

The effect of university organizational culture on organizational silence and faculty–student interaction

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ABSTRACT

Colleges/universities outside the Seoul metropolitan area (hereafter “non-Seoul universities”) are in a crisis of existence due to a decline in the school-aged population in South Korea. Most non-Seoul universities are making efforts to implement self-rescue measures for survival. This study examines the relationships among different types of organizational culture (innovative, collective, rational, and hierarchical), organizational silence (acquiescent, prosocial, and defensive), and faculty–student interaction as perceived by non-Seoul university professors to provide useful implications for effective human resource management plans for the professors, who are responsible for entrance examinations and education at non-Seoul universities in crisis. An online survey was employed to collect data from professors at private community colleges/universities outside the Seoul metropolitan area. Responses from 421 professors were used for data analysis. Results are as follows. First, when professors perceived innovative and collective cultures, their defensive silence decreased while prosocial silence increased. Second, when rational culture was perceived, defensive silence increased while prosocial silence decreased. Third, acquiescent silence increased while prosocial silence decreased when hierarchical culture was perceived. Fourth, faculty–student interaction was enhanced when innovative and collective cultures were prevalent. Finally, prosocial silence had a positive effect on faculty–student interaction. The findings imply that if university managers change policy to encourage professors to perceive the university culture as innovative and collective, prosocial silence, which is positive from the organization’s perspective, will increase, facilitating interactions between professors and students.

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1. Introduction

In South Korea, where the school-aged population is continuously decreasing due to a low birth rate and an aging society, fierce competition for university entrance is becoming rare in regions outside of the Seoul metropolitan area due to the oversupply of higher education institutions and the opening of the education market. While the number of students that can be admitted to university in 2020—the year when the cohort associated with the sharp decrease in births in 2001 is eligible to enter university—was 48,3146, the number of students that actually enrolled in the same year was 47,9376, marking the first time in South Korea’s history that the number of enrolled students was smaller than the university admission capacity. As a result, as of 2020, 16 universities in South Korea were closed due to the difficult financial situation caused by insufficient student enrollment. More colleges and universities located in the regions outside the Seoul metropolitan area (hereafter “non-Seoul universities”) will face a crisis of existence due to insufficient student enrollments in the future.

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Previously, universities in South Korea enjoyed overflowing demand for education and did not take student-centered management seriously. However, the situation has changed; if a university does not make an effort to provide the best quality education service that meets students' needs and expectations in the future, it may face a crossroads where its continued existence is uncertain. Moreover, through the evaluation of university structural reforms, the government demands that universities respond proactively to changes through active and creative organizational innovation. The sense of crisis is even higher at non-Seoul universities. Given this series of crisis-related situations, non-Seoul universities will need to make changes to proactively cope with the rapidly shifting external environment and maximize student satisfaction by providing high-quality educational services (Shim & Choi, 2014). It is understood that fundamental changes in the organizational culture are needed to improve an organization's performance (Cameron & Quinn, 2006). As universities are not an exception, university managers should pay attention to forming a desirable organizational culture that will be helpful to overcome the current crisis (Choi, 2010). While it is necessary to express ideas, present opinions on improvement strategies, and provide useful information for organizational development, there is a high possibility of silence where these actions are not intentionally performed in a malformed organizational culture (Probst et al., 2007). It is said that organization members' silence affects not only individual performance but also organizational innovation, which ultimately adversely affects the organization's overall performance (Beer & Eisenstat, 2000; Sackett et al., 2006).

Recently, an environment has been created in which the phenomenon of organizational silence can continuously appear among non-Seoul university professors. Until now, education and research have been Korean professors' primary duties; however, due to the recent changes in the external environment, non-Seoul university professors are being forced to take charge of entrance examinations as well. At the same time, they are being asked to break away from the educational world's authoritarian and conservative characteristics, and communicate at the student's level. As such, university managers tend to focus on student satisfaction rather than professors' opinions, which encourages professors to stay silent when they need to express their opinions within the university organization (Shin, 2016). In universities, professors are directly related to student satisfaction. Therefore, it is crucial to investigate the cause of professors' organizational silence, as their active participation in university management is a critical factor for university innovation and achievements. Recently, non-Seoul universities have recognized that increasing student satisfaction is an essential condition for survival; consequently, they have emphasized the importance of professors' smooth interactions with students (Choi & Shin, 2010). It is known that through interactions with professors, college students acquire rich knowledge related to their majors, form correct values and attitudes as students (Beckett et al., 2016), and attain high educational achievements (Kuh, 2003; Pascarella & Terenzini, 2005).). As such, the role of professors in non-Seoul universities is directly related to the university's survival, so university managers should show more interest in and consideration for actively supporting professors' performance. In particular, organizational members' silence is known to be prevalent in negative organizational cultures, such as those characterized by authoritative leadership, negative feedback within the organization, and the absence of communication opportunities (Milliken & Morrison, 2003; Morrison & Milliken, 2000; Vakola & Bouradas, 2005; Graen & Uhl-Bien, 1995). It was also found that teachers who exhibit organizational silence in school become less active in students' learning activities, which negatively affects their interactions with students and ultimately hinders school development (Park & Shin, 2018). On the other hand, a school's positive organizational culture creates conditions for teachers to provide effective instruction to students (Firestone & Wilson, 1984; Goldring, 2002) and improves the relationship between teachers and students, ultimately contributing to school development (Kritek, 1986). Therefore, universities' organizational culture should be changed to one where professors can efficiently perform their work. For non-Seoul universities to survive in such a rapidly changing environment, professors' roles should be taken seriously; however, prior research on this is rare.

To fill the research gap, this study examines the relationship between the type of organizational culture perceived by non-Seoul university professors, organizational silence, and faculty–student interaction to provide implications for non-Seoul university managers and stakeholders toward efficient university management.

2. Literature Review and Hypotheses

2.1 School Organizational Culture

School organizational culture is defined as the result of expressing school-specific values and beliefs, ideologies, attitudes, norms, goals, etc., which influence its members' way of thinking and behavior (Kim, 1991; Kim, 2008; Owens, 2001). A university is a complex organization composed of professors, administrative staff, and students, and each member has unique characteristics. Students have a fluid character, as they graduate after living college life for a certain period; however, professors and staff generally stay for a long time, that is, until retirement. Professors are involved in executing various university functions, such as education, research, and service, and staff play a role in supporting and helping professors and students through the university administration. Accordingly, it can be seen that employees are mainly influenced by bureaucratic principles, while professors are influenced by university community principles (Shin, 1993). Furthermore, it is said that university professors' organization has a characteristic that strives to improve the school system, curriculum, and class satisfaction through active interaction among members (Hoy & Miskel, 2013). Universities in South Korea are facing a survival crisis due to the opening of the education market and the rapid decline in the number of students. The situation is severe in the regions outside the Seoul metropolitan area, and the number of non-Seoul universities that have had to close is increasing. Accordingly,

non-Seoul universities need to preemptively cope with this crisis through active and creative organizational innovation. As part of this, professors are making efforts to become competitive by providing quality educational services that meet students' needs and expectations. As professors spend most of their time at school, it is said that their work efficiency varies depending on their school's organizational culture (Kim & Jun, 2011). Therefore, it is crucial to pay attention to organizational culture to provide quality education services (Choi, 2010). School organizational culture is influenced externally by politics, economy, and society, and internally by principals, teachers, students, parents, and residents; therefore, organizational culture is formed differently at each school (Park, 2014). The method for typifying school organizational culture varies depending on the researcher, but the approach suggested by Lee (2020), which is the most widely used in South Korea, was employed in this study. Lee (2020) typifies school organizational culture by adapting to the external environment and solving the organization's internal problems; that is, the type of school organizational culture is based on active or passive behavior that responds to the external environment and flexible or rigid behavior in the process of solving problems inside the school. Accordingly, school organizational culture was classified into four types in this study: innovative culture (active and flexible), rational culture (active and rigid), collective culture (passive and flexible), and hierarchical culture (passive and rigid).

Detailed explanations of how these four types apply to this study are as follows. Innovative culture indicates that professors actively respond to the rapidly changing external environment and are flexible in the problem-solving process. In this organizational culture, professors are free to exchange ideas and opinions for problem solving, and apply new teaching methods to enhance students' learning. In a rational culture, professors actively respond to the external environment but are somewhat rigid in the problem-solving process. To achieve goals within the university, professors form practical rather than human relationships to perform tasks. Collective culture indicates that professors react passively to changes in the external environment and develop a strong bond with other professors in the problem-solving process. In this culture, professors try to share each other's interests and difficulties rather than competing for individual achievements. Finally, in hierarchical culture, professors respond passively to changes in the external environment and are rigid in solving problems. Professors tend to emphasize a sense of rank, based on tenure and prestige, and they perform by following regulations and instructions set forth by the school-wide management system.

In conclusion, school organizational culture is one of the critical factors determining professors' behavior and an important variable that positively or negatively affects their teaching behavior. Therefore, this study empirically examined the relationship between school organizational culture and other variables.

2.2 Organizational Silence

In the rapidly changing business environment, organizational silence among members negatively affects individual members and the organization; hence, organization managers are continually striving to reduce organizational silence. Since organizational silence is a collective phenomenon that suppresses employees' opinions and concerns about potential problems arising in the organization, it is crucial to understand the existence of the organizational force that causes this phenomenon (Morrison & Milliken, 2000). When most members want to be silent about an organizational problem, it is expressed as a collective action called organizational silence, which is ultimately an obstacle to communication channels within the organization and thus the greatest barrier to organizational change and innovation (Henriken & Dayton, 2006). Organizational silence refers to the failure of upward communication, where individuals do not express their thoughts, questions, and information, and stay silent about problems related to the organization to which they belong and to their job; it can take the form of acquiescent, defensive, and prosocial silence (Van Dyne et al., 2003). Acquiescent silence refers to a phenomenon where organizational members give up and are unwilling to comment on the situation they are facing. This is a type of silence that emerges from the idea that what an individual says is meaningless and does not make a difference in the organization (Morrison & Milliken, 2000; Van Dyne et al., 2003). It is said that this form of silence can be caused by an unfair situation within the organization, an organizational culture that causes silence, and superiors' attitude toward silence (Vakola & Bouradas, 2005).

Defensive silence represents a self-protective attitude to avoid the negative consequences of expressing opinions or making suggestions within an organization (Pinder & Harlos, 2001). Specifically, it is said to be a type of silence caused by various fears, such as the fear of acquiring a negative image from talking with others, the fear of deteriorating favorable relations with others, and the fear of retribution and reprimand from the organization (Morrison & Milliken, 2000). Finally, prosocial silence refers to deliberately refraining from expressing one's ideas or sharing information in an attempt to benefit others or the organization. Specific examples include being silent to protect the organization's confidentiality, safeguarding by not revealing unfavorable information about colleagues or supervisors, and refraining from disclosing information that is exclusively owned by the organization (Van Dyne et al., 2003). Antecedent variables that cause organizational silence include individual characteristics, a lack of work experience and a low status, and organizational variables such as leaders' characteristics, a strong hierarchical culture, and an organizational climate that does not favor autonomous speech (Milliken et al., 2003). It is also reported that the possible consequences of organizational silence include the slowing of organizational development (Vakola & Bouradas, 2005) and stress and psychological problems among members caused by intentionally refraining from communication (Morrison & Milliken, 2000). Moreover, it is known that continuous and long-term organizational silence adversely affects the organization, manifesting as lethargy, employees' decreased enthusiasm for work, their increased negative feelings toward the organization, and low job satisfaction (Kang & Go, 2014).

Currently, it is hard to find studies on organizational silence that have been conducted with Korean professors as subjects. Given that until recently, the university admission capacity has been far less than the number of students who want a college education, colleges have been able to operate without changes and innovations, and professors have had enough freshmen, creating circumstances where professors could make their voices heard in protest against university managers' unreasonable instructions and management style. However, now that the university admission capacity is more than the demand for a college education, school closure due to deterioration in management has become a reality, especially for non-Seoul universities, and professors are trying to change and innovate to cope with the threat to school existence due to an insufficient supply of students. In particular, since this phenomenon is rapidly spreading among non-Seoul universities, for which the recruitment of new students is challenging, it has become common for non-Seoul university professors to no longer receive tenure and to be recommended for honorary retirement. In such an environment, it is believed that the possibility of remaining silent about university managers' unjust instructions or regarding their method of running the school against individuals' will is likely to increase among non-Seoul university professors.

2.3 Faculty–Student Interaction

Faculty–student interaction refers to college students' academic and social interactions with professors while attending school. Faculty–student interaction is known to be the core of university education activities since college students gain expert knowledge related to their majors and learn correct values and attitudes through their interactions with professors (Beckett et al., 2016; Choi & Shin, 2010). Faculty–student interaction occurs through formal and informal exchanges during and outside class. It is known that students' educational achievements increase when professors and students meet outside class for discussions, career planning, and academic counseling (Astin, 1977; Chickering, 1969; Kuh, 2003; Pascarella & Terenzini, 2005). Furthermore, in the socialization process of university students, interaction with professors has a significant effect on student growth (Weidman, 1989); the higher the frequency of faculty–student interactions, the higher the student's analytical thinking ability and the stronger their sense of belonging to the university, both of which have a crucial impact on their intellectual and personal growth and development (Astin, 1993; Choi & Shin, 2010; Tinto, 1993). Moreover, interaction between professors and students is a factor that leads students to actively participate in academic studies and positively affects students' cognitive aspects (Kuh et al., 2006; Pascarella & Terenzini, 2005). It is also known to reduce students' learning deviation and develop students' positive learning attitudes (Marx & Walsh, 1988; Mayer, 2011; Weinstein & Mignano, 1996). These previous studies indicate that it should be one of professors' main roles to maintain intimate relationships with students by frequently contacting them and building trust. However, unlike at foreign universities, it is not easy for students to regularly visit professors and communicate comfortably at Korean universities due to the deep-rooted Confucian ideology and conservatism in South Korea. This is not just a problem for students; professors and the university administration must work together to revitalize the interaction between professors and students (Choi et al., 2016). Toward that goal, this study empirically examined methods for facilitating smooth interactions between professors and students to improve university education and overcome the crisis affecting non-Seoul universities.

2.4 Hypotheses Development

The main causes of silence among organizational members are characteristics that contribute to negative organizational cultures, such as authoritative leadership, negative feedback in the organization, and insufficient communication opportunities (Milliken & Morrison, 2003; Morrison & Milliken, 2000). It has also been reported that the prevalence of hierarchical culture in the organization further promotes members' silence (Vakola & Bouradas, 2005). This hierarchical and authoritative organizational culture suggests that the fear of suffering disadvantages due to speaking out can lead to organizational silence (Wang & Hsieh, 2013; Whiteside & Barclay, 2013). When teachers exhibit organizational silence in school, they become less active in students' learning activities, which negatively affects their interactions with students and eventually hinders school development (Park & Shin, 2018). In contrast, a positive organizational school culture is known to be a critical factor in enabling teachers to instruct students effectively (Firestone & Wilson, 1984; Goldring, 2002), which improves the relationship between teachers and students and facilitates teacher–student exchanges, ultimately contributing to school development (Kritek, 1986). Studies in South Korea also show that when teachers perceive a highly innovative culture, they make a strong commitment to the school and maintain smooth relationships with students (Park, 2008). Another study shows that when teachers perceive a strong vertical and collective culture, students' learning activities and teacher–student relationships deteriorate (Choi & Kim, 2016). Based on these prior studies, it can be judged that faculty–student interaction can differ depending on how professors perceive the school's organizational culture. Drawing on these prior studies, this study examined the structural relationships among the sub-dimensions of the organizational culture perceived by university professors (i.e., innovative culture, rational culture, collective culture, and hierarchical culture), the sub-dimensions of organizational silence (i.e., acquiescent silence, defensive silence, prosocial silence), and faculty–student interaction. Before establishing hypotheses to test, this study set up the following theory-driven directions between variables. Innovative culture is a culture in which professors actively accept changes in the external environment and are flexible in solving related problems. Since this organizational culture makes it easy for members to express their opinions freely, it can be considered to negatively affect professors' acquiescent and defensive silence, while positively affecting prosocial silence and faculty–student interaction. Rational culture is a culture in which professors are active in responding to changes in the external environment but show rigidity in the problem-solving process. Since this organizational culture places great importance on performance, goal achievement, practical rather than human

relations, and results rather than processes, it can be considered to have a positive effect on acquiescent and defensive silence, a negative effect on prosocial silence, and a negative effect on faculty–student interaction. I think it will have a negative effect. Collective culture is a culture in which professors are passive about changes in the external environment but form a strong bond with other professors to solve problems. Since Korean society values interpersonal harmony over individual characteristics (Oh et al., 2018), collective culture is believed to negatively affect acquiescent and defensive silence, and positively affect prosocial silence and faculty–student interaction. Finally, hierarchical culture is a culture in which professors respond passively to changes in the external environment and show rigidity when solving problems. Since this organizational culture has an authoritative characteristic that emphasizes commands, procedures, and regulations, it is considered to positively affect acquiescent and defensive silence, and negatively affect prosocial silence and faculty–student interaction. On this theoretical basis, this study established the following research hypotheses to specifically and elaboratively identify and examine the relationships among variables to suggest implications for non-Seoul universities in crisis:

Hypothesis 1. University’s innovative culture will have a significant effect on professors’ organizational silence.

Hypothesis 1-1. University’s innovative culture will have a negative effect on acquiescent silence.

Hypothesis 1-2. University’s innovative culture will have a negative effect on defensive silence.

Hypothesis 1-3. University’s innovative culture will have a positive effect on prosocial silence.

Hypothesis 2. University’s rational culture will have a significant effect on professors’ organizational silence.

Hypothesis 2-1. University’s rational culture will have a positive effect on acquiescent silence.

Hypothesis 2-2. University’s rational culture will have a positive effect on defensive silence.

Hypothesis 2-3. University’s rational culture will have a negative effect on prosocial silence.

Hypothesis 3. University’s collective culture will have a significant effect on professors’ organizational silence.

Hypothesis 3-1. University’s collective culture will have a negative effect on acquiescent silence.

Hypothesis 3-2. University’s collective culture will have a negative effect on defensive silence.

Hypothesis 3-3. University’s collective culture will have a positive effect on prosocial silence.

Hypothesis 4. University’s hierarchical culture will have a significant effect on professors’ organizational silence.

Hypothesis 4-1. University’s hierarchical culture will have a positive effect on acquiescent silence.

Hypothesis 4-2. University’s hierarchical culture will have a positive effect on defensive silence.

Hypothesis 4-3. University’s hierarchical culture will have a negative effect on prosocial silence.

Hypothesis 5. University’s organizational culture will have a significant effect on faculty–student interaction.

Hypothesis 5-1. University’s innovative culture will have a positive effect on faculty–student interaction.

Hypothesis 5-2. University’s rational culture will have a negative effect on faculty–student interaction.

Hypothesis 5-3. University’s collective culture will have a positive effect on faculty–student interaction.

Hypothesis 5-4. University’s hierarchical culture will have a negative effect on faculty–student interaction.

Hypothesis 6. Professors’ organizational silence will have a significant effect on faculty–student interaction.

Hypothesis 6-1. Professor’s acquiescent silence will have a negative effect on faculty–student interaction.

Hypothesis 6-2. Professor’s defensive silence will have a negative effect on faculty–student interaction.

Hypothesis 6-3. Professor’s prosocial silence will have a positive effect on faculty–student interaction.

3. Methods

3.1 Data Collection Procedure

This study employed an online survey method to collect data to test the established hypotheses. A total of 500 professors working at 25 universities, including private junior colleges and 4-year colleges located in regions outside the Seoul metropolitan area (i.e., non-Seoul universities), were invited to complete the survey between July 1 and October 30, 2020. Among them, 421 professors responded to the survey, and their responses were used for data analysis. This study used scales developed in the previous study to measure the variables. The survey questionnaire was finalized after reviewing with ten professors to ensure each variable’s content validity. The collected data were analyzed using SPSS and AMOS.

3.2 Measures

3.2.1 School Organizational Culture

In this study, school organizational culture is defined as the way of thinking and behavior formed through professors’ shared perceptions within the university. To measure this, we used the measurement scale provided by Lee (2020), who tailored Quinn and McGrath (1985) to suit the context of Korean schools. Twenty question items were used, with five items for each dimension of school organizational culture, namely innovative culture, rational culture, collective culture, and hierarchical

culture. The items were rated on a 5-point Likert scale (Bentler, 1990; Bollen, 1989; Gaski, 1984).

3.2.2 Organizational Silence

This study defined organizational silence as a professor's behavior, that is, their acquiescence or adaptiveness to a situation, or their avoidance of offering their opinions or objections for fear of deteriorating their human relationships within the organization, even if they perceive problems or opportunities for improvements within the organization. To measure this construct, this study drew on Dyne et al. (2003), who used 15 items to measure three dimensions of organizational silence (five items for each), namely acquiescent silence, defensive silence, and prosocial silence. The items were rated on a 5-point Likert scale.

3.2.3 Faculty–Student Interaction

This study defined professor–student interaction as the degree to which a professor perceives academic and social exchange activities with students. The items to measure this variable were adapted from Song and Yu (2020) to suit this study's context. Five questions were used to measure faculty–student interaction, rated on a 5-point Likert scale.

4. Results

4.1 Study Participants

The survey participants' demographic characteristics are as follows. The final sample consisted of 256 men (60.81%) and 165 women (39.19%). By age, 42 participants were in their 30s (9.98%), 260 in their 40s (61.76%), 79 in their 50s (18.77%), and 40 in their 60s or older (9.51%). By faculty position, 123 were assistant professors (29.22%), 249 were associate professors (59.15%), and 49 were professors (11.64%). By employment type, 312 (74.11%) participants had a regular faculty position, and 109 (25.89%) held a contractual position. Lastly, by experience, 70 participants (16.63%) had less than ten years, 208 (49.41%) had 10–14 years, 79 (8.77%) had 15–19 years, and 64 (15.21%) had 20 or more years.

4.2 Reliability and Validity

Table 1 presents the results of analyzing the reliability and validity of each construct employed in this study. First, each construct's reliability coefficient (Cronbach's α) was of an acceptable level, at 0.6 or higher. The results of confirmatory factor analysis (CFA) to examine each construct's validity are as follows. For school organizational culture, $\chi^2 = 713.921$, $df = 164$, $p = .000$, $RMR = .064$, $CFI = .897$, $TLI = .881$, $RMSEA = .089$. For organizational silence, $\chi^2 = 285.699$, $df = 87$, $p = .000$, $RMR = .028$, $CFI = .941$, $TLI = .929$, $RMSEA = .074$. For faculty–student interaction, $\chi^2 = 23.573$, $df = 5$, $p = .000$, $RMR = .012$, $CFI = .986$, $TLI = .972$, $RMSEA = .094$. These results demonstrate that the goodness-of-fit of all the constructs was within an acceptable level.

Table 1
Reliability and Validity

	Items	N	Cronbach's α	Goodness of fit
School organizational culture	Innovative culture	5	.830	$\chi^2 = 713.921(df = 164, p = .000)$, $RMR = .064$, $CFI = .897$, $TLI = .881$, $RMSEA = .089$
	Rational culture	5	.869	
	Group culture	5	.909	
	Hierarchical culture	5	.868	
Organizational silence	Acquiescent silence	5	.837	$\chi^2 = 285.699(df = 87, p = .000)$, $RMR = .028$, $CFI = .941$, $TLI = .929$, $RMSEA = .074$
	Defensive silence	5	.813	
	Prosocial silence	5	.901	
Faculty–student interaction	Interaction 1	5	.834	$\chi^2 = 23.573(df = 5, p = .000)$, $RMR = .042$, $CFI = .901$, $TLI = .899$, $RMSEA = .094$
	Interaction 2			
	Interaction 3			
	Interaction 4			
	Interaction 5			

4.3 CFA Analysis

Table 2 shows the results of testing the convergent and discriminant validity of each construct in a model with all three constructs: school organizational culture, organizational silence, and faculty–student interaction. The model's goodness-of-fit was examined using CFA and found to be on an acceptable level: $\chi^2 = 1902.392$, $df = 712$, $p = .000$, $RMR = .044$, $CFI = .902$, $TLI = .892$, $RMSEA = .060$.

The composite construct reliability (CCR) coefficients were .7 or higher for all constructs, indicating no serious problem with the convergent validity (Bagozzi & Yi, 1988; Hair et al., 2006; Gerbing & Anderson, 1988).

Table 2
CFA Results

Construct	Items	Unstandardized estimates	Standardized estimates	Measurement error	CCR ^a	AVE ^b	
School organizational culture	Innovative culture	IC5	1.000	.843	.247	.831	.501
		IC4	.823	.730	.361		
		IC3	1.091	.749	.566		
		IC2	.891	.623	.758		
		IC1	.741	.596	.604		
	Rational culture	RC5	1.000	.778	.576	.876	.586
		RC4	.813	.762	.419		
		RC3	.598	.692	.343		
		RC2	.783	.774	.362		
		RC1	.831	.798	.346		
	Group culture	GC5	1.000	.719	.507	.908	.667
		GC4	1.280	.858	.318		
		GC3	1.153	.867	.239		
		GC2	1.073	.862	.216		
		GC1	1.133	.795	.406		
Hierarchical culture	HC5	1.000	.623	.354	.878	.595	
	HC4	2.008	.875	.278			
	HC3	1.876	.813	.406			
	HC2	1.986	.820	.432			
	HC1	1.256	.644	.500			
Organizational silence	Acquiescent silence	AS1	1.000	.560	.138	.940	.768
		AS2	1.343	.519	.307		
		AS3	2.200	.841	.126		
		AS4	2.345	.908	.073		
		AS5	1.986	.770	.170		
	Defensive silence	DS1	1.000	.712	.441	.867	.569
		DS2	.843	.716	.306		
		DS3	.799	.698	.304		
		DS4	.863	.723	.307		
		DS5	.680	.574	.426		
	Prosocial silence	PS5	1.000	.786	.327	.926	.717
		PS4	1.035	.825	.266		
		PS3	1.040	.834	.251		
		PS2	1.113	.877	.197		
		PS1	.693	.711	.249		
Faculty–student interaction	Interaction 1	1.000	.663	.285	.907	.666	
	Interaction 2	.960	.802	.115			
	Interaction 3	1.258	.814	.181			
	Interaction 4	1.018	.716	.221			
	Interaction 5	1.088	.588	.502			

Goodness of fit
 $\chi^2 = 1902.392(df = 712, p = .000)$, $RMR = .044$, $CFI = .902$,
 $TLI = .892$, $RMSEA = .060$

^a In the measurement model, the parameter estimate of the measurement variable is fixed to the first one.

a. Composite construct reliability

b. Average variance extracted

4.4 Discriminant Validity Analysis

Discriminant validity, which shows whether concepts or measurements that are not supposed to be related are actually unrelated, was examined by comparing each construct's AVE value with the squared correlation coefficients between the constructs (Fornell & Larcker, 1981). The result of correlation analysis, shown in Table 3, indicate that the highest correlation coefficient was .674 between prosocial silence and faculty–student interaction; its squared value was .460. Since all AVEs were exceeded this value, the discriminant validity of all constructs employed in this study was confirmed. Furthermore, the relationships among the three constructs turned out to be positive, which is consistent with the correlation table and demonstrates the nomological validity of the model employed in this study.

Table 3
Correlation Matrix

Items	Innovative	Rational	Group	Hierarchical	Acquiescent	Defensive	Prosocial	Faculty–student
Innovative culture	1.00							
Rational culture	-.643	1.00						
Group culture	.638	-.609	1.00					
Hierarchical culture	-.475	.457	-.619	1.00				
Acquiescent silence	-.421	.445	-.522	.565	1.00			
Defensive silence	-.578	.597	-.573	.423	.422	1.00		
Prosocial silence	.664	-.621	.629	-.531	-.531	-.613	1.00	
Faculty–student interaction	.631	-.624	.637	-.487	-.478	-.581	.674	1.00

*All correlations were significant at $p < .01$

4.5 Hypotheses Testing

This study employed structural equation modeling and used the maximum likelihood estimation method to test the research model. The goodness-of-fit indices of the structural model were as follows: $\chi^2 = 1924.757$, $df = 715$, $p = .000$, $RMR = .045$, $CFI = .900$, $TLI = .891$, and $RMSEA = .061$; these values demonstrate an acceptable model fit to the data.

Table 4 presents the hypotheses testing results; 11 out of 19 hypotheses were supported, and the details are as follows.

Table 4
Path Analysis Results

	Path	B	β	S.E	C.R	<i>p</i>
(H1-1)	IC → AS	-.029	-.090	.028	-1.023	.306
(H1-2)	IC → DS	-.249	-.286	.075	-3.314	.000**
(H1-3)	IC → PS	.355	.378	.072	4.920	.000**
(H2-1)	RC → AS	.038	.141	.021	1.791	.073
(H2-2)	RC → DS	.242	.337	.056	4.331	.000**
(H2-3)	RC → PS	-.172	-.222	.051	-3.346	.000**
(H3-1)	GC → AS	-.033	-.098	.028	-1.190	.234
(H3-2)	GC → DS	-.202	-.221	.073	-2.767	.006**
(H3-3)	GC → PS	.156	.158	.068	2.287	.022*
(H4-1)	HC → AS	.227	.432	.039	5.781	.000**
(H4-2)	HC → DS	.039	.028	.084	.466	.641
(H4-3)	HC → PS	-.250	-.163	.081	-3.089	.002**
(H5-1)	IC → Interaction	.086	.170	.036	2.388	.017*
(H5-2)	RC → Interaction	-.039	-.064	.050	-.790	.429
(H5-3)	GC → Interaction	.140	.218	.045	3.102	.002**
(H5-4)	HC → Interaction	-.026	-.026	.057	-.457	.647
(H6-1)	AS → Interaction	.083	.044	.093	.894	.371
(H6-2)	DS → Interaction	-.037	-.052	.048	-.768	.443
(H6-3)	PS → Interaction	.298	.459	.047	6.343	.000**

Acquiescent silence SMC = .440 (44.0%)

Defensive silence SMC = .611 (61.1%)

Prosocial silence SMC = .648 (64.8%)

Faculty–student interaction SMC = .751 (75.1%)

$\chi^2 = 1924.757$ ($df = 715$, $p = .000$), $RMR = .045$, $CFI = .900$, $TLI = .891$, $IFI = .901$, $RMSEA = .061$

* $\alpha < 0.05$, ** $\alpha < 0.01$

First, regarding the relationships between the four types of organizational culture and the three types of organizational silence, innovative culture was found to have a significant effect on defensive silence ($t = -3.314$, $p = .000$) and prosocial silence ($t = 4.920$, $p = .000$), supporting Hypotheses 1-2 and 1-3; however, the effect of innovative culture on acquiescent silence was insignificant ($t = -1.023$, $p = .306$), and Hypothesis 1-1 was rejected. Rational culture was also found to have a significant effect on defensive silence ($t = 4.331$, $p = .000$) and prosocial silence ($t = -3.346$, $p = .000$), supporting Hypotheses 2-2 and 2-3; however, the relationship between rational culture and acquiescent silence was insignificant ($t = 1.791$, $p = .073$), and Hypothesis 2-1 was rejected. Collective culture had a significant effect on defensive silence ($t = -2.767$, $p = .006$) and prosocial silence ($t = 2.287$, $p = .022$), supporting Hypotheses 3-2 and 3-3. However, the relationship between collective culture and acquiescent silence was insignificant ($t = -1.190$, $p = .234$), not supporting Hypothesis 3-1. Finally, hierarchical culture was found to have a significant effect on acquiescent silence ($t = 5.781$, $p = .000$) and prosocial silence ($t = -3.089$, $p = .002$),

supporting Hypotheses 4-1 and 4-3; however, the association between hierarchical culture and defensive silence was insignificant ($t = .466, p = .641$), and Hypothesis 4-2 was not supported. As a result, it can be said that innovative culture and collective culture decrease defensive silence but increase prosocial silence, while rational culture increases defensive silence but decreases prosocial silence, and hierarchical culture increases acquiescent silence but decreases prosocial silence.

Second, concerning the relationships between the four types of organizational culture and faculty–student interaction, innovative culture ($t = 2.388, p = .017$) and collective culture ($t = 3.102, p = .002$) were found to have a significant effect on faculty–student interaction, supporting Hypotheses 5-1 and 5-3. The relationships between rational culture ($t = -.790, p = .429$) and hierarchical culture ($t = -.457, p = .647$), respectively, and faculty–student interaction were insignificant, not supporting Hypotheses 5-2 and 5-4. It can be concluded that the more professors perceive innovative and collective cultures, the higher the frequency of faculty–student interaction.

Third, regarding the relationships between the three types of organizational silence and faculty–student interaction, prosocial silence was found to have a significant effect on faculty–student interaction ($t = 6.343, p = .000$), supporting Hypothesis 6-3. However, the associations between acquiescent silence ($t = .894, p = .371$) and defensive silence ($t = -.768, p = .443$), respectively, and faculty–student interaction were insignificant, so Hypotheses 6-1 and 6-2 were rejected. As a result, it can be said that faculty–student interaction increases when prosocial silence is high.

Finally, the explanatory power (SMC) of the endogenous latent variables was .440 (44%) for acquiescent silence, .611 (61.1%) for defensive silence, .648 (64.8%) for prosocial silence, and .751 (75.1%) for faculty–student interaction.

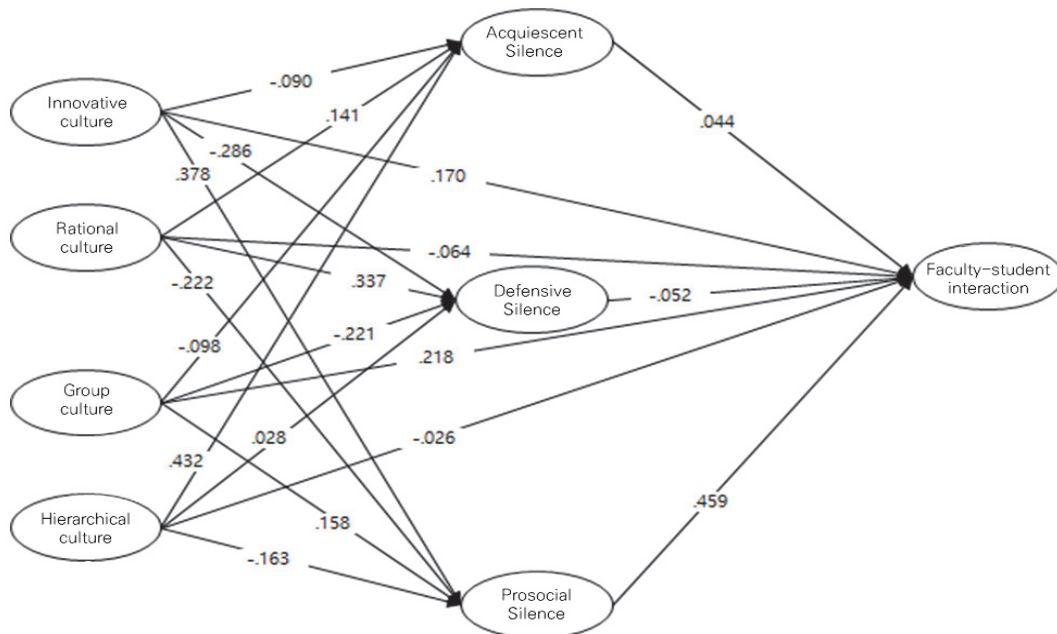


Fig. 1. Research model

5. Discussion

5.1 Conclusion

Non-Seoul universities in South Korea are currently facing a crisis of existence due to the continuous decline in the school-aged population. Most non-Seoul universities are making efforts to prepare self-rescue measures for survival. This study examined the relationships between organizational culture as perceived by non-Seoul university professors, organizational silence, and faculty–student interaction to provide implications for an efficient human resource management plan for non-Seoul university professors who are responsible for entrance examinations and education at those non-Seoul universities in crisis. This study conducted an online survey with professors working at private junior colleges and 4-year colleges located in regions outside the Seoul metropolitan area. Responses from the 421 professors who participated in the survey were used for data analysis, which was conducted using SPSS and AMOS. As a result, 11 out of 19 hypotheses were supported, and eight were rejected.

5.2 Implications

A summary of the empirical findings and their implications is as follows. First, among the four types of organizational culture perceived by professors, innovative culture and collective culture were found to decrease professors' defensive silence but increase prosocial silence. This is because the university's innovative culture encourages professors' voluntary participation and enthusiastic attitude, so professors are more likely to choose to express their opinions rather than keep silent, even if they are concerned about speaking out. Furthermore, since collective culture is based on a family-like atmosphere, collaboration, and consideration, it encourages professors to share their opinions. In this organizational culture, prosocial silence to protect the university prevails among professors. Professors at non-Seoul universities in South Korea are making efforts to avoid suffering disadvantages related to the evaluation of university structural reforms. Unlike in the past, their job now includes simultaneous responsibility for entrance examinations and education, and it is common for them to be recommended for honorary retirement. Organizational silence will be lowered when an organizational culture suited to the rapidly changing external environment affecting non-Seoul universities is formed. As this study's findings show, if the university develops an innovative culture that actively accepts the rapidly changing external environment and facilitates the free expression of professors' opinions, while fostering a collective culture that values harmonious interpersonal relationships between professors, defensive silence will decrease, and prosocial silence will increase among professors. To this end, school management should pay attention to allowing professors to voluntarily and freely develop and communicate creative ideas and/or educational programs, and to enabling professors to form friendly relationships rather than engage in competitions.

Second, this study found that when professors perceived rational culture to be prevalent, defensive silence increased and prosocial silence decreased. Suppose professors perceive that the university's culture values practical relations over human relations, and results over processes. In that case, they will refrain from expressing their opinions, which will hinder university development. Therefore, for non-Seoul universities to change and reform, it is necessary for professors to present their ideas, suggest measures to improve problematic areas, and provide useful information that is essential for university development. Hence, the university should prioritize the creation of an organizational culture where professors' opinions can be freely presented and utilized. It should also be noted that if this culture is not established, professors may spread negative information about their university. Therefore, school management should quickly move away from the existing culture of forcing professors to be results- and efficiency-oriented, form only practical relationships, and undergo performance-oriented evaluations.

Third, it was found that acquiescent silence increased and prosocial silence decreased among professors when they perceived hierarchical culture as high. Since hierarchical culture emphasizes orders, procedures, and regulations, professors lose the will to make any remarks toward university development. Their tendency to remain silent to protect their university also decreases when they perceive a highly hierarchical culture. Therefore, school management should strive to escape from a culture that strictly follows the procedures and regulations in a rank-oriented business handling style. It was found that the university's organizational culture positively affects silence when non-Seoul university professors perceive innovative culture and collective culture rather than rational culture and hierarchical culture.

Fourth, regarding the result of analyzing the relationships between the four types of organizational culture and faculty–student interaction, professors increase their interaction with students when they perceive innovative culture and collective culture to be prevalent. It is believed that professors at non-Seoul universities tend to be more faithful to education and more interactive with their students if they actively accept changes in the external environment and perceive a strong innovative culture that provides flexibility in solving internal problems related to the external changes. Furthermore, since Koreans have traditionally valued and accepted collective culture, faculty–student interaction also increases if non-Seoul university professors perceive a robust collective culture that values interpersonal relationships. Non-Seoul university professors have a common goal of providing quality education and effecting high employment rates among graduates in order to increase the new student recruitment rate and secure talented pupils. Smooth and efficient faculty–student interaction is crucial to achieving this goal. Accordingly, university executives should make full use of policy changes, so that professors can perceive innovative and collective cultures.

Finally, regarding the relationships between the three types of organizational silence and faculty–student interaction, prosocial silence was found to positively affect interaction between professors and students. Prosocial silence is an act that appears based on professors' cooperation with and altruism toward the university; it is a positive type of silence that increases when non-Seoul university professors perceive strong characteristics of innovative and collective cultures. Therefore, if university managers come up with various alternatives so that professors can perceive strong characteristics of innovative and collective cultures, then prosocial silence, a positive silence from the organization's standpoint, will increase, resulting in more active interactions between professors and students.

5.3 Limitations and Future Studies

Despite the implications mentioned above, this study has the following limitations that warrant future research. First, the generalizability of the findings in this study may be limited (i.e., potentially limited external validity) because the data were

collected from only 25 non-Seoul private colleges and universities. Second, since the survey subjects used self-report questionnaires, they may have selected a more socially desirable option that does not represent their actual experience, potentially biasing the results. Third, this study has a limitation resulting from using cross-sectional data and is vulnerable to common method bias. The respondents presented all information on the cause and effect variables simultaneously, resulting in potentially biased relationships between variables.

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