialize. This extended time may lead employees to think that a knowledge sharing climate without
support from leadership is not directly related to organizational learning. Such organizational learning must aim to successfully adapt to changing environments by accumulating and integrating knowledge and experience from all levels of an organization. In this regard, when organizations pursue efficiency and change through organizational learning, they need to be accompanied by transformational leadership that fosters a knowledge sharing climate for success.

The findings of this study are in accordance with previous studies (Chen et al., 2011; Choudhary et al., 2013; Noruzi et al., 2013; Yao et al., 2007) that show positive and significant associations among transformational leadership, organizational learning, trust, a knowledge sharing climate and behavior. This study also resonates with previous contributions that point to leadership as a critical driver that facilitates knowledge sharing and, thus, organizational learning (García-Morales et al., 2012; Sattayaraksa and Boon-Itt, 2016). In addition, from a practical perspective, actual knowledge sharing behaviors among employees based on interpersonal trust and a climate of knowledge sharing can help enhance organizational learning.

Our findings can also motivate practitioners to place greater emphasis on leadership support, knowledge sharing and organizational learning in the manufacturing sector. In manufacturing, the organizational learning experience gained from the production process helps increase productivity and cumulative outcomes by reducing labor time (Argote and Epple, 1990; Argote, 2013). In addition, interdependence between the productive functions is critical to create more production in manufacturing (Lenox et al., 2010). By providing diverse learning opportunities related to production activities and processes (e.g. sharing work processes and product information with colleagues and mentoring from managers), practitioners will allow employees to accumulate knowledge and learning at both the individual and organizational levels. Additionally, practitioners can enhance organizational learning by obtaining support from leaders and establishing a supportive work environment to encourage knowledge sharing.

Practitioners can also utilize mechanism linking leadership, knowledge sharing and organizational learning to initiate organizational change or to create an intervention for organizational development. For instance, when organizations need to change existing systems (e.g. HR policies and employee performance evaluation systems), practitioners could be prepared for implementation plans by working with leader groups and establishing a supportive climate for knowledge sharing and organizational learning. Before organizations start to implement the change, practitioners could communicate the reasons and need for the change with employees to form organizational consensus. In this communication process, leadership support and knowledge sharing can be a tool to spread the information (the reasons and need for the change) and help employees reach a consensus. In the implementation stage, practitioners, along with leadership support, could provide updated information on new HR policies and employee performance evaluation systems to employees through orientation and training programs that are connected to knowledge sharing and learning mechanisms.

Limitations and recommendations

This study presents several limitations, suggesting possible avenues for further research. One of the limitations of this study is the use of a cross-sectional design as the data were collected at one point in time; therefore, a longitudinal study is suggested for future studies. Another limitation of this study lies in its self-report design, which could lead to a common method bias that may influence the relationships among the variables examined in this study. Although self-reported data collection is a very common approach in social science studies, in future research, alternative approaches (e.g. cross-report-based data collection and an experimental research design) need to be considered to increase the validity and reliability of the results.
Finally, the sample adopted in this study was from one manufacturing organization in Korea, which may limit the generalizability of the study’s results. In particular, the adoption of a wider research focus may be appropriate to extend our findings to other organizational contexts. Future research could also explore more diverse factors to strengthen the relationship between transformational leadership and organizational learning. Additional research is essential to verify how organizational and leader support could interactively influence employees’ organizational learning process and the level of involvement with knowledge sharing behaviors. Future research could also assess a range of transformational leadership behaviors and employees’ knowledge-related activities to further strengthen the ties between leadership and learning in organizations and, thus, strengthen the conclusions from this study. Finally, researchers could collect more specific data (e.g., the work relationship between employees and the immediate supervisor, data from both individual and organizational levels) and conduct a multilevel analysis to observe the dynamics between individuals and organizations in terms of interpersonal trust, knowledge sharing and organizational learning.

References


Further reading


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