

When Do We Share Our Knowledge to Others?

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Abstract. The main purpose of our study is to find an answer to the question: “When do we share our knowledge to others?” Searching for the answer to this question, we investigate the effects of participative leadership and diversity on employees’ knowledge sharing behavior in this research. Participative leadership is generally defined as a specific style of leadership style in which all employees of the organization make collective decisions and to coordinate the role of each member autonomously. Knowledge sharing behavior is well known as one of the most important factors of business in the era of industry 4.0. Research models and hypotheses were developed based on prior research on creativity and organizational leadership. We hypothesized the positive effect of group diversity in a way that as more diverse a certain group is more abundant ideas can be generated. We focused on the intermediating factor between the antecedents and knowledge sharing behavior. Thus, we developed a hypothesis that commitment to change of employees will mediate the relationship between independent variables and knowledge sharing behavior. Survey data were collected from 764 employees and structural equation modeling (SEM) analysis was applied to test the hypotheses. Result shows every hypothesis was supposed by statistical analysis (SEM) and depicts that commitment to change exerted full mediation effect among participative leadership, diversity and knowledge sharing behavior. This research has research implications on the research stream of creativity and knowledge management in a way that leadership and group composition have critical roles to improve knowledge sharing among team members. However, our dataset from single financial company might limit the generalizability of the research findings and there can be common method bias in the data even if we tried to minimize it with statistical validation process.

Keywords: Participative leadership, commitment to change, group diversity, knowledge sharing behavior.

1. Introduction

Industry 4.0 requires creative ideas and behavior of employees to acquire sustained competitive advantage. A great amount of research is trying to explore the antecedent and context variables of employees' creative and change-related behaviors to cope with the rapid change of environment. There has been a lot of interests for knowledge sharing to overcome and correspond environmental change. This research is aimed to investigate the feasible factors which might affect knowledge sharing behavior and we suggested leaders' participative leadership behavior and group diversity as independent variables.

Knowledge sharing is generally understood as behaviors of disseminating knowledge with other organizational members. The purpose of knowledge management is to share knowledge to enhance the effectiveness and efficiency of organizations (Liebowitz, 2001). Knowledge management is sequential process composed of activities about identifying, sharing, and using knowledge and programs (Choi and Lee, 2002; O'dell and Grayson, 1998).

Amongst those research, participative leadership aspect and diverse group structure has been nominated as key variables that may have positive impact on the creative behavior and knowledge sharing behavior in organizations. Participative leadership is a certain leadership type to make employees participate in decision making together with the members. Participative decision making can be made through listening to every opinions and debates from employees. When looking at participative leadership from the social exchange theory perspective, employees' reciprocal relationship with leaders can positively affect social relationship and group performance. This type of leaders' behavior can facilitate effective social process among organizational members and improve trust on leaders by building high level leader-member exchange (LMX) status. (Dirks and Ferrin, 2002).

Participative leadership and group diversity are important factors promoting organizational creativity through idea development and creative interactions among the members (Woodman et al., 1993). Diversity as demographic background means a variety of cultures and differences in intellectual competences of organization members. Effects of these kind of diversity on organizational performance may vary according to how well diversity is managed and how this diversity is fertilized effectively.

In this sense, efficient diversity management can play pivotal role to enhance positive characteristics of diverse opinions and values of employees. Diversity can promote creative idea generation and constructive communication when it is managed properly with participative and inclusive behaviors of leaders, otherwise it may disturb communication and cohesiveness of organization.

Social identity theory argues that physical and psychological similarity forms social categorization and it may harm organization cohesiveness and

communication (Ely and Thomas, 2001). However, a lot of researchers suggested confronting ideas from social identity theory such that diverse characters, jobs, and experiences of organization members can generate various ideas and creative behaviors than homogeneous groups. They focused on the positive side of diversity and argues that it can prevent a lot of side-effects of homogeneous group such as groupthink. Proper management of diversity can enhance organizational creative performance because it can produce synergy from diverse knowledge and experiences (Richard and Shelor, 2002). Consequently, diversity management is one of the critical success factors to cope with environmental change of industry 4.0 because knowledge sharing plays a critical role in producing and expanding knowledge to organizations and it is source of sustained competitive advantage (Nonaka, 1994).

From the social exchange theory perspective, knowledge sharing is emerged from social exchange relationships and it is a key example of cooperative behaviors in organizations. Social exchange theory emphasizes contextual conditions which proliferate cooperative relationship such as psychological safety climate, organizational support and inclusive behaviors of leaders.

This study aims to present antecedent variables that may promote knowledge sharing behavior of employees and suggested an integrated research model that can explain the relationships among contextual factors and employees' knowledge sharing behavior. We focused on the participative style of leadership behavior and group diversity as antecedent and contextual variables. Moreover, we developed hypotheses to investigate the mechanism which connect the contextual variables and employees' behavior. From the literature review we anticipated that commitment to change of employees could play this intermediating role as mediator.

2. Literature Review

2.1. Participative Leadership

In the era of the Industry 4.0, it is almost impossible for a leader to make all decisions alone. Rather, the members of the group should share the role of leadership through more active participation. Therefore, encouraging members to participate has become an important topic of organizational behavior and leadership in recent years.

Participative leadership, defined as collaborative decision-making or shared influence in decision-making process by leaders and subordinates (Koopman and Wierdsma, 1998), and it is a central topic of research and planning (e.g., Durham, 1997) in the industry 4.0.

Participative decision-making (PDM) can offer a lot of benefits to organizations. It may increase the quality of organizational decision (e.g., Scully, 1995), to contribute to the quality of work life (e.g., Somech, 2002), and to increase motivation (e.g., Locke and Latham, 1990), organizational commitment (e.g.,

Armenakis and Mossholder, 1993), and job satisfaction (Smylie, 1996).

Participative leadership motivates members to participate in the group decision-making process, imbues self-efficacy, and strengthens employees' psychological ownership (Kim and Bang, 2021). This research focused on the beneficial effect of participative leadership on employee's proactive behaviors such as creative behavior, helping others and knowledge sharing behavior.

2.2. Group Diversity

Work group diversity is generally defined as the degree to which there are differences between attributes of group members, and it can affect process and performance of organizations positively as well as negatively. However, there are much still unclear about the real effects of diversity in organizations.

Structure of work groups or work teams in organizations has become more diverse recently and it will become more diverse in the future (Williams and O'Reilly, 1998).

Recently diversity of organizations increases in terms of demographic differences among people (e.g., gender, age, and ethnicity). Organizations are increasingly adopting diverse work team compositions that includes differences in functional background, such as in task-force teams. Organizational integrations such as M&A and joint ventures also increase diversity in organizations. Diversity in organizations may have positive as well as negative effects performance (Jackson et al., 2003; Milliken and Martins, 1996).

Diversity is typically understood as differences between individuals on any attribute that may create the perception that another group member is different from them (Williams and O'Reilly, 1998; Milliken and Martins, 1996).

Diversity research concerns a lot of possible dimensions of differences, but diversity research has generally focused on such attributes as differences in gender, ethnicity, age, professional tenure, educational background, and functional area of expertise (Williams and O'Reilly, 1998; Jackson et al., 2003; Milliken and Martins, 1996). One of the key questions in diversity research is how differences between employees affect organizational process and effectiveness, as well as employees' commitment and satisfaction.

In this study we anticipated that group diversity may produce positive influence on knowledge sharing from their various perspectives and expertise.

2.3. Knowledge Sharing Behavior

Knowledge sharing behavior is generally understood as the degree to which employees share their knowledge with others in organizations. Generally, knowledge sharing is viewed as to have two aspects: behavioral and technological aspects. To share one's tacit knowledge is not so easy to carry out (Davenport and Prusak, 1996). This is because people doesn't eagerly share their knowledge unless they think it is beneficial to them or to organizations (Kim and Bang, 2021; Chang

and Cho, 2018; Hwang, 2017).

Knowledge sharing behavior is about collaborative knowledge exchange which includes the knowledge-givers, knowledge content, organizational climate, appropriate media for knowledge exchange, and organizational support programs. Researchers generally suggested a conceptualized framework which includes two main folds for productive knowledge sharing: knowledge transmission and knowledge absorption. The knowledge supporters externalize their knowledge content with the social skills of codification, elaboration, and presentation. Therefore, knowledge sharing behavior incorporates a lot of components and behaviors.

Researchers in knowledge-management system developed the organizational climate construct and TRA model, which includes the attitude toward knowledge sharing in order to demonstrate why knowledge workers participate in knowledge sharing process even if it is not mandate to their formal job.

A previous research suggested that one of the biggest challenges that organizations face in knowledge management is changing individual behavior (Ruggles, 1998). Robertson (Robertson, 2002) also argued that knowledge sharing is a social activity and the first step to do it is to understand who will share their tacit knowledge to others. Generally, there are several contextual variables that might affect the effectiveness of knowledge sharing programs or employees' knowledge sharing behavior, such as team structure, work process and the characteristics of knowledge to be shared (Robertson, 2002). Task structure and leadership style have been considered as another organizational factors motivating employees' knowledge sharing behavior (Lipshitz, 2002).

Despite the emphasis on behavioral factors of knowledge sharing process, only a few empirical researches on knowledge sharing have been conducted until now. Knowledge sharing has been explored from various perspectives as a structural factor of an organization at individual, group, and organizational levels. Empirical studies on various factors that positively influence knowledge sharing are also being conducted continuously in a lot of research streams such as empowering leadership and transactional leadership (Chen and Barnes, 2006). Some research showed empirical result that transformational leadership is positively related with knowledge sharing behavior (Dvir, 2002).

2.4. Commitment to Change

The term "resistance to change" has immediate appeal. It strikes a responsive chord because, over the years, industry estimates have quoted nearly 40 percent failure rates (Cartwright, 2002) for some change efforts. Most often the culprit is identified as employee resistance to change. Adverse consequences to failed change efforts have included higher turnover rates, lower efficiency, restriction of output and decreased organizational commitment (Goldstein, 1989; Kotter and Schlesinger,

1979).

Researchers have argued the importance of a commitment to the change taking place in organizations. For example, Herscovitch and Meyer (Herscovitch and Meyer, 2002) argued that ‘commitment is arguably one of the most important factors involved in employees’ support for change initiatives’ (p. 474).

Indeed, without such support, even the best-developed plans would fall by the wayside. Others have expressed similar notions. Huy (2002) commented that employees are more likely to collectively support organizational change programs when there is a sense of trust and attachment to the organization.

In this study, we point to commitment to change as the most important mechanism in the knowledge sharing process. We suggested this research question because antecedent research implies that those positive attitude and motivational factor is a key element to lead employees to the proactive behavior such as knowledge sharing behavior.

2.5. Hypotheses

H-1: Participative leadership will have positive effect on commitment to change.

H-2: Group Diversity will have positive effect on commitment to change.

H-3: Commitment to change will have positive effect on knowledge sharing.

H-4: Commitment to change will have significant mediating effect on the relationship between participative leadership and knowledge sharing behavior

H-5: Commitment to change will have significant mediating effect on the relationship between Diversity and knowledge sharing behavior.

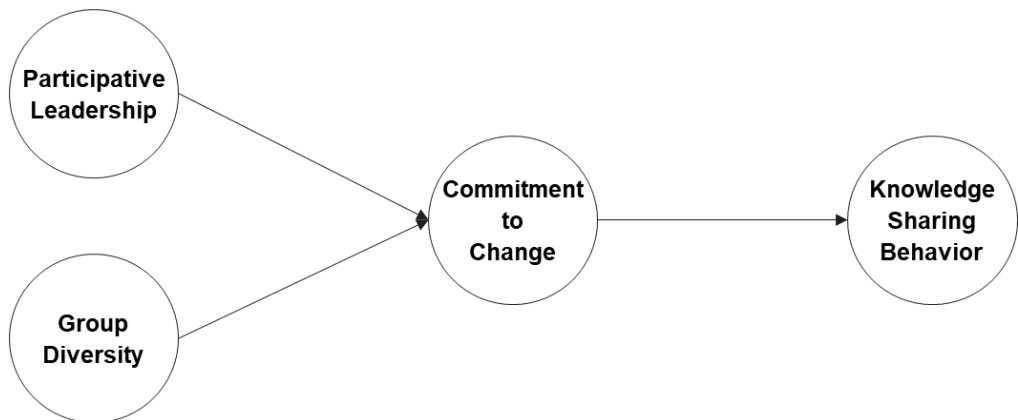


Fig.1: Research model.

3. Methods

3.1. Sample and Data

Data were collected from a company within financial industry with questionnaire survey. Our final dataset was contained 764 employees from 75 work groups in a Korean financial company. Before distributing the questionnaires, we visited the company and explained the purpose of this study, how to fill out the questionnaires, questionnaire distribution period and collection method. The number of distributed questionnaires was 1,435 and the collected questionnaire were 764 (53.2% of collection rate) from 75 groups.

Regional background showed Seoul 421(55.1%), Gyungki-do 114(14.9%) and Gyung-sang-do 106(13.9%). Employees were composed of 415 male(54.3%) and 349 female(45.7%) people. As for age, 322 people were in their 40s (42.1%), 308 in their 30s (40.3%), 95 in their 50s or over (12.4%), and 39 in their 20s (5.1%). Concerning the continuous employment years, 260 people were 6-10 years (34.0%), 162 people were 11-15 years (21.2%), 124 people were 16-20 years (16.2%), and 133 people were more than 20 years (17.4%). Regarding position, assistant division manager was 189(24.7%), assistant department manager was 165(21.6%), employees were 156(20.4%), department manager was 131 people (17.1%) and deputy division manager was 101 people (13.2%). Concerning department, 541 people belong to headquarter center (70.8%) and 223 belong to department (29.2%). As for continuous tenure at current organization, 335 people were 1-3 years (43.8%), 203 people were less than 1 year (26.6%), and 155 people were 4-5 years (20.3%).

3.2. Measurement

Participative leadership is defined as joint decision-making behavior or shared influence in decision-making by leaders and subordinates (Koopman and Wierdsma, 1998). To measure participative leadership, six questions developed by (Arnold, 2000) were used with a 7-point Likert scale. A sample question is “Our Center Manger (Department Manager) encourages personnel to suggest ideas or opinions.”

Diversity is defined as differences of members in age, character, various social experiences, information, and information utilization. Five questions developed by (Deng et al., 2000) and one question used in the study (Williams and O'Reilly, 1998) were used with the 7-point Likert scale. The sample question is “Our Center (Department.) personnel have a variety of experiences and training.”

Commitment to change is defined as intention of employees having commitment with passion to the success of organizational change. Four questions developed by (Fedor et al., 2006) were used with the 7-point Likert scale. The sample question is “Our Center (Department) personnel are doing anything for the Center (Department) changes to be carried out successfully.”

Knowledge sharing is defined as knowledge exchange or information sharing

process among the members to share and consolidate organizational members' competences. Five questions developed by (Rawung et al., 2015) were used with the 7-point Likert scale. The sample question is "Our Center (Department) personnel let other personnel know about new knowledge that they learn."

4. Results

4.1. Reliability & Validity

We calculated Cronbach's α value for reliability test. As shown in Table 1 Cronbach's α of participative leadership is 0.948, diversity is 0.846, knowledge sharing is 0.920, and commitment to change is 0.921. We conducted confirmatory factor analysis to test convergent and discriminant validity of the measurement model. Model fit coefficients showed $\chi^2=886.076(df=129, \rho=0.000)$, RMR=0.045, GFI=0.877, AGFI=0.838, NFI=0.928, IFI=0.938, TLI=0.926, CFI=0.938, RMSEA=0.088 and all SMC coefficients are at least more than 0.58. These results show appropriated level of internal and external validity of the measurement model.

Table 1: Confirmatory factor analysis

Construct Variable	Measured Variable	SRC	S.E.	C.R.	SMC	CR	AVE	Alpha
Participative leadership	PL1	0.890	-	-	0.791	0.920	0.698	0.948
	PL2	0.926	0.026	40.244	0.857			
	PL4	0.891	0.026	36.762	0.794			
	PL5	0.839	0.030	32.26	0.703			
	PL6	0.887	0.028	36.414	0.787			
Diversity	Diversity 2	0.819	-	-	0.671	0.841	0.743	0.846
	Diversity 3	0.864	0.036	27.081	0.747			
	Diversity 4	0.791	0.039	24.232	0.626			
	Diversity 5	0.765	0.039	23.186	0.585			
Commitment to change	CC1	0.849	-	-	0.720	0.920	0.743	0.921
	CC2	0.833	0.034	28.77	0.694			
	CC3	0.881	0.034	31.623	0.777			
	CC4	0.888	0.033	31.995	0.788			
Knowledge sharing	KS1	0.842	-	-	0.709	0.903	0.652	0.920
	KS2	0.846	0.035	29.014	0.715			
	KS3	0.873	0.033	30.565	0.763			

	KS4	0.839	0.035	28.617	0.703			
	KS5	0.782	0.038	25.674	0.612			

Table 2 shows descriptive statistics and Pearson’s correlation coefficients of all of the control and research variables in the research model.

Table 2: Descriptive statistics and correlations

Variable	Average	Standard Deviation	1	2	3	4	5	6	7	8	9
1	1.46	0.50									
2	2.62	0.76	-0.35								
3	4.03	1.44	.52**	-0.74							
4	4.85	1.48	-0.13	.60**	-0.59						
5	2.14	0.96	-0.16	.15**	-0.19	.15**					
6	5.38	1.14	-.027	.01	-.04	-.03	.02				
7	4.88	0.92	-0.13	.02	-0.07	-.06	.02	.48**			
8	5.16	0.97	-.01	-.02	-.01	-.03	-.07	.47**	.53**		
9	4.99	1.02	-0.1	.04	-0.1	-.02	-.03	.58**	.59**	.67**	

** Significant at <0.01 level.

Classification: 1 (gender), 2 (age), 3 (position), 4 (continuous service years), 5 (continuous service period), 6 (participative leadership), 7 (diversity), 8 (knowledge sharing), 9 (commitment to change)

※ all control variables are dummy coded in a way that gender(1=male, 2=female), age(1=20~25, 2=26~30), position(1=assistant, 2=associate, 3=assistant division manager, 4=manager, 5= senior manager, etc).

Table 3: Discriminant validity (AVE)

Variables	Participative leadership	Diversity	Knowledge sharing	Commitment to change
Participative leadership	0.698			
Diversity	0.505	0.743		
Knowledge sharing	0.506	0.593	0.652	
Commitment to change	0.623	0.650	0.723	0.743

*** Significant at p<0.001 level. 1) Square-rooted correlations, 2) Diagonal means the AVE value.

We conducted additional analysis to test the discriminant validity with comparing square root value of correlations and AVE (average variance extracted). All the square-rooted correlation values among variables are smaller than average variance extracted and so the research model’s differentiation validity is significant and so it

was confirmed that there is no problem in discriminant validity.

4.2. Hypotheses Test

Research model’s goodness of fit shows appropriate level such $\chi^2=914.89$ (df=131, $p<0.000$), RMR=0.059, GFI=0.875, AGFI=0.836, NFI=0.926, IFI=0.936, TLI=0.925, and CFI=0.935, RMSEA=0.089. Although the values of RMR, GFI, and AGFI are slightly below the goodness of fit index, other indices show more than appropriate level.

We conducted structural equation model with AMOS and the results are shown in Table 4. Path coefficients of H1, H2, and H3 are statistically significant and all the hypotheses were supported statistically.

Table 4: SEM test results

Hypothesis (Path)	Path Coefficient	t value	R2	Test Result
Hypothesis 1 (participative leadership → commitment to change)	0.39	11.348***	.450	Supported
Hypothesis 2 (diversity → commitment to change)	0.46	12.438***	.450	Supported
Hypothesis 3 (commitment to change → knowledge sharing)	0.73	20.069***	.560	Supported
Goodness of fit	$\chi^2=914.89$ (df=131, $p<0.000$), RMR=0.059, GFI=0.875, AGFI=0.836, NFI=0.926, IFI=0.936, TLI=0.925, CFI=0.935, RMSEA=0.089			

* Significant at $p<0.05$ level, ** Significant at $p<0.01$ level, *** Significant at $p<0.001$ level.

Table 5: Direct and indirect effects

Path	Total effects	Direct Effect	Indirect Effects	p-value
Participative Leadership → Commitment to Change	0.394	0.394	-	0.000
Diversity → Commitment to Change	0.464	0.464	-	0.000
Participative Leadership → Knowledge Sharing	0.290	-	0.290	0.002**
Diversity → Knowledge Sharing	0.341	-	0.341	0.002**
Commitment to Change → Knowledge Sharing	0.735	0.735	-	0.000

* Significant at $p<0.05$ level, ** Significant at $p<0.01$ level,

In the SEM analysis, the results of total effects, direct effects, and indirect effects among the variables are shown in Table 5. To test the significance on the indirect effects, which are mediating effects, a bootstrapping test was conducted using AMOS. For the parameter drawn through total 1,000 sessions of bootstrapping, we can see statistically significant indirect effects.

The indirect effects of participative leadership on knowledge sharing through commitment to change is 0.290 (** $p < 0.01$), and the indirect effects of diversity on knowledge sharing is 0.341 (** $p < 0.01$). Therefore, hypotheses H-4 and H-5 are supported as they are statistically significant.

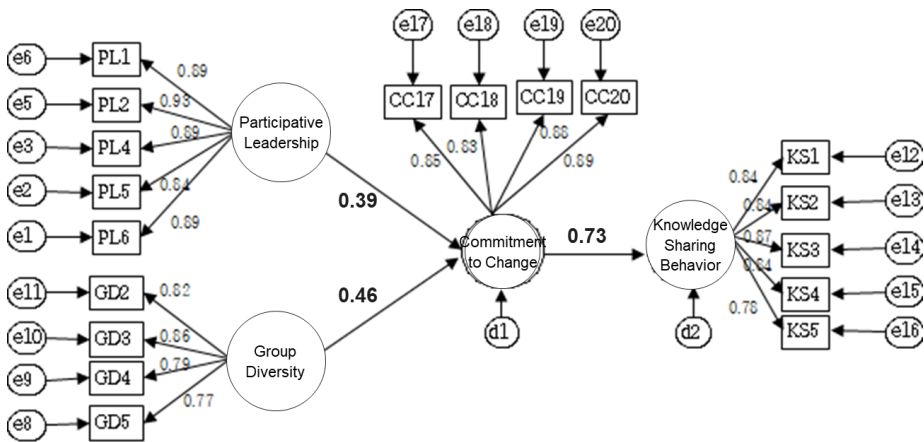


Fig. 2: Hypotheses test results and coefficients.

5. Conclusions

In this research we investigate the effects of participative leadership and diversity on employees’ knowledge sharing behavior. Participative leadership is generally defined as a specific style of leadership style in which all employees of the organization make collective decisions and to coordinate the role of each members autonomously. Knowledge sharing behavior is known as one of key success factors of organizations in the era of industry 4.0.

We draw research questions from prior research of knowledge management process and found significant antecedents of employees’ knowledge sharing behavior. As a managerial influence we suggested leaders’ participative behavior will facilitate employee’s proactive behaviors – here, knowledge sharing behavior.

Participative leadership and diversity are important factors promoting creativity through idea revelation and interactions among the members. Diversity as demographic background means a variety of cultures and differences in intellectual competences. Hence, organizational effectiveness and performance may vary according to how diversity is managed. In this sense, efficient diversity

management is one of the most important factors in the era of industry 4.0. Although competitive advantage can be achieved due to job commitment, job satisfaction, and change in organizational culture in case diversity is used well, otherwise it may disturb communication and cohesiveness and cause conflicts and the problems of discord.

As a contextual influence we suggested group diversity which might enhance groups' ability to make diverse opinions and behaviors. Moreover, this study find the role of employees' commitment to change as a key mechanism among those relationships.

We hypothesized the positive effect of group diversity in a way that as more diverse a certain group is more abundant ideas can be generated. We focused on the intermediating factor between the antecedents and knowledge sharing behavior.

Survey data were collected from employees and structural equation modeling analysis was applied to test the research model. Statistical test shows every hypothesis was supposed by SEM analysis and shows that commitment to change exerted full mediation effect among participative leadership, diversity and knowledge sharing behavior.

Implications for the future research from this study are as follows:

First, participative leadership is an important antecedent affecting knowledge sharing through commitment to change. It is in line with previous studies reporting that leadership improves teamwork and makes trust atmosphere and so contributes to knowledge sharing and organizational goal achievement.

Second, a stream of studies is required to reveal the positive effects of diversity within the organization and to explore the complex nature of work group diversity. When diversity increases, organizations will face conflict and communication problems within organization. However, we can also take advantage of different ideas and knowledge with appropriate diversity management. Diversity management has an organizational strategic aspect removing organizational members' stereotype, bias, and obsolete way of working. That is, diversity management can reduce the negative effects of diversity such as conflicts of members and communication bias.

Third, from the social exchange theory we suggested the positive effects of participative leadership and diversity on knowledge sharing. The behavior of members of the organization is essentially based on the exchange relationship. From an exchange perspective, we can provide an explanation for many organizational behaviors, especially proactive behaviors such as helping, idea-generation, and knowledge sharing.

Implications for the practical fields from this study are as follows:

First, organizational leaders from upper echelon should exert more participative and inclusive style of influence for facilitating productive creativity and knowledge sharing behaviors. We can stress the importance of organizational climate and

culture which is apt to motivate organizational creativity. Leaders in organizations generally have roles and responsibilities to these organizational climate and atmosphere. Leaders should remove obstacles disturbing creativity-favored climate.

Second, organizations should adopt various human resource development programs that enhance employees' commitment to change and self-efficacy for actualization of positive relationship between diversity and knowledge sharing.

Third, organizations must adopt and expand fair personnel evaluation system. Concerning the positive effects and influences of diversity on organizations, organizational diversity can be a new opportunity for the organization to respond the volatile environmental change

Despite the study results and implications, the limitations of this study are as follows:

This study also has limitations. First, common method variance may be a concern. However, we note that several analyses (e.g., CFA, AVE) supported the discriminant validity of our variables.

Second, the correlational design of this study precludes causal conclusions, although our predictions are based on a strong theoretical foundation and the time-lagged performance data makes alternative explanations less likely (e.g., reverse causality such as knowledge sharing behavior predicting participative leadership).

In addition, the generalizability of our findings to other cultures is limited because the this was conducted in South Korea.

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