

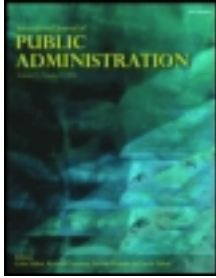
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The Impact of Knowledge Sharing on Work Performance: An Empirical Analysis of the Public Employees' Perceptions in South Korea

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Abstract: This article examines the impact of knowledge sharing on individual work performance by analyzing perceptions of 323 public employees in South Korea. An analytical model is drawn from an extensive review of literature on knowledge management and sharing from which nine exogenous variables are identified as antecedents of knowledge sharing that affect individual work performance. The results indicate that four exogenous variables—employee training, reward systems, support from the top management, and openness in communication—are perceived to have a positive influence on employees' knowledge sharing, which, in turn, improved individual work performance. Perceived trustworthiness between individuals involved in knowledge sharing has also positively influenced both knowledge sharing and individual work performance. These results imply that individual work performance may be dependent on the effective use of knowledge sharing.

Keywords: knowledge sharing, work performance, mutual trust, South Korea

INTRODUCTION

In a knowledge-based society, competitive advantage in a nation relies heavily on the quantity and quality of information and knowledge that has accumulated

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in society.^[1] Similarly, the creation, utilization, and application of new knowledge have become increasingly important to build a sustainable and competitive government. Thus, a great deal of effort has been made not only to create and manage new knowledge but also to make strategic applications of new knowledge in the provision of public programs. Furthermore, turbulent environmental change continues to require effective knowledge sharing and management, as organizational performance tends to rely on critical knowledge for maximum efficiency with minimum resources.^[2]

Knowledge sharing has emerged as a core process of knowledge management. Individual members of an organization, whose job experience and existing knowledge are diverse, create new knowledge by communicating and sharing important information and accumulated knowledge. However, knowledge sharing is more than just sharing, but synergistic. Individual information and knowledge, which tends to be dissimilar and fragmented, has become a more effective source of information for organizational performance as they are shared among members of an organization. By sharing information and knowledge, individual employees can learn from others' know-how and work experience. This is not only a cost-effective learning strategy but can also validate individual employees' accumulated knowledge.

Individual employees are the source of organizational knowledge and information.^[3] Knowledge workers create, identify, and accumulate new knowledge throughout core work processes. Competitive advantage of the government relies on cross-utilization of important knowledge, but sharing knowledge may be an uncomfortable experience to organizational members.^[4] Thus, it is increasingly important that knowledge sharing flourish with an organizational culture that encourages collaborating and transmitting new ideas and data.

Research must be done on what prevents organizational members from sharing organizational knowledge.^[5] For example, people are reluctant to share their knowledge as they may feel that others might steal their ideas and rewards. There has been a great deal of research to explain what makes knowledge sharing successful, but little progress has been made concerning the impact of knowledge sharing on individual work performance. The purpose of this article is to fill the void by establishing an analytical model by which the relationships between antecedents of knowledge sharing and individual work performance are tested with empirical data.

THE CONCEPT OF KNOWLEDGE SHARING

Knowledge sharing is an ill-defined concept. Scholars use several similar concepts interchangeably without conceptual clarity. Knowledge sharing is often used interchangeably with knowledge transfer and knowledge management.^[6] Knowledge sharing is beyond simple transfer of new knowledge in which knowledge is often seen as an object like a visible product. Knowledge sharing

is usually a broader concept that emphasizes social interaction for knowledge exchange, not to mention simple transfer of knowledge. However, knowledge sharing is part of the initiative of the knowledge management. Knowledge management is a much broader concept that encompasses the creation, accumulation, sharing, and application of information and knowledge.^[7]

A definitional glut prevents scholars from reaching a consensus about a unifying concept of knowledge sharing. Grant^[8] defined knowledge sharing as a process of strengthening organizational effectiveness by maximizing the utilization of knowledge that is shared by organization members. Chkravarthy, Zaheer, and Zaheer^[9] viewed it as a process of a work unit in an organization to access useful knowledge of other work units that are necessary to improve organizational effectiveness. Hansen^[10] characterized knowledge sharing as a process of building a solid network with others in different work units. Gupta and Govindarajan^[11] described it as a process of identification, outflow, transmission, and inflow of knowledge in an organization. Finally, Bock and Kim^[12] defined it as the transmission or distribution of individual knowledge in an organization.

This article adopted Bock and Kim's definition of knowledge sharing because, unlike other research that is in most cases limited to conceptual study, they not only tested the validity of the concept empirically but also focused on individual level of knowledge sharing, which is the unit of analysis of the present study.

ANALYTICAL MODEL AND RESEARCH HYPOTHESES

Figure 1 proposes an analytical model that shows an overall picture of and direction for subsequent data analysis. Variables in the analytical model are drawn from an extensive review of literature on knowledge management and sharing. The model suggests that nine exogenous variables in three broad dimensions—organizational, individual, and characteristics of knowledge—influence the level of knowledge sharing, which in turn improves work performance. The degree to which knowledge sharing affects work performance is also mediated by the mutual trust between individuals in the course of sharing their knowledge.

Antecedents of Knowledge Sharing

Effective knowledge sharing among organizational members requires immediate attention to the antecedents of knowledge sharing that make people collaborate and share their knowledge for the eventual improvement of organizational performance. This is because the degree to which organizational members are willing to share their knowledge relies heavily on systematic organizational support

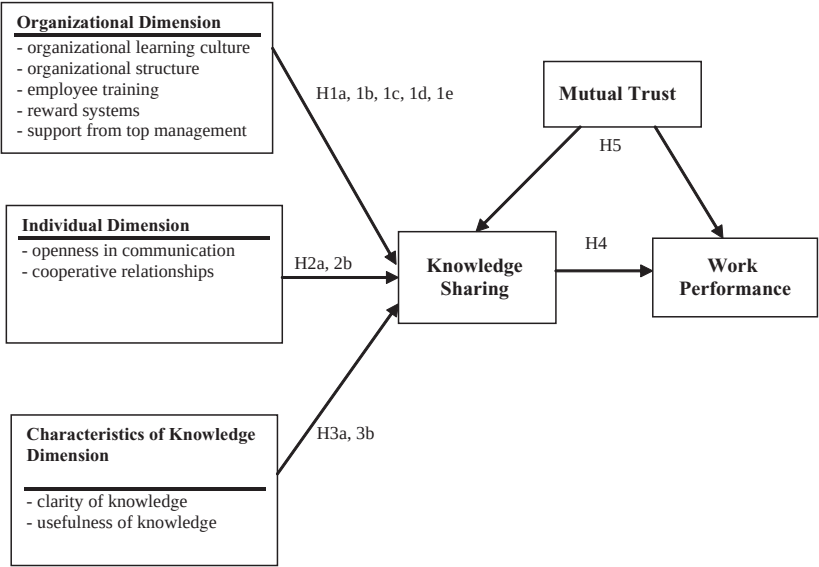


Figure 1. An Analytical Model of Knowledge Sharing and Research Hypotheses.

of those identified antecedents. An extensive literature on knowledge sharing and management suggests three broad dimensions as antecedents of knowledge sharing: organizational, individual, and characteristics of knowledge factors.

The level of knowledge sharing is affected by four exogenous variables in organizational dimension, including the level of organizational learning culture, organizational structure, training, reward systems, and support from the top management. A learning culture in an organization promotes knowledge sharing among organization members who believe that learning by sharing knowledge would improve work performance.^[13–18] Flexible organizational structure advances knowledge sharing by encouraging horizontal communication.^[9,10,19]

Similarly, employee training helps members of organizations realize the importance of sharing their knowledge in learning processes through which employees are involved in a multi-faceted set of learning activities.^[16,20] Appropriate reward systems aligned clearly with the creation and dissemination of knowledge into organization would also promote employees' knowledge sharing.^[16,17,21,22] Finally, support from the top management is critical in the growth of knowledge sharing as it attracts voluntary participation from employees in initiating and disseminating important knowledge.^[9,16] The discussion about a set of organizational factors affecting knowledge sharing suggests the following five hypotheses:

- *Hypothesis 1a: The higher the level of organizational learning culture, the higher the chance of knowledge sharing among organization members.*

- *Hypothesis 1b: The higher the flexible organizational structure, the higher the chance of knowledge sharing among organization members.*
- *Hypothesis 1c: The higher the level of employee training, the higher the chance of knowledge sharing among organization members.*
- *Hypothesis 1d: The better the reward systems in an organization, the higher the chance of knowledge sharing among organization members.*
- *Hypothesis 1e: The more the support from the organizational top management, the higher the chance of knowledge sharing among organization members.*

Two variables associated with individual characteristics of organization members were selected to measure their impact on the level of knowledge sharing: the openness in communication, and cooperative relationship between individuals involved in knowledge sharing and dissemination. Scholars agreed that intimate and open communication is an important antecedent of knowledge sharing.^[23–26] Notably, Marquardt and Peynolds^[23] argued that openness in communication has a positive influence on knowledge sharing, on the grounds that distrust in communication acts as a major barrier in establishing a learning culture. In a similar vein, the cooperative relationship between individuals in transmitting knowledge also positively affects knowledge sharing in a way that they cooperate to accomplish their common goals.^[16,27] Two hypotheses are suggested by these arguments:

- *Hypothesis 2a: The higher the level of openness in communication, the higher the chance of knowledge sharing among organization members.*
- *Hypothesis 2b: The higher the level of cooperative relationship, the higher the chance of knowledge sharing among organization members.*

Finally, two characteristics of knowledge can affect knowledge sharing: the clarity of knowledge^[25,26,28,29] and the usefulness of knowledge to be shared.^[8,21,30] These characteristics of knowledge imply that sharing of knowledge would become difficult if the characteristics of knowledge are ambiguous or appear to be useless on the part of recipients of new knowledge. Two hypotheses follow from this discussion:

- *Hypothesis 3a: The higher the clarity of knowledge, the higher the chance of knowledge sharing among organization members.*
- *Hypothesis 3b: The higher the usefulness of knowledge, the higher the chance of knowledge sharing among organization members.*

Knowledge Sharing and Work Performance

There has been extensive research to examine the relationship between knowledge sharing and work performance, but little consensus has reached what

constitutes work performance. Gueutal, Surprenant, and Bubeck^[31] contended that successful knowledge sharing, using information systems, not only reduced time for a set of work processes but also improved the level of employee confidence in performing their work. Errors at work would also be reduced through consistent and repeated knowledge sharing, which eventually improved overall efficiency and effectiveness of individual work performance.

In an empirical study of analyzing 150 professional employees in six business corporations in South Korea, Kim and Kim^[32] found a significant positive relationship between knowledge sharing and a total of eight areas of work performance: competitiveness, ability of forecasting and decision making, quality of customer services, customer satisfaction, organizational innovation, quality of products, work processes, and work productivity. Based on the analysis of 212 local government employees in South Korea, Park and Im^[33] also confirmed that knowledge sharing improved work performance of individual employees. The authors found that the creation and accumulation of knowledge positively impacted the dissemination and utilization of transmitted knowledge, which in turn improved work performance. In a similar study based on local government employees in South Korea, Kim^[34] agreed that communicating and sharing important knowledge positively affects individual work performance measured by excellence, the familiarity with work, the frequency of compliments from supervisors, the number of citizen complaints, and problem solving capability.

The degree to which knowledge sharing affects work performance relies on mutual trust between individuals involved in the creation, transmission, and application of new knowledge. In particular, sharing tacit knowledge requires a higher level of trust between individuals, as they tend to misunderstand and take advantage of the lack of clarity of the knowledge. Thus, mutual trust between individuals involved in knowledge sharing is critical for work performance. The discussion about the relationship between knowledge sharing and work performance suggests the following two hypotheses:

- *Hypothesis 4: The higher the level of knowledge sharing among organization members, the better their work performance.*
- *Hypothesis 5: The higher the level of mutual trust between individuals in knowledge sharing, the better their work performance.*

METHODS

Research Settings and Sample

The questionnaire was administered to public employees within the central government of South Korea. The sample included all employees classified GS seven or higher and working at the eight departments in central government.

During August to September 2004, a total of 480 questionnaires were distributed to public employees who were randomly selected from the central government for this study. A total of 340 were returned, but 17 responses were discarded from 340 due to their partial answers, resulting in 323 useable responses (a response rate of 67.3%).

Table 1 shows demographic characteristics of the sample. Of 323 total usable respondents, 228 (70.6%) employees were male whereas only 95 (29.4%) were female employees. A majority of respondents were between 31 and 40 years old (49.5%) and followed by 41 through 50 years old (28.8%). A majority of respondents were also highly educated public employees. More than 86% of our respondents were university graduates, including approximately 8% respondents who achieved post-graduate education. Most respondents were in relatively high ranks from GS 7 through up to GS 3, which is the third highest rank in South Korean government. However, more than 90% of

Table 1. Demographic characteristics of the sample

Variables	Frequency	(%)
Gender		
Male	228	70.6
Female	95	29.4
Age		
30 years old and younger	43	13.3
31–40 years old	160	49.5
41–50 years old	93	28.8
50 years old and older	27	8.4
Education		
High school graduates & less	6	1.8
Junior college graduates	39	12.1
University graduates	252	78.0
Graduate school	26	8.1
Ranks ^A		
GS 7	86	26.7
GS 6	98	30.3
GS 5	119	36.8
GS 4	17	5.3
GS 3	3	0.9
Tenure		
5 years and shorter	85	26.4
6–10 years	80	24.6
11–15 years	98	30.3
16–20 years	43	13.4
21 years and longer	17	5.3

^AGS ranks in South Korea are different from those of the United States. The higher the GS number, the lower their ranks.

our respondents were from GS 7 through GS 5 rank. Finally, our samples have enjoyed relatively long tenure as public employees in central government. Almost 50% of them have stayed in central government for more than 11 years.

Measures

Multiple indicators were selected from an extensive review of literature to measure antecedents, knowledge sharing itself, and its impact on work performance. Employing multiple measures is critical as this study attempts to measure several latent constructs such as learning culture, knowledge sharing, and work performance. Thus, at least three items for each exogenous variable were drawn from literature for ensuring the validity of measurement constructs. The selected items drawn from literature were modified by the authors in a way that those items fit well into the working environment of the Korean government. Table 2 shows individual items that were used to measure the relationship between knowledge sharing and work performance.

Antecedents of Knowledge Sharing

This article identified three broad dimensions that affect knowledge sharing: organizational, individual, and characteristics of knowledge dimensions. Organizational dimension includes five exogenous variables as antecedents of knowledge sharing: organizational learning culture, organizational structure, training, reward systems, and support from the top management. Perceived learning culture in each department (Cronbach's $\alpha = .84$) was measured by three items drawn from both Goodman and Darr and Tracey,^[13] Tannenbaum, and Kavanaugh.^[35] Perceived organizational structure (Cronbach's $\alpha = .90$) was measured by four items from Nonaka and Takeuchi.^[36] The high scores indicate that an organization's structure is flexible to encourage sharing of knowledge among organizational members. Four items from McDermott and O'Dell^[21] were used to measure employees' perception of an organization's support for employee training (Cronbach's $\alpha = .80$). In order to measure employee perception of the available reward systems (Cronbach's $\alpha = .86$), four items were selected from O'Dell and Grayson,^[16] Lahti and Beyerlein,^[37] and Wiig.^[22] Finally, support from the top management (Cronbach's $\alpha = .74$) was measured by four items drawn from Chkravarthy, Zaheer, and Zaheer.^[9]

Two exogenous variables in individual dimensions—openness in communication and cooperative relationships—were used to measure to what extent these two variables affect the level of knowledge sharing. Openness in communication (Cronbach's $\alpha = .62$) was measured by four items selected from Roberts and O'Reilly.^[38] The higher scores indicate that members of organizations feel free to communicate their ideas and knowledge with those in different departments. Three items drawn from Kramer, Brewer, and

Table 2. Validity of the measures

Variables	Items	Factor Loadings	Eigen values
Learning culture	• My department values employees' efforts for change and innovation.	.81	2.14
	• My department encourages knowledge sharing among employees.	.77	
	• My department respects employees who have new ideas and knowledge.	.62	
Organizational structure	• There is a good system of delegation of power in my department vertically and horizontally.	.91	1.97
	• There is a standard operating procedure in handling work tasks in my department.	.88	
	• A host of work rules spell out ways to handle work tasks in my department.	.74	
	• My department secures employee participation in decision-making process.	.83	
Employee training	• My work unit highly supports employee training for personal development.	.87	1.84
	• My work unit has good employee training programs by which new knowledge can be successfully disseminated.	.69	
	• My work unit highly encourages employees to take educational programs in order to obtain new knowledge.	.73	
	• My work unit appropriately evaluates and rewards knowledge sharing in various ways.	.89	
Reward systems	• Dissemination and sharing of know-how and professional knowledge is an important element in annual evaluation in my work unit.	.84	1.20
	• Knowledge sharing is an important factor in annual evaluation and promotion decision.	.83	
	• An employee who actively engages in knowledge sharing earns reputation as a professional in my work unit.	.76	
	• My boss emphasizes the importance of knowledge sharing between work units.	.85	
Support from the top management	• My boss highly encourages employees to share their know-how and professional knowledge.	.98	3.41

(Continued)

Table 2. (Continued)

Variables	Items	Factor Loadings	Eigen values
Openness in communication	• My boss makes consistent efforts to foster a culture of knowledge sharing (e.g., offering rewards).	.57	9.6
	• There is a sufficient level of mutual understanding among co-workers in job-related discussion.	.89	
	• My co-workers are willing to share, what they think, important information with each other.	.59	
	• Openness in communication, and frequent knowledge sharing among organizational members are helpful for my work task.	.78	
Cooperative relationship	• I am doing my part in accomplishing organizational goals by sharing my knowledge.	.75	2.56
	• I am willing to share my knowledge with other work units.	.68	
	• My work unit is more willing to share its knowledge than other work units do.	.63	
Clarity of knowledge	• Knowledge gained by my work is clear enough for sharing.	.84	1.34
	• Knowledge gained by my work is well organized for sharing.	.86	
	• Knowledge gained by my work is simple enough for sharing.	.79	
	• Knowledge gained by my work is easily understandable for sharing.	.81	
Usefulness of knowledge	• Knowledge gained by my work is useful for better performance.	.83	3.54
	• Knowledge gained by my work is suitable for better performance.	.64	
	• Knowledge gained by my work is effective for better problem solving.	.68	
	• Knowledge gained by my work is dependable.	.59	
Knowledge sharing	• I am willing to share my knowledge or know-how gained by my work.	.84	2.34
	• I am willing to share my knowledge or know-how gained by training.	.86	
	• I am willing to share my insights and intuition gained by my work.	.78	
	• I am willing to share my data regularly with my co-workers.	.81	

(Continued)

Table 2. (Continued)

Variables	Items	Factor Loadings	Eigen values
Mutual trust	• I believe that my supervisor is willing to listen to my grievances related to my work.	.84	1.43
	• I believe that my supervisor is willing to advise or encourage me about my personal problems.	.87	
	• I trust my supervisor due to his or her commitment and professionalism.	.78	
	• I have no doubt about my supervisor's capability based on his or her work performance.	.77	
	• I believe that my co-workers are willing to listen to my grievances related to my work.	.73	
	• I believe that my co-workers are willing to advise or encourage me about my personal problems.	.69	
	• I trust my co-workers due to their commitment and professionalism.	.82	
	• I have no doubt about my co-workers' capability based on their work performance.	.63	
Work performance	• Knowledge sharing helps me reduce errors at work.	.78	2.74
	• Knowledge sharing helps me enrich my work.	.54	
	• Knowledge sharing helps me improve my work performance.	.76	

Hanna^[39] were selected to measure cooperative relationships (Cronbach's $\alpha = .84$) between individuals involved in transmitting knowledge.

Two exogenous variables in characteristics of knowledge dimension—clarity of knowledge and usefulness of knowledge—were used to measure to what extent these characteristics of knowledge impact the level of knowledge sharing. Four items drawn from Zander and Kogut^[29] and Simonin^[25] were used to measure the clarity of knowledge (Cronbach's $\alpha = .88$) affecting knowledge sharing. Similarly, the usefulness of knowledge (Cronbach's $\alpha = .82$) was measured by four items selected from McDemott and O'Dell.^[21]

Knowledge Sharing

Knowledge sharing can be measured by the extent to which a member of an organization communicates and shares their knowledge with other members

of the organization. Four items drawn from Bock and Kim^[12] were used to measure the perceived knowledge sharing (Cronbach's $\alpha = .88$) among organizational employees.

Mutual Trust

Mutual trust between individuals in sharing knowledge serves as a mediating variable that influences the relationship between the level of knowledge sharing and individual work performance. Kang and Park^[40] classified trust into affective trust and cognitive trust, indicating that the former demonstrates an emotional attachment by those who are in the trust relationship, while the latter represents a cognitive decision by individuals who are willing to take and disseminate knowledge because of their evaluative beliefs in others. This article adopted eight items from Lewis and Weigert^[41] and McAllister^[42] to measure the perceived mutual trust (Cronbach's $\alpha = .91$) between individuals involved in the process of knowledge sharing.

Work Performance

Measuring work performance focuses on the positive change in individual work performance gained by knowledge sharing. Four items from Igbaria and Tan^[43] and Gueutal, Surprenant, and Bubeck^[31] were used to measure the perceived change in work performance (Cronbach's $\alpha = .65$) gained by knowledge sharing.

Reliability and Validity of the Measures

Cronbach's *alpha coefficient* was used to establish the reliability of the individual items drawn from literature. Reliability refers to the ability of a measure to yield the same results time after time. Two items from perceived work performance—pride in work, and analytical capability—were excluded due to the low values of Cronbach's α , .47 and .38, respectively. Cronbach's α was high in the rest of the measures ranging from .62 through .91, which support scale reliability of the present measures.

Factor analysis was performed to test factorial validity of the measures. All items selected for this study were factor-analyzed (principal component analysis) using varimax rotation with Kaiser normalization. Both eigenvalues and factor loadings produced 12 separate factors with .5 and above factor loadings for all items selected. In addition, Kaiser's eigenvalues-greater-than 1.00 rule was confirmed for all identified factors along with significant results of Bartlett's χ^2 test. This factor analysis indicates that all identified factors are

valid to measure antecedents of knowledge sharing, knowledge sharing itself, and its impacts on work performance. Table 2 shows the factor loadings and eigenvalues of each item selected for this study.

ANALYSIS AND RESULTS

Using Analysis of MOment Structures (AMOS) 4.0, path analysis was conducted to test hypothesized relationships between antecedents of knowledge sharing, knowledge sharing itself, and its impacts on work performance. AMOS is a statistical package that permits structural equation analysis with graphic mode combining factor analysis and regression analysis. Factor analysis was used to ensure each individual item measures the corresponding latent variables, while path analysis established causal relationships between exogenous (organizational, individual, and characteristics of knowledge factors) and endogenous (knowledge sharing and work performance) variables. Thus, path analysis using AMOS can offer a concise model building by establishing causal paths among various exogenous and endogenous variables in the model.^[44]

The chi-square (χ^2) test was used to estimate the overall model fit of covariance matrices among measurements. The chi-square value should not be significantly different because a significantly different chi-square value indicates that the covariance structure of the model is different from the observed covariance matrix. A non-significant chi-square indicates a good model fit as shown in Table 3. It is noted, however, that although the chi-square test provides a convenient way of estimating overall model fit, several other fit measures are often necessary because the chi-square test is dependent on sample size.^[45,46] Accordingly, the chi-square test of model fit tends to be used in conjunction with other practical fit indices, such as the Goodness of Fit Index (GFI), the Adjusted Goodness of Fit Index (AGFI), the Root Mean Square Residual (RMR), the Normed Fit Index (NFI), the Incremental Fit Index (IFI), and the Comparative Fit Index (CFI). Table 3 indicates that all other practical indices are within the fit ranges (GFI >.9, AGFI >.8, RMR <.08, NFI>.9, IFI>.9 CFI>.9) suggested by previous research.^[47-49]

Parameter estimates were calculated by Maximum Likelihood (ML), which maximizes the chance to reproduce the observed data. Research

Table 3. Results of the Goodness of Fit Test for the Analytical Model

df	χ^2	p-value	GFI	AGFI	RMR	NFI	IFI	CFI
161	171.14	0.277	.939	.904	.069	.943	.996	.996

Note: GFI = Goodness of Fit Index, AGFI = Adjusted Goodness of Fit Index, RMR = Root Mean Square Residual, NFI = Normal Fit Index, IFI = Incremental Fit Index, and CFI = Comparative Fit Index.

hypotheses drawn from the literature review were tested by estimating the significance of the path coefficient, which is a standardized regression coefficient (beta). In the present model, path coefficients are partial regression coefficients that measure the effect of one variable on another controlling for all other prior variables. Significance of path coefficients was measured by t-value, which tests the null hypothesis that the regression coefficient is zero. In AMOS, Critical Ratio (CR) for regression weights is used instead of t-value. If CR is >1.96 for a regression weight, that path is significant at the .05 level, and thereby confirming a given hypothesis. Figure 2 shows the path coefficients and the tests of significance of the current research model.

As Figure 2 suggests, the causal relationships between exogenous and endogenous variables vary across the three factors. First, not every exogenous

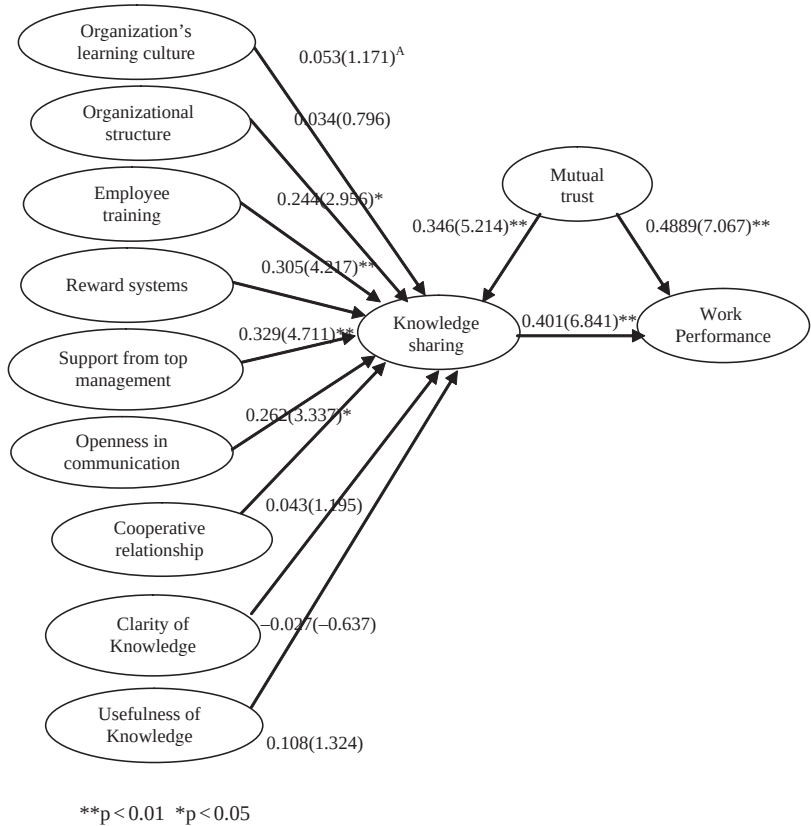


Figure 2. Path Coefficients and the Tests of Significance of the Analytical Model.

variable in the organizational dimension affect positively knowledge sharing among organizational members. Our respondents perceived that employee training ($CR = 2.96$, $p < .05$), reward systems in their organizations ($CR = 4.22$, $p < .01$), and support from the top management ($CR = 4.7$, $p < .01$) are important antecedents that make them willing to communicate and share their important knowledge, and thereby confirming hypotheses 1 c, 1d, and 1e. However, perceptions of learning culture of an organization ($CR = 1.12$, $p = .44$) and flexibility in the organizational structure ($CR = .80$, $p = .64$) are not significantly important to cultivate knowledge sharing, contrary to hypotheses 1a and 1b.

This study hypothesized that openness in communication and the cooperative relationships between individuals in transmitting knowledge positively affect knowledge sharing in order to accomplish their common goals. The path analysis shows somewhat odd results. While respondents believed that openness in communication can facilitate knowledge sharing ($CR = 3.34$, $p < .05$), cooperative relationships between individuals in transmitting knowledge would not contribute to knowledge sharing significantly ($CR = 1.20$, $p = .46$). In other words, respondents believed that open communication would improve the level of knowledge sharing significantly (hypothesis 2a is confirmed), but cooperative relationships do not necessarily make them share their knowledge, which rejects hypothesis 2b. The insignificant result of the cooperative relationship may stem from the fact that cooperation sometimes derives from coercion or calculated intent.^[50–52]

The two exogenous variables in the third dimension—characteristics of knowledge—turned out to be unimportant for knowledge sharing among our sample. Respondents agreed that clarity and usefulness of knowledge are not significantly important components for knowledge sharing (clarity of knowledge: $CR = -.64$, $p = .59$; usefulness of knowledge: $CR = 1.32$, $p = .19$), and thus rejecting hypotheses 3a and 3b.

As expected, there was a strong correlation between knowledge sharing and individual work performance ($CR = 5.21$, $p < .01$). That is, public employees in South Korea strongly believed that knowledge sharing in intra- and extra-organizational relations plays a vital role for improving their work performance (hypothesis 4 is confirmed). Also, mutual trust between individuals in the course of knowledge sharing is positively mediating the relationship between the knowledge sharing and work performance. The current path analysis indicated that the mutual trust between individuals in knowledge sharing affect positively both knowledge sharing ($CR = 5.21$, $p < .01$) and work performance ($CR = 7.07$, $p < .01$), as expected in hypothesis 5.

IMPLICATIONS

This study examined the impact of public employees' knowledge sharing on their work performance in the central government of South Korea. An extensive

literature review on knowledge sharing and management suggested three broad dimensions of knowledge sharing from which nine exogenous variables were identified as antecedents of knowledge sharing in order to measure to what extent these exogenous variables affect individual employee's work performance. Mutual trust between individuals involved in knowledge transmitting and sharing was used as a mediating variable that influences on the relationship between knowledge sharing and work performance.

The results of the path analysis indicated that four exogenous variables—employee training, reward systems, support from the top management, and openness in communication—are perceived to have a positive influence on employees' knowledge sharing, which, in turn, improved individual work performance. Perceived mutual trust between individuals involved in knowledge sharing has also positively influenced both knowledge sharing and individual work performance. These results imply that individual work performance may be dependent on the effective use of knowledge sharing. Thus, special attention must be paid to those exogenous factors that influence positively on knowledge sharing because knowledge sharing seems to be a major determinant of improving work performance.

Specifically, the results of the study have five implications for effective knowledge management aimed at improving work performance. First, the positive impact of employee training on knowledge sharing is consistent with the findings from McDermott and O'Dell.^[21] The authors argued that employee training helps employees adapt themselves to the new environment quickly and facilitates the creation and dissemination of new knowledge for maintaining a continuous learning cycle for better performance.

Second, the positive impact of reward systems on employees' knowledge sharing is consistent with the findings from Ruggles.^[17] Ruggles contended that the establishment of the reward systems in an organization facilitated knowledge sharing among organizational members because they can expect positive reinforcements for sharing their knowledge with co-workers. These findings imply that employees in an organization are willing to share their knowledge when they believe that they can receive appropriate rewards in exchange for knowledge sharing.

Third, this study found that support from the top management is critical in sharing knowledge among organizational members. The top manager's support is particularly important in the Korean government's work environment, in which risk-taking behavior of subordinates has been discouraged due to the frequent political turmoils. Also, a strong Confucian culture in South Korea—in which seniority often receives a higher priority than performance—devalues new initiatives and ideas derived from subordinates. The present results of the analysis thus suggest a significant challenge on the part of the top managers in South Korean government. In other words, they must change their management style in a way to encourage the creations, utilizations, and applications of new knowledge among their employees.

Fourth, the frequent political turmoils and Confucian culture in South Korea also prevent public employees from actively engaging in open communication, which was proven to be an important variable for effective knowledge sharing. Thus, there must be a radical cultural change in South Korean government, which relieves tension between supervisors and subordinates in its bureaucratic systems. For example, Golembiewski^[53] argued that unlimited openness in traditional bureaucratic systems might not be effective and could even be disruptive because it can make employees vulnerable, given the traditional bureaucratic systems that are structured to punish whistle-blowers.

Finally, the significant mediating role of mutual trust in the relationship between knowledge sharing and work performance suggests that organizations must find ways of improving interpersonal trust relationships in an organization using various mechanisms, such as guaranteeing employee participation in decision making process, improving fairness in performance appraisals and promotion, and instituting a pay-for-performance system. Previous research confirmed the important role of interpersonal trust in knowledge sharing and performance improvement. For example, Driscoll^[54] argued that interpersonal trust would increase information sharing because of the expectation that both parties will benefit from reciprocal interaction. Through experiments, Zand^[55] and later Boss^[56] found that interpersonal trust among organizational members improved problem solving effectiveness.

This article can contribute to the current literature on knowledge management and sharing by empirically identifying multiple antecedents of knowledge sharing and its impacts on work performance. The empirically identified antecedents of knowledge sharing can also help top managers in government who have tried to institute knowledge management systems aimed at improving work performance. Nevertheless, several limitations of this research must be observed with caution. First, generalizability of the present model of knowledge sharing is limited because our sample is drawn only from public employees in a central government. Future research should use a wide variety of samples, including private sector employees as well as local government employees. Similarly, second, generalizability of this research would be improved by employing multiple measures such as interview and focus groups that can cross-validate the findings from survey questionnaires. Finally, there may be delayed effects or differences in work performance across the departments. Thus, future research must conduct a time series analysis across the departments that can capture the delayed effects as well as other patterns of performance improvement.

Ever-increasing financial shortfalls and concerns for government accountability require a better performing government for the provision of high quality of services. This research found that effective knowledge sharing can be a major determinant of performance improvement in government. Thus, several limitations addressed in this research should receive continued attention that can polish the present model of knowledge sharing and its impacts on work performance.

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