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LEARNING ORGANIZATION CULTURE AND CORE JOB CHARACTERISTICS FOR KNOWLEDGE WORKERS IN KOREA

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ABSTRACT

The purpose of this study is to examine the relationship between perceived learning organization culture and core job characteristics in a sample of 264 knowledge workers from four organizations in South Korea. The dimensions of the learning organization questionnaire (DLOQ) and the job diagnostic survey (JDS) were used as measures. The result of a canonical correlation analysis indicated that the composite of learning organization culture (i.e., continuous learning, dialogue and inquiry, team learning, embedded system, empowerment, system connection, and strategic leadership) was modestly but significantly related to the composite of core job characteristics (i.e., variety, identity, significance, autonomy, and feedback), accounting for 34 percent of the shared variance between the two variable sets. More specifically, the effects of dialogue and inquiry, team learning, and system connection in learning organization culture were greater on feedback, autonomy, and task significance in job characteristics for knowledge workers in South Korea.

Keywords: learning organization, job characteristics, canonical correlation, Korea.

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RESUMO

O objetivo deste estudo é examinar a relação entre a cultura da organização de aprendizagem percebida e as principais características do trabalho em uma amostra de 264 trabalhadores do conhecimento de quatro organizações na Coréia do Sul. As dimensões do questionário da organização de aprendizagem (DLOQ) e da pesquisa de diagnóstico do trabalho (JDS) foram usadas como medidas. O resultado de uma análise de correlação canônica indicou que a composição da cultura de aprendizagem organizacional (ou seja, aprendizado contínuo, diálogo e investigação, aprendizado em equipe, sistema incorporado, capacitação, conexão do sistema e liderança estratégica) estava modestamente, mas significativamente relacionado à composição das características do trabalho principal (variedade, identidade, significado, autonomia e feedback), respondendo por 34% da variação compartilhada entre os dois conjuntos de variáveis. Mais especificamente, os efeitos do diálogo e da investigação, do aprendizado em equipe e da conexão do sistema na cultura aprendizagem organizacional foram maiores no feedback, na autonomia e no significado da tarefa nas características do trabalho para os trabalhadores do conhecimento na Coréia do Sul.

Keywords: aprendizagem organizacional, características do trabalho, correlação canônica, Coréia.

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INTRODUCTION

The origin of traditional views of organizations was based on the works of Adam Smith (1776) who revolutionized productivity by proposing the concept of division of labor, and Max Weber (1922) who suggested the classic conceptualization of bureaucracy (Williams and Yang, 1999). But those were the notions when business environment was stable over time. Today, it is a time of change not only in strategy, technology, and product mix, but also in the nature of work and organizational culture. To survive and thrive in such a world, an organization must always be ready to adapt. The ever changing business environment makes jobs more complex and mobile. Thus, talented employees seek not only salary and benefits, but also more flexibility and autonomy. And smart companies know that flexibility and autonomy might beat out pure compensation especially for knowledge workers (Hall and Heras, 2010).

Since the early *time and motion studies* of Taylor (1911) to the keen interest in motivational aspects of work in the 1970s (Hackman and Oldham, 1975), thousands of studies have examined work design issues (Morgeson and Humphrey, 2006). Work design research is one of the first areas in organizational psychology based on rigorous scientific study, significantly influencing management thinking and practice, as well as academic research and theory (Parker, Morgeson, and Johns, 2017). Work design is regarded as a key antecedent of the major dependent variables in the field of management and organizational psychology: absenteeism, retention, job satisfaction, organizational commitment, job engagement, performance, well-being, creativity, and so on (Parker et al., 2017). Among others, Hackman and Oldham's (1975, 1976, 1980) job characteristics model has been the dominant model of work design, influencing job demand-control, job demand-resources, role theory including job crafting (Parker et al., 2017).

Work design will vary depending on organizational environment, business domain or industry, and job function. We are moving into the world of artificial intelligence, robotics, and other automation technologies (Ford, 2015). While a majority of human jobs might be automated, knowledge workers will survive. Peter Drucker (1988, 1992) long ago pointed to the growth of the knowledge economy and the importance of knowledge workers and foresaw that future organizations would be flatter, information based, and organized

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around teams in response to competitive challenges. The current study is focused on knowledge workers, which are defined as high-level employees who apply theoretical and analytical knowledge that is acquired through formal education in developing new products or services (Drucker, 1992).

In this increasingly competitive environment in which rapid changes in technologies, markets, government regulations and customers give rise to turbulence and uncertainty (Unsworth and Parker, 2003), organizational structure and culture can significantly influence core job characteristics in many ways (Parker et al., 2001). In particular, the competency of learning has been a critical resource to keep valuable heritage, learning new things, solving problems, creating core competences, and to create new opportunities for both individual and organizations (Liao, Chang, and Wu, 2010). Thus, many organizations strive to have culture of learning organization that creates, acquires, and transfers knowledge, and modifies its behavior to reflect new knowledge and insights (Garvin, 1993). A learning organization refers to an organization with the necessary organizational structures and capacities to create an environment that will stimulate knowledge and ultimately financial performance (Watkins and Kim, 2017).

Thus, a learning organization has an enhanced capacity to learn and to transform (Watkins and Marsick, 1993).

PROBLEM STATEMENT AND RESEARCH PURPOSE

Learning organizational culture and work design are important research areas in management and organizational psychology in general and organization development (OD) in particular. They are frequently used contextual variables for satisfaction, performance, change, innovation and creativity not only for individuals, but also for groups and organizations (Hackman and Oldham, 1975, 1980; Marsick and Watkins, 2003). Learning organization culture can significantly influence work design in many ways. Hall and Heras (2010) defined smart jobs as those that entail a strong developmental network, help create a protean career orientation, introduce new possible selves, and create psychological career success and other positive career outcomes. Thus, smart jobs require smart culture that support learning in individual level as well as organizational level. Despite a number of studies on job characteristics and increasing attention on learning

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organization, an in-depth analysis on the relationship between the two critical sets of variables has not been conducted. Most respondents in this study were knowledge workers in junior and middle managers with higher level of education.

The purpose of this research is to investigate the relationship between learning organization culture and core job characteristics for knowledge workers in South Korea. The research question is: "What are the relationships between the seven dimensions of organizational learning culture (i.e., continuous learning, dialogue and inquiry, team learning, embedded system, empowerment, system connection, and strategic leadership) and the sub-constructs of core job characteristics (i.e., skill variety, task identity, significance, autonomy, and feedback)?"

THEORETICAL FRAMEWORK AND RESEARCH MODEL

LEARNING ORGANIZATION CULTURE (LOC)

The concept of the learning organization is an increasing area of interest in the fields of HR/OD, management, and even school systems (Marquardt, 1996, 2002; Wang, Yang, McLean, 2007). Interest in the learning organization as the source of the organizational success and competitive advantage has been a strong focus in these fields since the past decades (Gilley and Maycunich, 2000; Leonard, 1998; Tsang, 1997).

Learning organization is defined as an environment in which organizational learning is structured so that teamwork, collaboration, creativity, and knowledge processes have a collective meaning and value (Confessore and Kops, 1998), and that enables organizations to be responsive and adaptive to the constant inflows of information and resource characteristics of open systems (Senge, 1990). According to Garvin (1993), a learning organization refers to "an organization skilled at creating, acquiring, and transferring knowledge, and at modifying its behavior to reflect new knowledge and insights" (p. 80). Thus, a learning organization can be regarded as an application of organizational learning and organization development (Garratt, 1990) to have an enhanced capacity to learn and to transform (Watkins and Marsick, 1993).

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Table 1: Watkins and Marsick's (1997) Model of the Seven Dimensions of the Learning Organization

Dimension	Definition
Continuous learning	Opportunities for ongoing education and growth are provided; learning is designed into work so that people can learn on the job.
Inquiry and dialogue	The organizational culture supports questioning, feedback, and experimentation; people gain productive reasoning skills to express their views and the capacity to listen and inquire into the views of others.
Team learning	Work is designed to use teams to access different modes of thinking; collaboration is valued by the culture and rewarded; teams are expected to learn by working together.
Embedded system	Necessary systems to share learning are created, maintained, and integrated with work; employees are accessible to these high- and low-technology systems.
Empowerment	People are involved in setting and implementing a shared vision; responsibility is distributed so that people are motivated to learn toward what they are held accountable to do.
System connection	The organization is linked to its communities; people understand the overall environment and use information to adjust work practices; people are helped to see the effect of their work on the entire organization.
Strategic leadership	Leadership uses learning strategically for business results; leaders model, champion, and support learning.

To illustrate learning organization, the general systems model that views organizations as "capable of operating either in open or closed systems supports these two perspectives of organizational models" (Williams and Yang, 1999, p. 387). Stressing a systems perspective, Senge (1990) depicted learning organizations as places "where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together" (p. 1). Senge's (1990) concept of systems thinking that integrates other disciplines, focusing on a vision for the future rather than on short-term returns, embodies the goals that

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today's organizations must pursue. He also argued that companies need team learning and a shared vision. These concepts can be attained only with a shift of mind that departs considerably from the perspective of organizations in the past that relied on fixed, predictable principles. Thus, there seems to be general consensus that being a learning organization is a prerequisite for successful organizational change and performance (Garvin, 1993; Marsick and Watkins, 2003). Watkins and Marsick's (1997) framework for the learning organization, above, serves as a theoretical base for this study (see Table 1). Although Watkins and Marsick's comprehensive model employed a cultural perspective of organizational learning in the traditions of Schein (1996) and Argyris and Schön (1996), it emphasized diagnosis over prescription, culture over strategy, and building infrastructure and capacities over one-off events or training programs (Watkins and Kim, 2017).

Core Job Characteristics (CJC)

Work design has long been considered to be an important contributor to employees' individual motivation, attitudes, and creative performance at work (Amabile, 1996; Hackman and Oldham, 1975, 1980; Kanter, 1988; Shalley, Zhou, and Oldham, 2004; West and Farr, 1989). Work design is also recognized as a mediator between other variables and outcomes. Using a big picture perspective on work design research, job characteristics model as the dominant model of work design have influenced other branches of work design research such as job demand-control, job demand-resources, role theory including job crafting (Parker et al., 2017). The current study is focused on the traditional motivational model of CJC, which consist of the five components: skill variety, task identity, task significance, autonomy, and feedback.

CJC is defined as the perception of the extent that a job is characterized by high levels of autonomy, feedback, significance, identity, and variety (Hackman and Oldham, 1975, 1980; Oldham and Cummings, 1996), which contribute to intrinsic motivation (Amabile, 1988). A meta-analysis of work design literature concluded that employees working on complex jobs are more satisfied and internally motivated than employees working on jobs that are relatively simple (Fried and Ferris, 1987). When jobs are complex and challenging, individuals are likely to be excited about their work activities and interested in completing these activities in the absence of external constraints (Oldham and Cummings, 1996).

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Table 2: Hackman and Oldham's (1975) Job Characteristics Model

Dimension	Definition
Skill variety	▪ Doing different things; using different valued skills, abilities, and talents. ▪ The degree to which a job requires a variety of challenging skills and abilities.
Task identity	▪ Doing a complete job from beginning to end, the whole job rather than bits and pieces. ▪ The degree to which a job requires completion of a whole and identifiable piece of work.
Task significance	▪ The degree of meaningful impact the job has on others; the importance of the job. ▪ The degree to which the job has a perceivable impact on the lives of others, either within the organization or the world at large.
Autonomy	▪ Freedom to do the work as one sees fit; discretion in scheduling, decision-making, and means for accomplishing a job. ▪ The degree to which the job gives the worker freedom and indepe ndence in scheduling work and determining how the work will be carried out.
Feedback	▪ Clear and direct information about job outcomes or performance. ▪ The degree to which the worker gets information about the effectiveness of his or her efforts, either directly from the work itself or from others.

As work becomes more obscure and knowledge based, rather than physical and observable, internal motivation and commitment become increasingly significant in production quality and quantity (Williams and Yang, 1999). This observation is especially true of such knowledge intensive products as innovations and creative performance. When jobs are complex and demanding (i.e., high on challenge, autonomy, and complexity), individuals are more likely to focus all of their attention and efforts on their jobs, making them more persistent and more likely to consider different alternatives, which should result in creative outcomes (Shalley and Gibson, 2004). On the contrary, simpler and more routine jobs may not motivate employees or allow them the flexibility to try new ways of doing things, to take risks, and potentially to perform creatively. In the same vein, as Ford (1995) warned, when organizations assign people to narrow job responsibilities, reward and promotion based on existing norms and procedures, and direct efforts up and down

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hierarchies, motivated and creative individuals will be out of place.

Relationship between LOC and CJC

Work design will vary depending on organizational environment, business domain or industry, and job function. In this increasingly competitive environment "in which frequent changes in technologies, markets, government regulations and customers give rise to turbulence and unpredictability" (Unsworth and Parker, 2003, p. 175), LOC can significantly influence CJC in many ways.

As Drucker (1988) put it, organizations are shifting to information-based organizations, or self-governing units of knowledge specialists. Jobs not only in service and knowledge work, but also in manufacturing are becoming more knowledge-oriented, highlighting the importance of cognitive characteristics of work (Parker, Wall, and Cordery, 2001). By definition, knowledge work is "unpredictable, multidisciplinary, and non-repetitive tasks with evolving, long-term goals which, due to their inherent ambiguity and complexity, require collaborative effort in order to take advantage of multiple viewpoints" (Janz, Colquitt, and Noe, 1997, pp. 882-883). Enriched forms of work design are most appropriate where uncertainty is high (Parker et al., 2001), and autonomy has been identified to be particularly salient for knowledge workers (Janz et al., 1997). That is, an increasingly uncertain environment requires LOC, and knowledge workers prefer complex jobs to simple and routine work (Parker et al., 2001).

Therefore, in jobs that require high levels of knowledge and creativity, job occupants' work attitudes (i.e., the perception of job characteristics) may vary directly with the level of LOC. That is, attitudes about their jobs should be more favorable when environmental characteristics such that LOC complements the knowledge and creativity requirements of the work (Marsick and Watkins, 2003; Shalley, Gibson, and Blum, 2000).

Research Model

The proposed research model of this study is depicted in Figure 1. This canonical correlation analysis model represents a multivariate statistical model that facilitates the study of interrelationships between the predictor variables set (i.e., the subscales of LOC) and the criterion variables set (i.e., the subscales of CJC)

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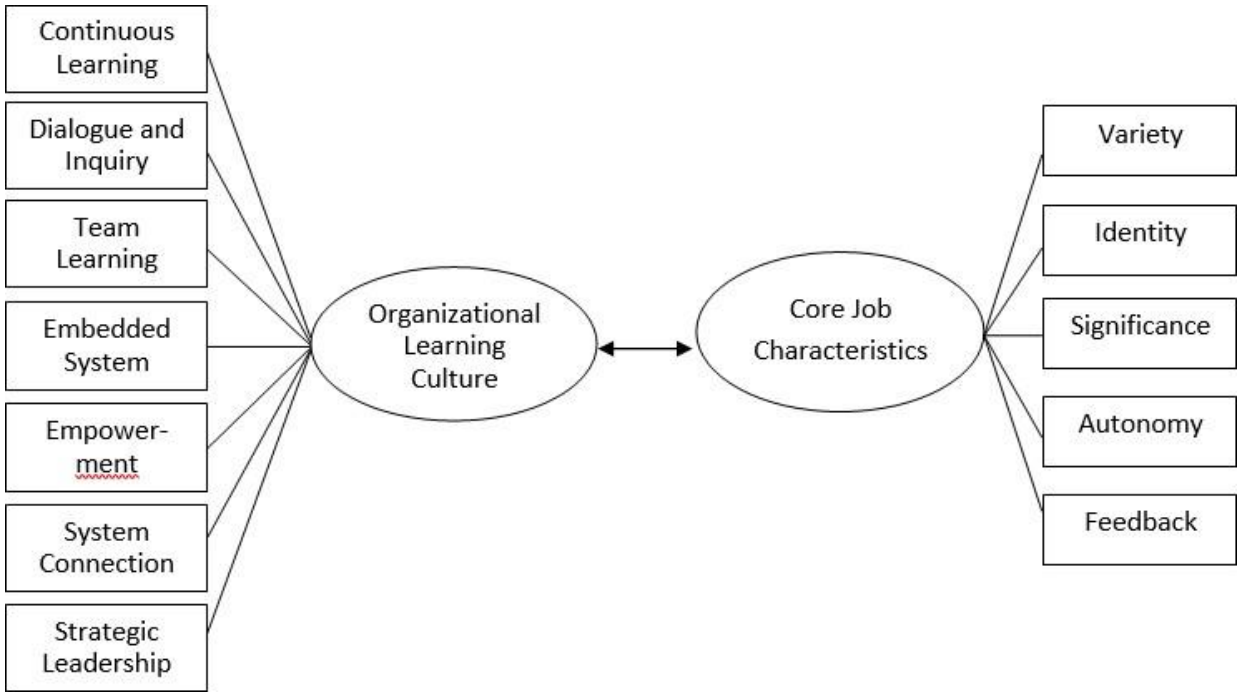
Figure 1: Research Model



Source: Authro's own elaboration

METHOD

SAMPLE AND DATA COLLECTION

Four Korean companies participated in this study, representing diverse industries: manufacturing, construction, and telecommunications. The HR managers in each company, following the provided guidelines, selected participants who received the email request for participation. A self-administered Internet-based online survey was used to obtain individual perceptions. Of the approximately 600 members contacted through email, responses were received from 264 employees (response rate: 44%). In terms of educational level, 208 employees (79%) graduated from 4 year college, and 56 (21%) from graduate school. While 181 (69%) were manager or assistant manager, 83 represented non-managerial group. Classification by job types were as follows: 54 in marketing and sales (21%), 93 in production, engineering, and research and development (35%), 85 in supporting function such as finance, HR, legal and so on (32%), and 32 in others (12%).

MEASURES

All constructs used multi-item scales that have been developed and used in the Unites States. The instruments were prepared for use in Korea using appropriate translation-

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back-translation procedures. A 5-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree) were used.

Learning organizational culture.

To measure the learning organization, this study used Yang, Watkins, and Marsick's (2004) shortened version of the *Dimensions of the Learning Organization Questionnaire* (DLOQ), originally developed by Watkins and Marsick (1997). The instrument uses 21 items composed of seven dimensions (i.e., continuous learning, dialogue and inquiry, team learning, empowerment, embedded system, system connection, and strategic leadership. Yang et al. (2004) provided evidence of construct validity for the refined version of the DLOQ with 21 items and seven dimensions (i.e., three items for each dimension). Sample items included: "In my organization, whenever people state their view, they also ask what others think" and "In my organization, leaders continuously look for opportunities to learn."

CJC

Fifteen items from the *Job Diagnostic Survey* (JDS) (Hackman and Oldham, 1975, 1980) were used to assess the challenges and complexity of employees' jobs. The instrument was composed of three items for each of the five job characteristics (skill variety, task identity, task significance, autonomy, and feedback). The median alpha of the job characteristics measures in Oldham and Cummings' (1996) study was .68. A sample item was, "the job gives me considerable opportunity for independence and freedom in how I do the work."

Analytical Technique: Canonical Correlation Analysis (CCA)

CCA is a multivariate method (Thompson, 1984) that explores the relationship between two variable sets, where each set contains variables that are theoretically linked (Nimon and Reio, 2011). CCA derives a vector of weights that maximizes the correlation between the sets. These coefficients are similar to regression weights in that each standardized coefficient may be interpreted as the independent contribution of that variable to the correlation between two sets (Barcikowski and Stevens, 1975; Lambert and Durand, 1975). CCA is generally considered a more appropriate technique than separately regressing multiple dependent variables on the same set of independent variables. Not only does CCA avoid the inflation of *Type I error* rate associated with conducting several multiple regressions, CCA honors the validity of research that considers multiple outcomes and causes (Thompson, 2000).

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In conclusion, it is useful for identifying overall relationships between multiple independent and dependent variables, particularly when the researcher has little a priori knowledge about relationships among the two sets of variables (Hair, Anderson, Tatham, and Black, 1998). In sum, as contrasted in Table 3, CCA statistics are analogous to univariate statistics such as multiple regression analysis (Sherry and Henssen, 2005).

Table 3: Comparison between Univariate and Multivariate Statistics

Multivariate Analysis (CCA)	Univariate Analysis
Canonical correlation coefficient (R_c)	Pearson correlation (r)
Squared canonical correlation (R_c^2)	R^2 in multiple regression
Canonical function (or variate)	Component in a principal component analysis
Standardized canonical function coefficient	Beta (β) weights in regression
Structure coefficient (r_s)	Structure matrix in factor analysis
Squared structure coefficient (r_s^2)	Any r^2-type effect size

As shown in Figure 1, the two sets of variables were the seven dimensions of LOC (continuous learning, dialogue and inquiry, team learning, embedded system, empowerment, system connection, and strategic leadership) and the five factors of CJC (variety, identity, significance, autonomy, and feedback). CCA results are interpreted using squared canonical correlations (R^2c), standardized function and structure coefficients as in Sherry and Henson (2005). Interpretation of the canonical variates in a significant function is based on the premise that variables in each set that contribute heavily to shared variances for these functions are considered to be related to each other. Hair et al. (1998) recommended that three criteria be used in conjunction with one another to decide which canonical functions should be interpreted. The three criteria are: (a) level of statistical significance of the function, (b) redundancy measure for the percentage of variance accounted for from the two data sets, and (c) magnitude of the canonical correlation. Those who are unfamiliar with canonical correlation or canonical commonality are respectively referred to

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Sherry and Henson (2000; 2005) and Nimon and Reio (2011).

RESULTS

DESCRIPTIVE AND CORRELATION STATISTICS

Table 4 shows means, standard deviations, and correlations statistics. All correlation coefficients among the sub-scales of the two constructs were positive and significant ($p < .05$) except for one (team learning – variety: .08, n.s.). All correlation coefficients among the sub-constructs of LOC were significant and strong (r = .55 - .76; mean = .68). Correlations among the sub-constructs of CJC were significant and moderate (r = .39 - .65; mean = .61). With regard to the correlations among the sub-constructs of LOC and CJC, while autonomy and feedback showed modest relationships (r = .20 -.36), variety and identity indicated mediocre relationships (r = .08 - .26) with the sub-constructs of LOC.

Table 4: Correlations and Descriptive Statistics

	1	2	3	4	5	6	7	8	9	10	11	12
1. Continuous Learning	-											
2. Dialogue & Inquiry	.66**	-										
3. Team Learning	.60**	.72**	-									
4. Embedded System	.74**	.65**	.64**	-								
5. Empowerment	.64**	.68**	.69**	.66**	-							
6. System Connection	.55**	.66**	.69**	.59**	.71**	-						
7. Strategic Leadership	.71**	.70**	.76**	.71**	.67**	.66**	-					
8. Variety	.16**	.19**	.08	.18**	.13*	.17**	.18**	-				
9. Identity	.15**	.19**	.21**	.19**	.24**	.26**	.16**	.39**	-			
10. Significance	.20**	.34**	.30**	.27**	.31**	.37**	.26**	.52**	.55**	-		
11. Autonomy	.25**	.35**	.36**	.29**	.29**	.29**	.31**	.39**	.65**	.57**	-	
12. Feedback	.30**	.25**	.36**	.34**	.34**	.36**	.33**	.44**	.59**	.57**	.62**	-
Mean	3.59	3.79	3.75	3.57	3.69	3.91	3.72	3.93	3.65	4.02	3.60	3.73
s.d.	.64	.57	.60	.63	.55	.54	.64	.71	.69	.72	.68	.68

Note; n = 264; * p < .05, ** < .01.

Source: Author's own elaboration

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CANONICAL CORRELATION ANALYSIS STATISTICS

For the analysis and interpretation of the CCA results, we followed the procedure suggested by Sherry and Hensen (2005): (a) evaluate the full canonical model; (b) decide the number of canonical functions for further analysis, based on a reasonable amount of variance between the two variable sets and the effect size of the dimension reduction analysis; (c) examine the standardized weights and structure coefficients by the function for analysis.

As a result of multivariate test of all canonical functions, this five-function solution turned out to be fitted the data well based on the four tests (see Table 5). More specifically, the full model across all functions was statistically significant using the Wilks's λ .661 criterion, $F(35, 1{,}062.50) = 3.135$, $p < .001$ (see Table 5). Because Wilks's λ represents the variance unexplained by the model, 1 – λ yields the full model effect size in an r^2 metric. Thus, for the set of five canonical functions, the r^2 type effect size was .339, which indicates that the full model accounted for a substantial portion (34%) of the variance shared between the variable sets. Therefore, there was a significant statistical relationship between the set of independent variables and the set of dependent variables.

Table 5: Statistical Significance Tests for the Full CCA Model

Test Name	Value	Approximate F	Hypothesis DF	Error DF	Significance of F
Pillais's	.379	2.998	35.00	1280.00	.000
Hotelling's	.454	3.246	35.00	1252.00	.000
Wilks's	.661	3.135	35.00	1062.50	.000
Roy's	.224				

Source: Author's own elaboration

A canonical correlation analysis was conducted using the seven LOC variables as predictors of the five job characteristics variables to evaluate the multivariate shared relationship between the two variable sets. The derivation of successive canonical variates is similar to the procedure used with unrotated factor analysis. The first factor

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extracted accounts for the maximum amount of variance in the set of variables. Then, the second factor is computed so that it accounts for as much as possible of the variance not accounted for by the first factor. This process is repeated until all factors have been extracted. The strength of the relationship between the pairs of variates is reflected by the canonical correlation. When squared (R^2_c), the canonical correlation represents the amount of variance in the predictor variate accounted for by the criterion variate. This also may be called the amount of shared variance between the two canonical variates (Hair et al., 1998).

There are as many functions (or variates) as there are variables in the smaller set (see Table 6). The analysis yielded five functions with squared canonical correlations (R^c_2) of .224, .079, .056, .018, and .002 for each successive function. It is suggested to interpret only the function(s) with a reasonable amount of variance between the variable sets (Sherry and Hensen, 2005). Therefore, we interpreted only function 1 that explained 22.4% of the variance between LOC set and CJC set.

Table 6: Eigenvalues and Canonical Correlations for Each Function

Function	Eigenvalue	Percent (%)	Cumulative Percent (%)	Canonical Correlation (R_c)	Squared Correlation (R_c^2)
1	.288	63.45	63.45	.473	.224
2	.086	19.00	82.44	.282	.079
3	.060	13.12	95.56	.237	.056
4	.019	4.11	99.67	.135	.018
5	.002	0.33	100.00	.038	.002

Source: Author's own elaboration

As indicated in Table 7, the dimension reduction analysis allows the researcher to test the hierarchal arrangement of functions for statistical significance. As noted, the full model (Functions 1 to 5) was statistically significant ($F(35, 1{,}062.50) = 3.135$, $p < .001$).

Function 2 to 5 was also statistically significant ($F(24, 883.82) = 1.733$, $p < .05$).

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Function 3 to 5, Function 4 to 5, and Function 5 to 5 did not explain a statistically significant amount of shared variance between the variable sets respectively. Despite its statistical significance Function 2 to 5 was not interpreted, because it explained only 7.9% of the remaining variance in the variable sets after the extraction of the prior function (see R^2_c in Table 6). In sum, given the effects for each function, only the first function was considered noteworthy in the context of this study (22.4% of shared variance).

Table 7: Dimension Reduction Analysis

Roots	Wilks λ	F	Hypoth. DF	Error DF	Significance of F
1 to 5	.661	3.135	35.00	1062.50	.000
2 to 5	.852	1.733	24.00	883.82	.016
3 to 5	.925	1.336	15.00	701.58	.174
4 to 5	.980	.639	8.00	510.00	.744
5 to 5	.999	.128	3.00	256.00	.943

Source: Author's own elaboration

Table 8 presents the standardized canonical function coefficients and structure coefficients for Functions 1. Looking at the structure coefficients (r_s) in Function 1, relevant criterion variables were feedback, significance, and autonomy. This conclusion was supported by the squared structure coefficients (r^2_s). These three job characteristics factors also tended to have the larger canonical function coefficients. Moreover, all of these variables' r_s had the same sign, indicating that they were all positively related.

Regarding the predictor variable set in Function 1, team learning, dialogue and inquiry, system connection, and empowerment were the primary contributors to the predictor synthetic variable. Because the structure coefficients (rs) had the same sign , they all were positively related to all of the job characteristics factors. These results were generally supportive of the theoretically expected relationships between the two sets of variables.

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Table 8: Canonical Solution for LOC Predicting CJC for Function 1

Variable	Standardized Canonical Coefficient	Structure Coefficient (r_s)	Squared Structure Coefficient (r_s^2; %)
Criterion set (CJC)			
Variety	.232	-.339	11.49
Identity	.254	-.532	28.30
Significance	-.517	-.807	65.12
Autonomy	-.420	-.798	63.68
Feedback	-.543	-.850	72.25
Canonical Correlation Coefficient (R^2_c)			**22.35**
Predictor set (LOC)			
Continuous Learning	.185	-.620	38.44
Dialogue & Inquiry	-.391	-.885	78.32
Team Learning	-.410	-.904	81.72
Embedded System	-.219	-.751	56.40
Empowerment	-.046	-.783	61.31
System Connection	-.300	-.849	72.08
Strategic Leadership	.075	-.763	58.22

Note, Structure Coefficient (r_s) greater than |.80| are underlined; Squared Structure Coefficient (r_s^2) greater than 60% are underlined.

Source: Author's own elaboration

DISCUSSION

RESEARCH FINDINGS

The purpose of this study is to examine the relationship between perceived LOC and CJC in a sample of 264 knowledge workers from four organizations in South Korea. The result of a CCA indicated that the composite of LOC (i.e., continuous learning, dialogue and inquiry, team learning, embedded system, empowerment, system connection, and strategic leadership) was modestly but significantly related to the composite of CJC (i.e., variety, identity, significance, autonomy, and feedback), accounting for 22 percent of the shared variance between the two variable sets. More specifically, the four dimensions (i.e., dialogue and inquiry, team

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learning, empowerment, and system connection) of LOC had greater effects on feedback, autonomy, and job significance in job characteristics for knowledge workers in South Korea.

THEORETICAL CONTRIBUTIONS

This study has several theoretical contributions for the HR/OD filed. First, this study integrated learning organization research and work design research, which are the antecedents for critical affective and behavioral employee outcomes (e.g., intrinsic motivation, job satisfaction, engagement, and organizational commitment, individual and organizational performance) and the major intervention approaches for OD efforts.

While CJC can play a pivotal role not only in intrinsic motivation and job satisfaction, but also in performance, more broadly, creativity and innovation, it is contingent on LOC. That is, without such a culture, the efforts invested in job design might be meaningless. Thus, we found that organizations have an incentive to create environments conducive to high-quality relationships by encouraging LOC. Therefore, this study supported previous research: (1) an increasingly uncertain environment requires LOC (Parker et al., 2001); (2) knowledge workers prefer complex jobs to simple and routine work (Janz et al., 1997); (3) enriched forms of work design are most appropriate where uncertainty is high (Parker et al., 2001).

Second, most respondents in this study were highly educated knowledge workers in capital/knowledge intensive industries. Nearly 70% were managers or assistant managers who apply theoretical and analytical knowledge that can be acquired through formal education in developing new products or services (Drucker, 1992). For knowledge workers, organizations needs to be open to external environment and community. In addition, culture of free communication (i.e., dialogue and inquiry). Psychological safety will enable better collaboration and team learning. Based on supportive leadership, employees need to be more empowered. It is noted that skill variety and task identity found to be less associated with LOC for knowledge workers, whereas feedback, autonomy, and task significance indicated greater effect size. That is, knowledge workers with complex and flexible work characteristics tend to have already higher level of skill variety and task significance compared to the rest of employees in technical or service jobs.

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Lastly, instead of univariate statistical analyses such as multiple regression and ANOVA, we used CCA that is more suitable for a multivariate technique. Most classical parametric analyses are part of a general linear model (GLM) that include univariate and multivariate statistical methods (Sherry and Hensen, 2005). Even structural equation modeling is the highest level of the GLM. In particular, CCA is the most appropriate way to test empirical link between theoretically relevant two sets of variates (Capraro and Capraro, 2001; Nimon and Reio, 2011). Moreover, since most management and organizational psychology research investigates variables that include multiple causes and effects, CCA could be the best statistical approach. Determining outcomes based on separate test for single cases and effects can distort the reality of behavioral and/or attitudinal outcomes in HR/OD. To date, no previous research has examined the relationship between the two sets of variates: LOC as a predictor set and job characteristics as a criterion set LOC and core job complexity.

PRACTICAL IMPLICATIONS

HR/OD professionals can support managers by providing relevant practices and services. LOC can significantly influence job characteristics by enhancing all the sub-constructs of LOC, in both people level (i.e. continuous learning, dialogue and inquiry, team learning, and empowerment) as well as structural level (embedded system, system connection, and structural leadership) as suggested by Yang et al. (2004). First, the development of an organizational culture that is open and trusting, that allows people to express their views and to listen and inquire into the views of others, and that supports questioning, feedback, and experimentation, is vital for promoting employee's perception of job

complexity. Without such a culture, the efforts invested in work design are sub-optimized. Second, knowledge management systems and social learning, as well as effective communication of vision, values, and goals, can also help to facilitate learning culture at the organizational level. Third, managers can create an organizational culture that promotes systems thinking over fragmentation, collaboration and cooperation over competition, and creativity and innovation over complacence and status-quo.

LIMITATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

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This study has several limitations. First, this study relied on self-reported and reflective recollections of the indicators of the constructs in this study by employees who volunteered their participation. Because of the perceptual nature of the data, there is the possibility of a percept-percept bias and a single source bias. Second, this empirical study confined itself to a cross-sectional survey method that leaves room for speculation with regard to causality among the variables. Next, as the respondents were mostly highly educated male employees, there could be range restriction that might affect the results.

To solve the limitations above, methodologically, future research needs to be based on objective indicators and multiple sources. There should be more longitudinal studies with comparison groups, so that causality can be fully established. To increase generalizability of the present study, more studies in various industries representing diverse demographic cohorts are needed. In addition, more studies are needed in both western and non-western firms. Such research would also help to identify commonalities and differences across cultures. Last, future studies are needed to determine whether job characteristics serve as mediator or moderator role in the relationship of LOC and performance. Additional outcome variables of CJC (e.g., creative performance and proactive behaviors) need to be examined in the future.

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