

A Comparative Study of Entrepreneurial Leadership and Organizational Culture Oriented toward Innovation in Central Government Agencies, Public Enterprises, and Executive Agencies

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Abstract: Research indicates that entrepreneurial leadership is positively related to organizational innovation among central government agencies, public enterprises, and executive agencies in Korea. In addition, a performance-oriented with a humane orientation supports organizational innovation, while hierarchical culture has a negative impact on organizational innovation in Korean public sectors. Among organization types, only central government agencies have been found to have a significant moderating effect on the relationship between performance-oriented culture and organizational innovation. Given that public enterprise is more market-based and that executive agencies have great autonomy in budgeting and personnel to ensure the maximization of performance, central government agencies should adopt more practices designed to improve performance in a positive work culture.

Keywords: comparative study, entrepreneurial leadership, GLOBE model; organizational culture, organizational innovation; social identity theory, organization type

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INTRODUCTION

Identifying organizational motives is helpful when examining the forces that drive innovation, such as competition and opportunities for entering new markets (OECD, 2005). It has been argued that enhancing the level of organizational innovation “not only changes an organization, but also leads to changes in the external environment or as a preemptive action to influence the environment” (Damanpour, 1996; Jung & Lee, 2016, p. 757). Organizational innovation is the implementation of a new organizational method in an entity’s management practices, workplace organization, or external relations (OECD, 2005) and is widely recognized as a crucial output for organizations (Liao & Wu, 2010), a cause of organizational value creation (Hwang, Staley, Te Chen, & Lan, 2008), and an indicator of organizational competency, growth, and service quality (Boyne, 2003; Boyne, 2006) among public and private organizations.

In accordance with earlier findings, we assume that organizational innovation may lead to benefits for both individuals and organizations. Although organizational innovation generates significant advantages, it can also have negative outcomes, such as the incurring of both tangible and intangible costs (Brown, 2001), employee resistance (Piderit, 2000), and instability within the organization (Gouldner, 1960). Despite acknowledging the drawbacks of innovation, public sector entities continue to pursue organizational innovation as a response to increased demands for organizational efficiency and effectiveness, a means to improve public service quality, a reaction to external environment changes, and a means to reduce management costs.

Similarly, despite the importance of research on innovation to public organizations, public management practitioners and researchers are confronted with a knowledge gap regarding the determinants of organizational innovation. Some scholars (Claver, Llopis, Garcia, & Molina, 1998; Frost & Egri, 1991; Tahrira & Jaegal, 2012) argue that structural and environmental factors—such as organizational culture, leadership, and structure—drives innovation. In addition, given the dominant collectivist mindset (House, Hanges, Javidan, Dorfman, & Gupta, 2004) that is evident in the Korean public sector, we would expect external factors to influence innovation more than personal behavior. So, when it comes to considering the factors likely to foster innovation in Korean organizations, we stress leadership and organizational culture.

This study aims to identify the effects of the various dimensions of organizational culture—namely, hierarchical culture, performance-oriented culture, and humane-oriented culture—among central government agencies, public enterprises, and executive agencies in Korea. More specifically, the current study focuses mainly on exploring

the similarities and differences between public sector entities as regards organizational innovation by utilizing survey data on Korean public employees' attitudes and behaviors collected from March to August 2015. First, we drew on prior research and literature on entrepreneurial leadership, including various types of organizational culture and organizational innovation in the hierarchical system prevalent in central government agencies, public enterprises, and executive agencies in Korea. We then used quantitative research methods to develop and test several hypotheses to answer questions such as to what extent does entrepreneurship in Korean public leaders increase organizational innovation, what types of organizational culture predominate in public organizations, and which types of organizational culture are most likely to demonstrate organizational innovation. We conclude by discussing the implications of our research for Korean public human resource management and organizational theory and practices.

Main Aspects of the Korean Public Sector

In general, public sector organizations provide public services and deliver public goods, in the context of respecting public values and pursuing public interests. Public organizations respond to different challenges in their role and exist in a variety of forms, depending on the services they provide. According to Renin Varnali's (2015) research, the nature of a given organizational culture depends on the specific type of organizational climate, known as the human resource (HR) climate, that it finds itself in. Furthermore, we posit that the level of organizational innovation is a function of organizational characteristics (e.g., values, goals, and missions). We conducted an F-test on a sample of Korean public employees working in central government agencies, public enterprises, and executive agencies to investigate their similarities and differences as regards organizational culture and innovation.

Central government agencies operate public management at the national level, although various ministries in the executive branch also perform local functions. They are headed by the president, and the establishment and scope of the functions of central administrative agencies is determined by national law. There is a notable variety of agency types. Central government agencies are normally distinct from departments, ministries, and other types of public bodies established by the government. These agencies' functions are normally executive in character, while other types of organizations (such as commissions) often assume an advisory role; however, this distinction is often blurred in practice.

Public enterprises are directly financed and operated by the state, local government, or public entities for the benefit of the public. They are categorized by the

operating authority as a state-run enterprise, a publicly operated enterprise, or a specially incorporated enterprise. In Korea, public enterprises, including state-owned enterprises, are regulated and governed by the Act on the Management of Public Institutions. The minister of strategy and finance is responsible for designating enterprises as public. Pursuant to Article 5 (3) of the act, public enterprises include market-based public corporations (e.g., KEPCO, Incheon International Airport), whose asset size reaches or exceeds ₩2trillion and whose self-generated revenue as a proportion of total revenue reaches or exceeds the criterion prescribed by presidential decree, and quasi-market-based public corporations (e.g., KORAIL, Korea LH Corp.), which covers all other public enterprises that do not meet the criteria of the market-based public corporations (www.koreanlii.or.kr).

An executive agency is a part of a government department and is treated as a separate managerial and budgetary entity; it is responsible for performing specific part(s) of the department's executive duties. The Korean government introduced the executive agency system through the Executive Agency Act, which was ratified in 1999. As in other countries, executive agencies in Korea are given flexibility and autonomy in managing human resources, handling budget for operating, and changing their organizational structures. Furthermore, these agencies are permitted to spend extra budgetary funds for their own purposes. Decisions on staffing and recruitment are made by the agencies themselves. Additional profits obtained from an agency's activities are retained by that agency. Korea has several types of executive agencies, including statistics bodies, research institutes, educational institutions, theaters, hospitals, operating centers, and headquarters (Berman, Moon, & Choi, 2010, p. 431).

THEORETICAL BACKGROUND

New Public Management (NPM) reforms have underlined the improvement of capacity, processes of reinvention and reengineering, entrepreneurship, privatization, and performance measurement (Lane & Woodard, 2001; Park & Joaquin, 2012; Osborne, 2006). The NPM posits that the main reason organizations encourage innovation is to maximize efficiency, and innovation adoption and the diffusion of innovation across countries and among public agencies within countries have been described from diverse perspectives (Jung & Lee, 2016, pp. 759-760). Korean public sector organizations that have implemented NPM reforms since the early 2000s and organizational reform and innovation have done so, we can infer, because these reforms have been perceived as essential for organizational efficiency, effectiveness, and performance.

The conventional innovation models focus mainly on structural and environmental drivers of innovation, however, and fail to explain the role of the human behavioral factors in the process of innovation (Claver et al., 1998). Richard Daft (1982) suggests that the members of an organization should take all circumstances into consideration in order to accurately model organizational innovation. In addition, Peter Frost and Carolyn Egri argue that “these models of innovation depict an incomplete representation of reality which bears only tangential reference to energy and forces of the human agents involved” (1991, p. 235). Consistent with these positions, we posit that organizational values, norms, and cultures are important factors for understanding the process of innovation.

Person-organization (P-O) fit and social identity theory (SIT) may support the usefulness of cultural perspectives for understanding the complex nature of innovation. The following is a brief overview of the main theoretical perspectives. P-O fit has been defined in a number of ways, including as the degree of compatibility or fit between an individual’s and an organization’s values, goals, and characteristics (Lauver & Kristof, 2001) and the degree of compatibility between personal characteristics and organizational atmosphere (Bowen, Ledford, & Nathan, 1991). The organizational innovation through which organizations achieve their everyday goals and accomplish their mission plays an essential role by establishing the characteristics of the organization’s services. Organizational culture in the field of organizational behavior research can be understood in terms of P-O fit (e.g., Bowen et al., 1991; Lauver & Kristof, 2001) as it refers to employees’ shared values and goals as the extant criteria for organizational performance and success.

In addition, employees’ perception that their organization is innovative cause them to feel a sense of pride and loyalty, which in turn leads them to further immerse themselves in their work at their organization (Pyrozhenko, 2016). According to SIT, people “seek to confirm or establish favoring evaluative distinctiveness between in-group and out-group, motivated by an underlying need for self-esteem” (Turner, 1975; see also Hogg & Terry 2000, p. 122). Employees may compare the capacity or reputation of their “in-group” with the “out-group”; based on positive evaluations, employees are more likely to reinforce organizational socialization, identification, loyalty, internalization, and commitment (Ashforth & Mael, 1989). We introduce SIT as a platform that explain, in detail, how self-categorization and depersonalization derive from social identity phenomena (Hogg & Terry, 2000). In addition, we describe how these processes, which comprise the interaction effect of social identity, are consistent with the self-enhancement motivational aspects of SIT (Hogg & Terry, 2000). Thus, we posit that the positive aspects of organizational culture accompanied by commitment are congruent with individual and managerial capacities and, there-

fore, that high levels of such positive aspects enhance organizational innovation.

Organizational Culture: The Perspective of the GLOBE Model

Organizational culture can be defined as a pattern of basic assumptions that are invented, discovered, or developed by a given group as the organization learns to cope with the problems of external adaptation and/or internal integration (Schein, 1992). From the perspective of P-O fit theory, organizational culture plays a prominent role in individual and group behavior within organizations (O'Reilly, Chatman, and Caldwell, 1991). Each employee is suited to certain organizational cultural environments. Thus, to obtain positive organizational outcomes, achieving compatibility between the employee and his or her organizational cultural environment is crucial. The organizational framework is built on two dimensions with two axes, each representing a superordinate continuum. The first is the flexibility-control axis, and the second is the internal-external axis. Combining these two axes yields the following four cultural dimensions: group, developmental, hierarchical, and rational (Quinn & Kimberly, 1984).¹

During the 1990s, Robert J. House and colleagues (2004) conducted the GLOBE (Global Leadership and Organizational Behavior Effectiveness) project, a cross-cultural study of 62 societies across the world. One of the project's main contributions was identification of nine cultural dimensions: uncertainty avoidance, power distance, institutional collectivism, in-group collectivism, gender egalitarianism, assertiveness, future orientation, performance orientation, and humane orientation. The GLOBE project was designed not only to predict common practices and personality traits of leaders in the societies in which they lived but also to facilitate development of a model of the ideal society (Minkov & Blagoev, 2012), but in this study, we use it to measure the aspects of organizational innovation in Korean public sector organizations. More specifically, we describe three major types of organizational culture through the competing values framework: a hierarchical culture characterized by uncertainty avoidance, power distance, and institutional collectivism, a perfor-

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1. Group culture emphasizes flexibility and internal organization. Organizations that emphasize group culture consequently promote the development of human resources by focusing on openness, participation, cohesiveness, and commitment to membership. Development culture also emphasizes flexibility, but with a focus on the external environment. The orientation of a development culture is toward growth, stimulation of creativity, resource acquisition, innovation, and continual adaptation to the external environment. Likewise, rational culture is focused on the external environment, but is control oriented. It emphasizes productivity, performance, and goal achievement.

mance-oriented culture delineated by assertiveness and a future orientation, and an achievement-minded approach, and a humane-oriented culture defined by in-group collectivism, gender egalitarianism, and a benevolent mindset.

Following its remarkable economic growth and social development, Korea has been actively adapting Western cultural ideas, seeking to harmonize them with traditional Korean cultural ideas premised on Confucian values. We use the GLOBE model to determine the extent to which Western organizational cultural perspectives have been incorporated into Korean public sector organizations by investigating the impact of GLOBE's nine cultural dimensions on their organizational innovation. Moreover, we examine whether the three types of organizational culture have different effects on central government agencies, public enterprises, and executive agencies in Korea.

Entrepreneurial Leadership and Organizational Innovation

Two concepts that are important in leadership theory are trait theory (e.g., Stogdill, 1974) and contingency theory (e.g., Fiedler, 1964; Vroom & Jago, 2007), and in recent years, many accounts of various leadership styles have been proffered. Transactional and transformational leadership, for example, have been frequently proposed as highly influential with respect to individual behaviors and organizational performance. Scholars have also identified new leadership perspectives that place more emphasis on how public organizations effect reform in turbulent environments. In our investigation of the relationship between leadership and organizational innovation, we refer to entrepreneurial leadership—which is strongly manifested in leaders who take risks, search for new methodologies, and reshape organizational routines and behaviors (Ricard, Klijn, Lewis, & Ysa, 2017)—as an antecedent of organizational innovation.

The notion of entrepreneurial leadership fuses the concepts of entrepreneurship (Schumpeter, 1983 [1902]), entrepreneurial orientation (Covin & Slevin, 1988), and entrepreneurial management (Gupta, MacMillan, & Surie, 2004) with leadership. It highlights leadership that takes “a strategic approach to entrepreneurship” and that values entrepreneurial initiatives, which on this account always support the development of enhanced capabilities in an organization (Gupta et al., 2004, p. 243). Other research has suggested that entrepreneurial leadership can increase creativity and innovativeness (Pihie, Asimiran, & Bagheri, 2014; Kim, Park, & Miao, 2017), ensure that those who subsequently assume leadership roles are well trained (White, D'Souza, & McIlwraith, 2007), improve organizational performance, foster growth (Ruvio, Rosenblatt, & Hertz-Lazarowitz, 2010), and increase social capital (Leitch, McMul-

lan, & Harrison, 2013). Using exploratory factor analysis and confirmatory factor analysis (CFA), Lykke Margot Ricard and colleagues (2017) show that entrepreneurial leadership is one of the leadership types that actively supports innovation. Jintong Tang and colleagues (2014) have also verified the positive effect between entrepreneurial orientation and innovation. These considerations led us to hypothesize that when public employees perceive leaders to be more entrepreneurial in central government agencies, executive agencies, and public enterprises, the level of organizational innovation will be higher.

Organizational Culture and Organizational Innovation

In the public sector, innovation refers to a wide variety of phenomena, ranging from an agency's introduction of new technologies and service delivery strategies to the introduction of new policies by a government (Jung & Lee, 2016, p. 761). Even though research into organizational innovation has proliferated rapidly over the past 20 years, the notion of organizational innovation still remains in the developmental phase (Skuzza & Woldu, 2012). The range of related literature is likewise huge, covering such diverse topics as organizational learning (Beyene, Shi, & Wei, 2016; Jiménez-Jiménez & Sanz-Valle, 2011; Thorsell, 2007; Wang, 2008), organizational change (Szulanski 1996), knowledge management (Kiesling & Harvey, 2006; Meroño-Cerdan & López-Nicolas, 2013), organizational culture or climate (Chaveerug & Ussahawanitchakit, 2008; Jung & Lee, 2016; Skuzza & Woldu, 2012), and human resource management (HRM) practices (Jiang, Lepak, Hu, & Baer, 2012; Jiménez-Jiménez & Sanz-Valle, 2008; Laursen, 2002; Laursen & Foss, 2003). Most of this research seeks to understand what fosters organizational innovation and how organizational environments can better adapt to facilitate innovation. Recently, there have been new approaches regarding the determinants of organizational innovation that take into account both the "hard perspective" of financial expenditure (e.g., R&D expenditure, number of patents, etc.) and the "soft perspective" of human resources practices (e.g., leadership, organizational culture, knowledge management, etc.) (Skuzza & Woldu, 2012). As the soft perspective is especially underinvestigated in the public sector, the goal of this study is to contribute to filling this gap in the Korean context.

There are many definitions of organizational innovation. It has been described in terms of administrative innovation with respect to a series of basic activities within the organization, such as administration, management, marketing, purchases, sales, and staff policy (Damanpour, Walker, & Avellaneda, 2009; Jiang et al., 2012). The general perception of the importance of organizational innovation as a source of orga-

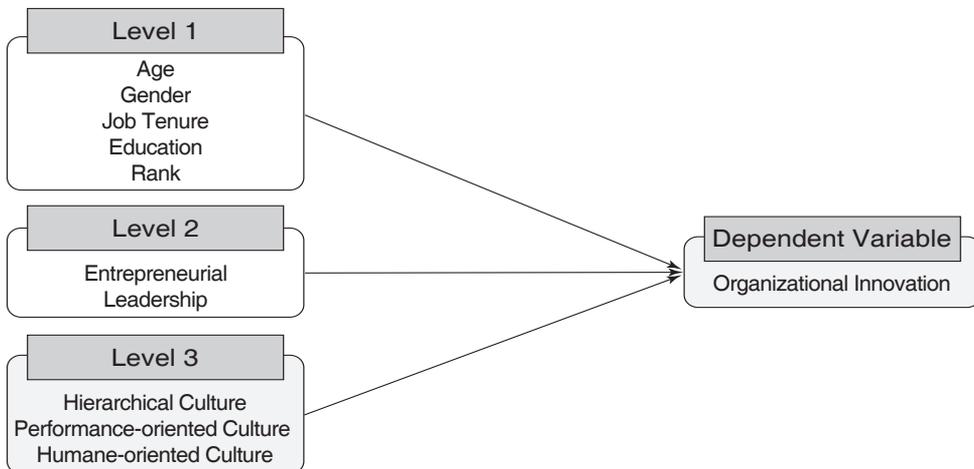
nizational vitality had led to a number of studies that have investigated the crucial determinants of organizational innovation. For instance, utilizing the data of 247 non-profit human service organizations in the U.S., Kristina Jaskyte and William Dressler (2005) found that organizational culture determines the likelihood of organizational innovation and is controlled by leadership and organization size. Chan Su Jung and Geon Lee (2016) conducted an empirical study of 14 central government agencies in Korea, utilizing a probability-based stratified sampling method. They found that the hierarchical organizational climate is positively related with employees' aspirations for organizational innovation. Furthermore, HRM scholars have observed that effective human resources practices—such as hiring and selection that is fair and grounded in an intention to hire the best person for the job, good training, performance appraisals, rewards, good job design, and teamwork—the bedrock of organizational culture—have a positive impact on organizational innovation (Ding & Akhtar, 2001; Jiménez-Jiménez & Sanz-Valle, 2008; Laursen & Foss, 2003; Mark & Akhtar, 2003; Storey, Quintas, Taylor, & Fowle, 2002). Recently, utilizing formal survey data from textile and leather product manufacturing firms in Ethiopia, Kinfey Beyene and colleagues (2016) investigated the impact of national culture (e.g., power distance, collectivism, masculinity, and uncertainty avoidance) on product innovation performance in terms of project and commercial performance. Their findings suggest that higher power distance and higher uncertainty avoidance have a negative impact on product innovation performance, while a characteristically masculine culture is positively related with project performance innovation, and a highly collectivist culture is positively related with commercial performance innovation. In addition, HRM studies grounded in NPM perspectives argue that higher levels of performance culture could increase organizational innovation. Finally, the diversity management movement, which supports the idea of innovativeness being expressed through different perspectives, suggests that employee's perceptions of organizational culture can regulate the level of organizational innovation. We thus posit that when public employees in central government agencies, executive agencies, and public enterprises perceive their organizational culture to be less hierarchical and to be more performance- and humane-oriented, the level of organizational innovation will be higher.

METHODOLOGY

Based on our review of existing research findings, we constructed a research model (as shown in Figure 1) to illustrate the relationships between individual characteristics (e.g., age, gender, job tenure, education, and rank), entrepreneurial leader-

ship, organizational culture—comprising hierarchical culture, performance-oriented culture, and humane-oriented culture—and organizational innovation by organizational types (i.e., central government agencies, executive agencies, and public enterprises) in the Korean public sector.

Figure 1. Research Framework



Data and Sample

We performed an empirical analysis using the results of the Public Sector Entrepreneurship Survey conducted by the Global Research Network teams at Sungkyunkwan University. The survey targeted public officials working in Korean public institutions, including central government agencies (N = 455), executive agencies (N = 187), and public enterprises (N = 359), and its goal was to understand employees' attitudes and organizational behaviors. The Global Research Network teams conducted quota sampling to ensure that the demographic background of the surveyed public organization members adequately reflected the population. A representative number of respondents were allocated to each sample group, based on age, gender, job tenure, education, and rank. The respondents comprised 1,001 public officials from 37 different agencies in Korea.

Table 1. Characteristics of Central Government Agencies

Central Government Agencies (N = 455)				
Variables	Mean	Standard Deviation	Minimum	Maximum
Control Variables				
Age	2.60	0.78	1	5
Gender	1.38	0.48	1	2
Job Tenure	3.56	1.34	1	5
Education	2.89	0.75	1	5
Rank	3.24	1.40	1	7
Leadership				
Entrepreneurial Leadership	4.72	1.05	1	7
Organizational Culture				
Hierarchical Culture	4.88	0.85	2.17	7
Performance Oriented Culture	4.27	0.76	2	6.83
Humane-Oriented Culture	4.51	0.78	1.67	7
Outcome				
Organizational Innovation	4.53	1.11	1	7

Table 2. Characteristics of Executive Agencies

Executive Agencies (N = 187)				
Variables	Mean	Standard Deviation	Minimum	Maximum
Control Variables				
Age	2.78	0.84	1	4
Gender	1.46	0.50	1	2
Job Tenure	3.53	1.49	1	5
Education	3.34	0.88	1	5

Rank	3.48	1.38	1	7
Leadership				
Entrepreneurial Leadership	4.39	1.17	1	7
Organizational Culture				
Hierarchical Culture	4.83	0.81	1.83	7
Performance Oriented Culture	4.08	0.90	1	7
Humane-Oriented Culture	4.47	0.91	1.50	7
Outcome				
Organizational Innovation	4.29	1.08	1	7

Table 3. Characteristics of Public Enterprises

Public Enterprises (N = 359)				
Variables	Mean	Standard Deviation	Minimum	Maximum
Control Variables				
Age	2.36	0.77	1	4
Gender	1.31	0.46	1	2
Job Tenure	2.96	1.39	1	5
Education	3.14	0.59	1	5
Rank	2.90	1.56	1	7
Leadership				
Entrepreneurial Leadership	5.01	1.06	1	7
Organizational Culture				
Hierarchical Culture	4.96	0.84	2	7
Performance Oriented Culture	4.43	0.88	1.50	7
Humane-Oriented Culture	4.80	0.90	2.33	7
Outcome				
Organizational Innovation	4.85	1.12	2	7

Variable Measurement

We asked all respondents to indicate the degree of entrepreneurial leadership, hierarchical culture, performance-oriented culture, humane-oriented culture, and organizational innovation in their public organizations using a 7-point Likert-type scale. For entrepreneurial leadership, we asked 14 questions about individuals' perceptions of their leaders' behaviors such as framing the challenge, absorbing uncertainty, path clearing, building commitment, and specifying limits that we developed based on Vipin Gupta and colleagues' framework (2004). We assessed the extent of hierarchical culture, performance-oriented culture, and humane-oriented culture using six questions adapted from House and colleagues' (2004) study. We measured organizational innovation with nine questions derived from the research of Jeffrey Covin and Dennis Slevin (1989), and Fabian Diefenbach (2011). Sample items include "My agency is open to innovations," "My agency rarely behaves hesitantly," and "My agency also undertakes promising but risky projects." All the survey questions are presented in the appendix.

Test for Common Method Bias

Because we used self-reported measures, we took several precautions to prevent common method variance (CMV), following the suggestions of Morten Jakobsen and Rasmus Jensen (2015). As the authors recommend, we adapted Harman's single-factor test as a post hoc test. This more exact test showed all factors with eigenvalues above 1, with a total variance of only 42% explained by the first factor; this is well under the 50% threshold suggested as the cut-off point.

STATISTICAL MODELING AND RESULTS

Reliability and Validity Tests

To verify the reliability of each variable in the research model, we performed an internal consistency analysis. The results of this analysis show Cronbach's α , which validates the reliability of the measuring tool (see table 4).

In addition, to test the latent constructs of the research variables in the Korean public sector, we employed a first-order confirmatory factor analysis model of those variables. The comparative fit index, normed fit index, incremental fit index, relative fit index, root mean square residual, and root mean square error of approximation

values in the models suggest our model for Korean public sector organizations can be considered a very good fit for the data.

Table 4. Reliability Tests and Confirmatory Factor Analysis Results

Reliability Tests						
Cronbach's α	Entrepreneurial Leadership	Hierarchical Culture	Performance-Oriented Culture	Humane-Oriented Culture	Organizational Innovation	
Central Government Agencies	.955	.751	.717	.565	.927	
Executive Agencies	.952	.724	.761	.659	.918	
Public Enterprises	.954	.719	.788	.657	.931	
Confirmatory Factor Analysis Results						
Model	X ² /df	RFI	NFI	IFI	CFI	RMSEA
Suggested Cut-Off Values	< 3	> 0.90	> 0.90	> 0.90	> 0.90	< 0.08
Central Government Agencies	2.93	.850	.866	.907	.907	.065
Executive Agencies	2.01	.794	.813	.896	.895	.074
Public Enterprises	2.53	.851	.869	.916	.916	.065

ANOVA Analysis

To test the question of whether there are significant differences in the organizational cultures of central government agencies, public enterprises, and executive agencies in the Korean public sector, we carried out an ANOVA (f-test) analysis of entrepreneurial leadership and organizational culture. To test for statistically significant differences between these organizational types, we conducted the ANOVA analysis after we had divided the sample into central government agencies (group 1), executive agencies (group 2), and public enterprises (group 3). The test results, reported in table 1, show that the mean level of entrepreneurial leadership ($F = 21.568$, significance = .000), performance-oriented culture ($F = 11.152$, significance = .000), humane-oriented culture ($F = 13.115$, significance = .000), and organization-

al innovation ($F = 18.029$, significance = .000) among each of the Korean public sector organizations is statistically significant.

Table 5. F-Test Results

		Sum of Squares	Degrees of Freedom	Mean Square	F	Significance
Entrepreneurial Leadership	Regression	50.641	2	25.320	21.568	.000
	Residual	1181.002	1006	1.174		
	Total	1231.643	1008			
Hierarchical Culture	Regression	2.777	2	1.389	1.915	.148
	Residual	781.633	1078	.725		
	Total	784.410	1080			
Performance-Oriented Culture	Regression	15.774	2	7.887	11.152	.000
	Residual	762.365	1078	.707		
	Total	778.139	1080			
Humane-Oriented Culture	Regression	19.481	2	9.740	13.115	.000
	Residual	800.640	1078	.743		
	Total	820.121	1080			
Organizational Innovation	Regression	44.717	2	22.359	18.029	.000
	Residual	1247.581	1006	1.240		
	Total	1292.298	1006			

Hierarchical Multivariate Regression

To investigate the possible causal relationships among the individual characteristics, entrepreneurial leadership, organizational culture, and organizational innovation, we undertook a hierarchical multivariate regression analysis. Level 1 takes into account individual characteristics, level 2 incorporates entrepreneurial leadership, and level 3 covers the three types of organizational culture. We regressed two different equations on organizational innovation in order to determine if there were changes in total variance induced by each set of factors (R^2 changes). We used β to represent the

standardized regression coefficient that estimates the relative importance of each antecedent variable association with organizational innovation.

Table 6. Central Government Agencies

Independent Variables	Dependent Variable: Organizational Innovation		
	Model 1	Model 2	Model 3
	t-statistics ()	t-statistics ()	t-statistics ()
Step 1: Demographic			
Age	-1.412(-.105)	-.358(-.023)	-.525(-.030) -.036
Gender	-.661(-.032)	-.308(-.013)	.521(.019) -.022
Job Tenure	3.631***(.275)	1.976**(.129)	1.951**(.112) .083
Education	.580(.029)	1.568(.066)	1.770(.066) .055
Rank	1.635(.042)	.873(.039)	.650(.026) .015
Step 2: Leadership			
Entrepreneurial Leadership		13.235***(.528)	4.228***(.203) .239
Step 3: Organizational Culture			
Hierarchical Culture			-3.493***(-.122) -.055
Performance-Oriented Culture			8.491***(.386) .329
Humane-Oriented Culture			3.936***(.190) .258
	adjR ² = .060	adjR ² = .325	adjR ² = .478
	F = 5.779, p = .000	F = 35.878, p = .000	F = 45.290, p = .000
	D.W. = 1.959		
	D.W. = 2.023		
	D.W. = 2.027		

** $p < 0.05$, *** $p < 0.01$

Table 6 shows the relationships among the individual characteristics, entrepreneurial leadership, organizational culture, and the organizational innovation of Korean central government agencies. First, we regressed individual characteristics regressed on organizational innovation. This regression reveals that job tenure ($\beta =$

.112, $p < .05$) is significantly associated with organizational innovation, which suggests that agencies with long-term employees are more likely to have a higher level of organizational innovation. It also reveals that entrepreneurial leadership ($\beta = .203$, $p < .01$) is significantly associated with organizational innovation and that hierarchical culture ($\beta = -.122$, $p < .01$), performance-oriented culture ($\beta = .386$, $p < .01$), and a humane-oriented culture ($\beta = .190$, $p < .01$) are significantly associated with organizational innovation.

Table 7. Executive Agencies

Independent Variables	Dependent Variable: Organizational Innovation		
	Model 1	Model 2	Model 3
	t-statistics ()	t-statistics ()	t-statistics ()
Step 1: Demographic			
Age	-280(-.031)	-1.577(-.140)	-1.187(-.084) -.036
Gender	-.051(-.004)	.197(.012)	.307(.759) -.022
Job Tenure	2.332***(.275)	3.269***(.307)	3.011***(.226) .083
Education	1.408(.116)	2.436**(.159)	1.995**(.109) .055
Rank	-1.936(-.197)	-1.413(-.115)	-.751(-.049) .015
Step 2: Leadership			
Entrepreneurial Leadership		10.270***(.605)	3.554***(.217) .239
Step 3: Organizational Culture			
Hierarchical Culture			-.131(-.006) -.055
Performance-Oriented Culture			6.728***(.408) .329
Humane-Oriented Culture			4.953***(.294) .258
	adjR ² = .043	adjR ² = .397	adjR ² = .627
	F = 1.640, p = .000	F = 19.734, p = .000	F = 33.109, p = .000
	D.W. = 1.959 D.W = 2.023 D.W = 2.027		

** $p < 0.05$, *** $p < 0.01$

Table 7 reports the degree of organizational innovation in executive agencies. First, we regressed individual characteristics were on organizational innovation. The results indicate that job tenure ($\beta = .226, p < .01$) and education ($\beta = .109, p < .05$) are significantly associated with organizational innovation, suggesting that long-term employees and higher level of education are more likely to have a higher degree of organizational innovation. The results also indicate that entrepreneurial leadership ($\beta = .217, p < .01$) is significantly associated with organizational innovation and that a performance- ($\beta = .408, p < .01$) and humane-oriented culture ($\beta = .294, p < .01$) are significantly associated with organizational innovation in Korean executive agencies.

Table 8. Public Enterprises

Independent Variables	Dependent Variable: Organizational Innovation		
	Model 1	Model 2	Model 3
	t-statistics ()	t-statistics ()	t-statistics ()
Step 1: Demographic			
Age	.148(.011)	-.831(-.048)	-618(-.031) -.036
Gender	-1.697 (-.094)	-1.401(-.060)	-2.122**(-.079) -.022
Job Tenure	.759(.060)	-.306(-.019)	-.452(-.024) .083
Education	2.035**(.111)	.767(.032)	.619(.023) .055
Rank	.809(.060)	2.549**(.011)	1.710(.086) .015
Step 2: Leadership			
Entrepreneurial Leadership		15.713***(.640)	5.645***(.286) .239
Step 3: Organizational Culture			
Hierarchical Culture			-1.793(-.065) -.055
Performance-Oriented Culture			6.892***(.322) .329
Humane-Oriented Culture			5.147***(.258) .258
	adjR ² = .035	adjR ² = .431	adjR ² = .568
	F = 3.570, p = .004	F = 46.197, p = .000	F = 53.253, p = .000
	D.W. = 1.974		
	D.W. = 2.023		
	D.W. = 2.027		

** $p < 0.05$, *** $p < 0.01$

Table 8 records the effects of individual characteristics, entrepreneurial leadership, and organizational cultures on the organizational innovation of Korean public enterprises. The analysis shows that gender ($\beta = -.079, p < .05$) is significantly associated with organizational innovation. That is, female public employees show a higher degree of organizational innovation. It also shows that entrepreneurial leadership ($\beta = .286, p < .01$) is significantly associated with organizational innovation and that a performance- ($\beta = .322, p < .01$) and humane-oriented culture ($\beta = .258, p < .01$) are significantly associated with organizational innovation.

DISCUSSION

Conclusions and Implications

In our research, we have explored strategies for enhancing organizational innovation in the Korean public sector by analyzing the effect of entrepreneurial leadership and organizational culture—that is, hierarchical culture, performance-oriented culture, and humane-oriented culture—as defined and classified by the GLOBE model. Further, we investigated whether there are differences in the factors that encourage innovation among the different types of organization (i.e., central government agencies, public enterprises, and executive agencies). Although a number of researchers have investigated the antecedents of organizational culture, no studies to date have compared the various types of public organization. To fill this gap, we analyzed the differences in antecedents of organizational innovation by organizational types in the public sector.

Our analysis of survey data shows that entrepreneurial leadership is a significant antecedent of organizational innovation no matter what the type of organization is. These results complement those of other studies (Pihie et al., 2014; Kim et al., 2017), contributing to theoretical accounts of innovation in the public sector in demonstrating that entrepreneurial leadership influences organizational innovation in a positive way and thus confirming our hypothesis that that when public employees in central government agencies, executive agencies, and public enterprises perceive leaders to be entrepreneurial, the level of organizational innovation will be higher. These results provide a sufficient rationale for the idea that the capacity and attitude of the entrepreneurial leader are crucial in boosting innovation in the public sector regardless of the organizational type. For example, setting high goals and presenting a vision for the future, having an unusual ability to persuade others of his or her viewpoint based on skill in interpersonal relations, demonstrating strong

positive emotions regarding work, seeking continuous performance improvement, and making decisions firmly and quickly may be required for leaders if they are to enhance organizational innovation. Given that the leaders of central government agencies are appointed by the president, leaders should keep their guard up against political pressure or undesirable intervention. In particular, the leader who plays a role in influencing the direction of the organization needs to have a decisive attitude about organizational innovation. Because leaders of Korean executive agencies are required to ensure that employees adhere to the terms of performance-based contracts, they have relatively high level of autonomy when it comes to budgeting and personnel. This means that their systems environment is good for executing entrepreneurial leadership. There has also been criticism of unfair hiring practices of leaders of public enterprises, such as a shortening of the application period to give certain candidates an unlawful advantage. In order to form an environment conducive to entrepreneurial leadership, fairness in the selection stage is important. Further, we have to consider how to boost the entrepreneurial leadership of the leader in the public sector from the viewpoint of human resource development. Providing entrepreneurial leadership training programs for leaders in the public sector is as important as selecting the right person for the job.

Our research indicates that certain types of organizational culture encourage or discourage organizational innovation. That is, a more performance- and humane-oriented culture is helpful in enhancing organizational innovation in all three types of public organizations. However, hierarchical culture has only negative effects on the ability of central government agencies to be innovative. Efforts should therefore be made to cultivate a culture in which employees are given a chance to speak freely and their opinions are respected. The private sector has made systematic attempts to reduce the level of hierarchy in the workplace. Currently, the ranking system, ranging from level nine to level one, strengthens the hierarchical mindset of the public sector.

Additionally, public employees at lower levels must be systematically encouraged to take risks in their jobs and to make decisions. Red tape and too many chains of command and reporting lines make employees less willing to take risks. Giving discretionary power to the middle and lower levels of public employees is likely to fuel innovation in the public sector. Another aspect of hierarchical culture is institutional collectivism, which encourages public employees to sacrifice their own interests and promoting that of the group instead, a mindset that may diminish the possibility of organizational innovation. Above all, entrepreneurial leaders need to forge a link between organizational and individual goals.

The results of our study also support the argument that performance-oriented

culture should be strengthened in the public sector. This is consistent with the criticism of the inherent inefficiency of the public sector compared to private sector. The public sector has adopted practices designed to enhance performance, such as performance contracts and performance evaluations as part of the NPM wave. However, the effectiveness of these practices has come into question, as undesirable consequences have been reported in the media, such as the sharing of performance-based pay on a rotation system. In order for the effectiveness of performance-oriented culture to be enhanced, the importance of ethical values within the organization must be stressed. Further, the criteria by which performance is evaluated should be reconsidered given that, for example, performance evaluations have been criticized for not taking into account how much time certain tasks take. Using the same criteria to assess all performances, regardless of the nature of the work being gauged, might make evaluations meaningless and merely turn them into more paperwork to prepare.

the results of our analysis also indicate that in-group collectivism fosters innovation, presumably because the sense of belonging to an organization helps employees feel positively connected to it. That is, employees see their in-group's achievement and reputation as linked to their individual performance, which supports the SIT theory, as we expected. In addition, gender equality between employees and treating employees humanely foster organizational innovation. There have been complaints, for example, about the fact that public employees cannot take advantage of work-life balance programs, although it is a benefit they are entitled to use. For example, if female employees take maternity leave, they may be passed over for promotion, which may erode their motivation to perform, resulting in a key obstacle to organizational innovation. A friendly and supportive climate should be cultivated within the public sector that counteracts negative perceptions about one's work being influence by one's family, as in the end, benefits such as enhanced organizational innovation accrue to organizations that foster a nurturing culture. In short, not treating employees as a resource or a means to reach an organizational goal and respecting them has a positive effect on organizational innovation.

Finally, our comparison of the three types of organizations suggests that organizational innovation is negatively affected by a hierarchical culture only in central government agencies. This result is noteworthy, considering the prevalence of that culture in central government agencies. Out of the three types of public organizations, the central government agency is the furthest from a market-based organization. Central government agencies need to adopt more practices that make the ranking system more flexible and that stress the concept of performance in a positive work culture.

Above all, the results of the current study provide empirical grounds for arguing that innovation in central government agencies requires a performance-oriented culture. When public officers are making a decision, for example, they need to be encouraged to take a long-term perspective and not just consider the immediate effects that might result from their decision. In recent years, NPM criticism concerning inefficiency in the public sector has meant that public employees have felt pressure to produce visible results. This suggests that there is a danger that the long-term perspective will be neglected. Given the job rotation system in the central government agencies, efforts to promote a future-orientated climate in the organization should be undertaken.

Among the driving forces of innovation in executive agencies, performance-oriented culture is the most significant antecedent. According to a recent report from the Ministry of the Interior and Safety, citizen satisfaction with executive agencies has been increased steadily during the last seven years, which suggests they are succeeding in their efforts to innovate. Starting in 2015, the salary of the heads of executive agencies was no longer determined by the ranking system of public officials. Several heads' salary, for example, now exceeds even those of ministers. Further, if the performance of the head of the executive agency is outstanding, his or her term may be extended for a maximum of eight years. Despite this progress, executive agency employees still tend to regard a hierarchical culture and a humane-oriented culture as more important than a performance-oriented culture. In light of how crucial a performance-oriented culture is in fostering organizational innovation, processes need to be designed to establish one not just for heads of agencies but also for the other employees in a given agency.

That innovation in public enterprises in Korea are strongly affected by performance-oriented culture is not surprising given demands that they enhance their performance in the face of criticism over ineffective management and inefficient spending. The IMF crisis shook the foundation of the Korean economy, and thus the government launched an operation to overhaul public organizations including public enterprises. However, there are inherent obstacles to improving performance in public enterprises since most are monopolies and therefore are at little risk of going out of business due to lack of financial support from the government (Kim, Hong, & Kim, 2008), sowing the seeds for multilevel principal-agency problems (Kim, 2002). To address these problems, the Korean government has privatized several public enterprises since 1997, and in 2004, it introduced a public enterprises performance evaluation system. It also holds public contests to fill agency head positions, and has undertaken an investigation of customer satisfaction. Such efforts to tackle inefficiency in public enterprises have created a performance-oriented ethos among employees in them. Additionally, given that public enterprises are more market-based and have

the autonomy in budgeting and personnel matters to ensure maximization of performance, talented leaders are essential, an idea that is consistent with previous studies showing that the innovation of public enterprises calls for competent leaders (Kim et al., 2008).

Limitations and Future Research Directions

In a society in which the importance of innovation is emphasized by practitioners and scholars alike, research on organizational innovation has deep practical implications. In this article, we have presented methods for increasing organizational innovation in three types of public sector organization. We have shown that entrepreneurial leadership is a key factor regardless of the type of organization. Further, we have proposed methods for forming and cultivating the most appropriate organizational culture in the public sector. Our suggestions are based on the empirical and statistical results of our analysis and represent strategies that practitioners can use to manage organizations and to design new HRM and HRD practices.

The implications of this research are not limited its practical uses. It also makes a contribution at a theoretical level in its exploration of the different kinds of public sector organization with respect to organizational innovation, a topic that has received little attention to date. Specifically, we expand the scope of application of the GLOBE model and simultaneously deepen the theoretical understanding of public organizational innovation.

Our study does have several limitations. First, although we attempted to cover all aspects of public sectors, we may not have been successful, in which case additional research will be necessary. For example, it might be possible to argue that entrepreneurship and innovation are both shaped by other factors and contexts. A longitudinal investigation could provide further insights into the systemic dynamics of the effects of leadership, culture, and innovative behaviors in the different types of public organization. Hence, future research on organizational innovation that adopted a comparative approach taking different cultural contexts into account could be helpful. Moreover, considering other variables, which might interact with organizational culture, such as individual personality and organizational structure, could also be meaningful.

Second, the study is based on self-reported data, which is subject to CMV and respondent bias. Although our application of Harman's test (Podsakoff & Organ, 1986), and our incorporation of a social desirability control variable (Paulhus & Reid, 1991) imply that our variables are not significantly related to social desirability or negative affectivity, a more insightful approach to method variance in future research would improve design and analysis, and the replication of this study with samples from other contexts would help confirm the generalizability of the scale items. How-

ever, we believe that despite these limitations, this study makes valuable contributions to practice and research.

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APPENDIX

Items for the Main Variables

Variable	Items						
Entrepreneurial Leadership (Gupta, MacMillan, and Surie 2004)	<ul style="list-style-type: none"> - The leader in my agency sets high goals and works hard. - The leader in my agency has extraintuitive insight. - The leader in my agency presents a vision for the future. - The leader in my agency anticipates possible future events. - The leader in my agency instills confidence in others by showing confidence in them. - The leader in my agency is skilled at interpersonal relations. - The leader in my agency has an unusual ability to persuade others of his or her viewpoint. - The leader in my agency gives employees confidence or hope through reassurance and advice. - The leader in my agency demonstrates and imparts strong positive emotions regarding work. - The leader in my agency is able to induce group members to work together. - The leader in my agency seeks continuous performance improvement. - The leader in my agency integrates people or things into a cohesive working whole. - The leader in my agency is generally optimistic and confident. - The leader in my agency makes decisions firmly and quickly. 						
Organizational Culture (House et al. 2004)	<table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td style="width: 20%; vertical-align: top;">hierarchical culture</td> <td> <ul style="list-style-type: none"> - In our agency, stability is stressed, even at the expense of change. - In our agency, expected behavioral patterns are spelled out in detail so that employees understand what they have to do. - In our agency, followers are expected to obey their leaders without question. - In our agency, power is concentrated at the top. - In our agency, leaders encourage group loyalty even if individuals' goals suffer. - In our agency, collective interests are maximized more than individual interests. </td> </tr> <tr> <td style="vertical-align: top;">performance-oriented culture</td> <td> <ul style="list-style-type: none"> - In our agency, employees are generally assertive. - In our agency, employees are generally tough. - In our agency, planning for the future is more valuable than focusing on the present. - In our agency, future planning is more emphasized than the present problem. - In our agency, employees are encouraged to continuously improve performance. - In our agency, employees are rewarded for excellent performance. </td> </tr> <tr> <td style="vertical-align: top;">humane-oriented culture</td> <td> <ul style="list-style-type: none"> - In our agency, employees take pride in the accomplishments of their leader. - In our agency, leaders take pride in the accomplishments of their employees. - In our agency, there is a difference in the degree to which men and women are encouraged to attain a higher education. (R) - In our agency, there is a difference in the number of men and women that are appointed to a position of high office. (R) - In our agency, employees are generally sensitive toward others. </td> </tr> </tbody> </table>	hierarchical culture	<ul style="list-style-type: none"> - In our agency, stability is stressed, even at the expense of change. - In our agency, expected behavioral patterns are spelled out in detail so that employees understand what they have to do. - In our agency, followers are expected to obey their leaders without question. - In our agency, power is concentrated at the top. - In our agency, leaders encourage group loyalty even if individuals' goals suffer. - In our agency, collective interests are maximized more than individual interests. 	performance-oriented culture	<ul style="list-style-type: none"> - In our agency, employees are generally assertive. - In our agency, employees are generally tough. - In our agency, planning for the future is more valuable than focusing on the present. - In our agency, future planning is more emphasized than the present problem. - In our agency, employees are encouraged to continuously improve performance. - In our agency, employees are rewarded for excellent performance. 	humane-oriented culture	<ul style="list-style-type: none"> - In our agency, employees take pride in the accomplishments of their leader. - In our agency, leaders take pride in the accomplishments of their employees. - In our agency, there is a difference in the degree to which men and women are encouraged to attain a higher education. (R) - In our agency, there is a difference in the number of men and women that are appointed to a position of high office. (R) - In our agency, employees are generally sensitive toward others.
hierarchical culture	<ul style="list-style-type: none"> - In our agency, stability is stressed, even at the expense of change. - In our agency, expected behavioral patterns are spelled out in detail so that employees understand what they have to do. - In our agency, followers are expected to obey their leaders without question. - In our agency, power is concentrated at the top. - In our agency, leaders encourage group loyalty even if individuals' goals suffer. - In our agency, collective interests are maximized more than individual interests. 						
performance-oriented culture	<ul style="list-style-type: none"> - In our agency, employees are generally assertive. - In our agency, employees are generally tough. - In our agency, planning for the future is more valuable than focusing on the present. - In our agency, future planning is more emphasized than the present problem. - In our agency, employees are encouraged to continuously improve performance. - In our agency, employees are rewarded for excellent performance. 						
humane-oriented culture	<ul style="list-style-type: none"> - In our agency, employees take pride in the accomplishments of their leader. - In our agency, leaders take pride in the accomplishments of their employees. - In our agency, there is a difference in the degree to which men and women are encouraged to attain a higher education. (R) - In our agency, there is a difference in the number of men and women that are appointed to a position of high office. (R) - In our agency, employees are generally sensitive toward others. 						

Organizational Innovation (Covin and Slevin 1989; Diefenbach 2011)	<ul style="list-style-type: none">- My agency is open to innovations.- My agency is creative.- My agency is innovative.- My agency often implements new approaches to meet its responsibilities.- My agency rarely behaves hesitantly.- My agency responds more actively to market changes as they occur.- My agency often asks outside groups to undertake projects for it.- My agency responds more actively to administrative environmental changes.- My agency also undertakes promising but risky projects.
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