Cross Cultural Perspectives of the Learning Organization: Assessing the Validity and Reliability of the DLOQ in Korea

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The primary purpose of this research was to adapt the Dimensions of Learning Organization Questionnaire (DLOQ) from Watkins and Marsick (1993, 1996) and examine its validity and reliability in a Korean context. Results indicate that the DLOQ produces valid and reliable scores of learning organization characteristics in a Korean cultural context.

Keywords: DLOQ, Learning Organization, Validity Testing

In the current era of fierce economic struggle, human capital can be considered a dominant competitive weapon of organizations. The extent of workforce knowledge will be a priority over external and physical resources formerly relied on, such as cash, capital, or even technology. There is a growing awareness of the importance of individual knowledge created in organizations that plays a key role in many functions (Thurow, 2003). Those functions include developing and introducing new products and technology, shortening or manufacturing-cycle times, overcoming barriers to entering new markets, and improving service to name just a few (von Krogh, Ichijo, & Nonaka, 2000). Since the economic crisis in the 1990s, Korean organizations have focused on continuous performance improvement as a competitive advantage. Along with this economic trend, more attention has been given to the learning organism, in which collaborative learning could occur continuously, both culturally and systematically (Yoo, 2005). As one of the most critical issues in the field of performance improvement, including Human Resource Development (HRD), and Organization Development (OD), the lack of the practical and validated measurement tools has been endorsed (Holton, Bates, & Ruona, 2000; Lim & Morris, 2006; Yang, Watkins & Marsick, 2004). In this regard, Yang, Watkins and Marsick (2004) proposed, "The concept of the learning organization has received increasing attention in the field of organizational studies, yet little is known about how to measure it" (p.31). This research attempts to contribute to providing a confirmative measurement tool for the learning organization concept through the validated applicability of the *DLOQ* across international regions.

Problem Statement and Research Question

The purpose of this research is to examine the reliability and validity of scores on the *Dimensions of the Learning Organization Questionnaire (DLOQ)* from Korean managers. Instruments and surveys (such as the DLOQ) must be assessed in new cultures to verify that they are able to measure the intended characteristics accurately and consistently given a different cultural context than that in which they may have been developed. Therefore, the research question that served as the basis of this inquiry was as follows:

RQ1: Does the *Dimensions of the Learning Organization Questionnaires (DLOQ),* developed by Watkins and Marsick (1993, 1996), produce valid and reliable scores in a Korean cultural context?

Review of Literature and DLOQ Research

In order to address the developed research question, literatures related to the following have been reviewed: (a) the general concept of learning organization, (b) the development of DLOQ and related components, (c) previous related studies in various cultures; and (d) the need for measures of learning organization in the Korean context.

The Concept of the Learning Organization

The perspective of the learning organization is not a newly developed concept; the learning-related organization has gradually been given more focus, with the publication of three books: *Organizational learning: Theory, method and practice* (Argyris & Schön, 1978), *The fifth discipline: The art and practice of the learning organization* (Senge, 1990), and *Sculpting the learning organization: The art and science of systematic change* (Watkins & Marsick, 1993).

According to Watkins and Marsick (1993), the concept of the learning organization is defined as "one that learns continuously and transforms itself…Learning is a continuous, strategically used process-integrated with and running parallel to work…Learning also enhanced organizational capacity for innovation and growth. The learning organization has embedded systems to capture and share learning" (p. 8).

In a more practical perspective, Slater and Narver (1994) defined a learning organization as one that continuously acquires, processes, and disseminates knowledge about market, products, technologies, and business processes, and this knowledge is often based on experience, experimentation, and information provided by customers, suppliers, competitors, and other sources.

More recently, the term learning organization was defined in the broader perspective by Jensen (2005) as "an organization that is organized to scan for information in its environment, by itself creating information and promoting individuals to transform information into knowledge and coordinate this knowledge between the individuals so that new insight is obtained" (p.61).

From a more integrated environmental perspective, Song, Kim & Kim (2007) described the learning organization as ". . .structure-based learning environment factors which trigger individuals' learning and knowledge transformation autogenously for the promotion of continuous and spontaneous organizational learning process within organization itself. The learning organization is the fundamental culture and structure for taking the market advantages through the performance improvement" (p. 1162)

The following commonalities were drawn from the literature study: (a) the learning environment-related factors, (b) the continuous learning process within the organization; (c) the system-oriented learning structure, (d) the autogenously learned and knowledge creation environment, and (e) the performance and goal-oriented learning systems, and these commonalities are represented in Figure 1. Along these lines, the collaborative learning-oriented organizational cultures are associated with the major learning processes, which include individual learning, learning and knowledge transfer, knowledge management systems, and collaborative organizational learning culture (Kofman & Senge, 1993; Nonaka, 1994; Pawlowsky, 2001; Senge, 1990; Tsang, 1997). To take advantage of learning-based performance improvement in organizations, it is clear that the establishment of a learning oriented culture is critical (Ellinger, Ellinger, Yang & Howton, 2002).

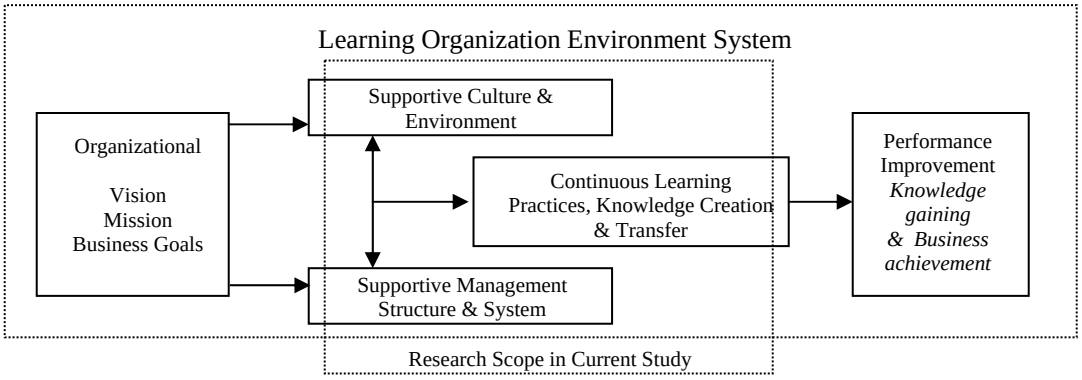

Figure 1. Learning organization system and its basic components

Development of the DLOQ

In order to define the construct of the learning organization, Watkins and Marsick provide an integrative concept of the learning organization based on several approaches, including (a) systems thinking -- organizational generativity (Senge, 1990), (b) learning perspective -- comprehensive aspects of learning (Pedler, Burgoyne & Boydell, 1991), and (c) strategic perspective -- managerial practices (Garvin, 1993; Goh, 1998).

From a broader theoretical standpoint, Watkins and Marsick (1993, 1996, 1997) proposed the *DLOQ – a* constructive concept of learning organization measures, which have seven dimensions of learning-related factors in both people-oriented and structure-oriented components.

The model of an effective learning organization is considered as one that has the capability to integrate people and organizational structures in order to facilitate continuous learning and encourage organizational changes (Yang, Watkins, and Marsick, 2004, p. 34). Through the integration of the aforementioned dimensions of the learning organization, Watkins & Marsick (1996) proposed an integrated model. The specific seven dimensions of a learning organization culture are as follows:

- Continuous Learning - Creating and supporting continuous learning opportunities
- Inquiry and Dialogue - Promoting interactive inquiry and dialogue
- Team-based Learning - Encouraging collaborative team-based learning activities
- Empowerment - Empowering people toward a collective vision
- Embedded System - Establishing systems to capture and share learning
- System Connection - Connecting an organization to its environment
- Strategic Leadership - Providing strategic leadership for learning practices

Watkins and Marsick (1993, 1996) indicated that learning organization design depends on these seven complementary imperative dimensions based on the interaction between people and the systematic structure in the organization. The integrated concept of the learning organization is presented in Figure 2.

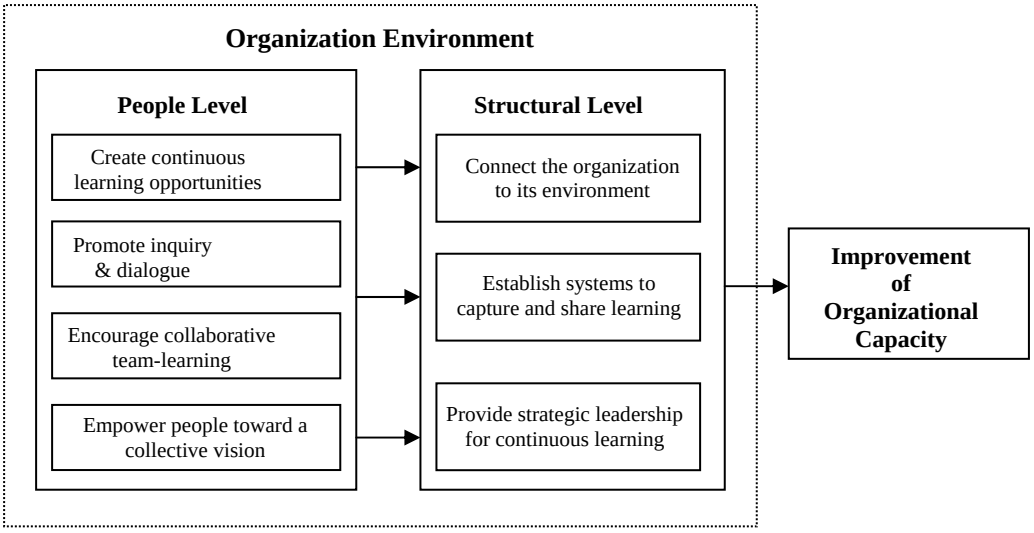

Figure 2. Integrated Network of the Dimensions of Learning Organization, and its Outcome from Watkins and Marsick (1993, 1996)

The DLOQ originally contained 43-items to measure the latent variables of each of the seven dimensions; however, Watkins and Marsick (2003) refined the DLOQ and produced a short version, which includes 21-items, that maintain the original theoretical structure. In 2004, Yang, Watkins and Marsick confirmed the valid model structure of the refined academic 21-item version of the DLOQ, providing the reliable results of confirmatory and exploratory factor analyses (GFI was .92 and .87 -- meaning that about 90 percent of the variances and covariances of the reported learning culture could be explained by the proposed seven dimensions of the learning organization). Furthermore, in order to emphasize practical applications in the actual organization settings, 12 items have been added for measuring the levels of performance improvement in both financial and knowledge domains. Consequently, an instrument that consists of seven dimensions of the learning organization and two measures of performance improvement was developed in two forms, (43-items and 21-items) and was named *DLOQ: Dimensions of the Learning Organization Questionnaires* (Yang, Watkins & Marsick, 2004).

Research using the DLOQ

To date, in an effort to develop valid measures of the learning organization, several studies have been conducted in various cultures as validation research of the *DLOQ*, in terms of its psychometric properties, which include the U.S., Colombia, China, and Taiwan contexts (Ellinger, Ellinger, Yang & Howton, 2002; Lien, Hung, Yang & Li, 2006; Yang, Watkins & Marsick, 2004; Zhang, Zhang & Yang; Hernandez, 2000). The results of these studies have verified the applicability of the *DLOQ* in different cultures, providing internal consistency of each item-reliability (coefficient alpha range from .71 to .91) and reliable factor structure of the dimensions of the learning organization (Lien, Hung, Yang & Li, 2006).

Furthermore, several types of subjects have been applied with the DLOQ, to address the applicability of the DLOQ to the overall organizational circumstances providing the valid factor construct of measures, which include

leadership, organizational commitment, job satisfaction, learning transfer, and so on, in both educational and business settings across the profit and non-profit levels (Hernandez, 2000; Kumar & Idris, 2006; Lim, 2003; McHargue, 1999; Wang, 2005).

The Need for the Validated DLOQ in Korea

According to Song (2000) and Yoo (2005), Korean business organizations need to consider the more strategic applications of the learning organization to overcome an aftermath of financial panic in the 1990s. Since the economic crisis in the 1990s, more and more efforts have been made to promote creative innovations in almost all organizations in terms of mergers and acquisitions, restructurings, changing business strategies, and cultural renovations.

Song (2005) further proposed that Korean organizations have the critical needs that concern the strategic implications of the learning organization for practical continuous learning in organizations to catch up with global and innovative economic trends. Furthermore, beyond the practices of the continuous learning process in organizations, now, Korean organizations need to learn how to adapt to the socio-economic changes, and how to link learning practices with the continuous performance improvement (Song, 1999, 2000; Song, 2005; Song & Park, 2006).

Since Korean business organizations have different and unique cultures and hierarchical organization structures (Song, 2005), applications of numerous types of measurement tools in the Korean context without strict processes of validation have the potential of producing negative side effects (Jang, Kim & Kim 2000; Sin, O & Park, 1999; Song 2000).

From a problematic standpoint, Yoo (2005) and Jang, Kim and Kim (2001) criticized that applications of learning organization approaches of more than a few of Korean business organizations have ended in failure. These researchers proposed that the reasons for failure were the absence of Korean-culturally acceptable instruments and invalid benchmarking of foreign business cases. All of these issues could be critical barriers against the structural and cultural advantages of Korean organizations (Jang, Kim & Kim, 2001). From an academic perspective, even though several research studies regarding the concept of the learning organization and applications of the DLOQ, have been conducted in Korea, few of those studies have accomplished the structural validation processes to measure acceptability and applicability of the instruments in the Korean culture.

In this regard, the current research examining the validity and reliability of DLOQ scores in Korea is intended as an evaluation of the applicability of the instrument in the Korean culture. The successful application of learning organization strategies and standardized measures of the learning organization characteristics may prove substantially helpful to Korean organizations trying to instill continuous learning practices.

Method

For this study, the abbreviated, 21-item version of the DLOQ was distributed in a large Korean organization based on the evidence that it is the optimal model structure in terms of the GFI (goodness-fit-index) from previous research (Ellinger, Ellinger, Yang & Howton, 2002; Lien, Hung, Yang & Li, 2006; Yang, Watkins & Marsick, 2004). All of the domains of the seven dimensions in the DLOQ instrument are measured with 21-items on the 6 point-Likert scale (1-Strongly disagree to 6-Strongly agree). Detailed methodological procedures are described in the following sections.

Translation strategy. Three bilingual Korean HRD experts translated the original DLOQ in to the Korean language. This team also offered suggestions to each other and refined the instrument based on their combined understanding of both the English and Korean languages. The researchers also asked a fourth bilingual individual to translate the developed Korean version back to English for comparison. Finally, the researchers confirmed the final version of a Korean DLOQ with the assistance of a Korean English teacher and an additional Korean English teacher with governmental certification.

Sample. The target population for this research was a large Korean conglomerate, which includes insurance, electronics, construction, service, and heavy industrial areas of a Korean conglomerate organization. The researchers were granted access to the electronics division, and 438 participants agreed to serve as participants.

Data collection. In order to collect data, the survey was distributed through the organization's Intra-Net server system. The Center for Human Resource Development of the conglomerate has an employee data-bank system, which contains all of the contact information for individual employees of all the subsidiary units. The senior manager of the HRD center of the conglomerate approved access to the Intra-Net server to obtain the lists of potential participants and distribute research questionnaires upon their agreement of participation. Along with the recruitment letter, the Human Subject Protection permission from IRB was distributed through the Intra-Net server.

Data analysis. To address the research question, essentially two statistical analyses have been conducted: item reliability estimation and Confirmatory Factor Analysis (CFA). First, in order to estimate the internal consistency and scale reliability for each of seven proposed dimensions of the learning organization in the Korean context, inter-item correlation coefficient and Cronbach's coefficient alpha were used. These item reliability-related estimations have been addressed with the SPSS 15.0 version. Secondly, CFA was utilized to assess the dimensionality and model structure of the Korean DLOQ version, in terms of construct validity of an instrument with pre-specified dimensions and allied measurement items. The CFA was conducted with LISREL 8.40 version (Jöreskog & Sörbom, 1993).

Results and Findings

The following sections describe the research results and findings. According to the primary purpose of this research -- *validation of instrument* -- the authors focused on the item reliability and construct validity issues. The construct validity is the extent to which a set of measured items actually reflects the theoretical latent construct those items are designed measure. Reliability of the item scales are one of the factors for convergent construct validity, and high construct reliability refers that internal consistency exists, meaning that measures all consistently represent the same latent construct (Hair, Black, Babin, Anderson, & Tatham, 2006, p. 778).

Reliability of Measures

As mentioned in the previous section, to estimate the item-internal consistency, correlation analysis and scale reliability were assessed, and Table 1 presents a comparison of the reliability estimates of the previous DLOQ studies in various contexts. Cronbach's Coefficient Alpha was used to review scale- reliability of measures of DLOQ. Table 2 shows inter-correlations among the all of the sub-items included in the DLOQ.

Table 1. *Reliability Estimates for the DLOQ Measures in Cross Cultural Contexts*

Dimemsions of Learning Organization	Korean Context	Previous Studies				
		Chinese Context	Taiwan Context	Latin Context	U.S. Context	
	N = 438	N = 477	N = 679	N = 906	N = 469	N = 208
	Current Research	Zhang *et al.*	Lien *et al.*	Hernandez	Yang *et al.*	Ellinger *et al.*
Continuous Learning	.70	.80	.72	.80	.79	.81
Inquiry and Dialogue	.80	.78	.89	.81	.85	.86
Team Learning	.80	.78	.86	.79	.84	.85
Embedded System	.70	.82	.71	.81	.80	.85
Empowerment	.76	.82	.75	.81	.75	.84
System Connection	.79	.84	.89	.80	.82	.87
Providing Leadership	.83	.85	.91	.84	.86	.89

The Cronbach's coeffcient alpha reliability estimates for the measures of the seven dimensions of the learning organization tend to be acceptable (ranging from .70 to .83). Given that this is an initial effort at measurement of a learning organization, the overall reliability estimates are satisfactory (Briggs and Cheek, 1986).

Table 2. *General Descriptive Analysis and Subscale Zero-order Inter-Correlations*

Variables	*M*	*SD*	1	2	3	4	5	6	7
1. Continuous Learning	4.13	.80	(.70)						
2. Inquiry and Dialogue	4.08	.81	.66**	(.80)					
3. Team Learnimg	4.04	.84	.55**	.72**	(.80)				
4. Embedded System	3.97	.81	.58**	.62**	.65**	(.70)			
5. Empowerment	3.87	.81	.56**	.60**	.67**	.66**	(.76)		
6. System Connection	2.28	.84	.56**	.57**	.64**	.60**	.62**	(.79)	
7. Leadership	4.30	.85	.61**	.63**	.66**	.63**	.65**	.70**	(.83)

Note. Sample size = 438 for all analyses, all dimensions are measured by Likert scales of 6-point.

**. $P < .001$ Correlation is significant at the .01 level (2-tailed); and Internal consistency estimates are presented in the diagonal

General descriptive statistics, shown in Table 2, indicate reasonable convergent validity for all of measures of the seven dimensions in the Korean version of the DLOQ. The levels of correlation among the seven dimensions reflect that the proposed learning organization constructs are positive and statistically significant, ranging from .55

to .72 at $p < .001$, in terms of the inter-item correlation coefficient in the Korean context. These levels of correlation coefficient are higher than the moderate effect size of the coefficient (Cohen, 1998; Urdan 2005).

Factor Structure of the DLOQ

Table 3 presents the results of the Confirmatory Factor Analysis (CFA) to identify the fit indices for model structure of the DLOQ measures. Six general criterion indices were tested to assess the fit of model structure between the hypothesized measurement model and that generated from the collected samples: (1) traditional chi-square (χ^2), (2) Jöreskin & Sörbom's (2001) goodness of fit index (GFI) and goodness of fit index for degree of freedom (AGFI), (3) Bentler's (1990) comparative fit index (CFI), (4) Bentler and Bonett's (1980) non-normed fit index (NNFI), (5) Steiger's (1990) root mean square error of approximation (RMSEA), and (6) Jöreskog & Sörbom's (2001) root mean square residual (RMR) with 95% confidence interval. These CFA analysis results may substantiate the adequacy of the item to factor associations and the number of dimensions underlying the proposed model (Hair, Black, Babin, Anderson, & Tatham, 2006; Thompson, 2004; Thomson & Diniel, 1996).

Table 3. *Fit Indices for the Model Structure of the DLOQ Measures in Korea*

Model	*df*	χ^2	RMR	RMSEA	GFI	AGFI	CFI	NNFI
21 Items 7-Factor	168	552.11**	.04	.07	.89	.86	.98	.98

Note. P < .01

The chi-square results [$\chi^2(438) = 552.11$, $p < .01$] were statistically significant, indicating a lack of close model fit with the data. Nevertheless, the chi-square test is sensitive to sample size and a holistic evaluation of the model needs to consider other fit indices. All estimates of comparative fit indices (GFI, AGFI, CFI, NNFI) were well above or near .90, indicating acceptable data-model fit. In addition, nearly 90% of the variances and covariances of the learning culture (GFI = .89) could be explained by the seven dimensions of the learning organization proposed by Watkins and Marsick (1993). Because of these fit statistics, further evidence of construct validity in a Korean cultural context has been provided. Thus, this research confirms that the DLOQ produces reliable and valid scores in Korea, and that the cultural differences between the U.S. and Korea do not seem to affect the accuracy or consistency of scores. Further, the small magnitude of residuals (RMR = .04, RMSEA = .07) also indicated appropriate model-data fit. In short, all indices examined confirmed that the seven-factor structure fit appropriately with the data obtained in Korea. It is therefore state that the DLOQ factor structure holds, and functions appropriately in a Korean cultural context.

Conclusions and Implications for HRD

The present study has shown strong evidence of construct validity for the scale intended to measure seven dimension of learning organization characteristics and culture. This research tested a seven-factor structure developed and initially validated in the U.S. (Yang, Watkins & Marsick, 2004) and confirmed that the seven-factor structure is fits the data reasonably well. Results show evidence of construct reliability and internal consistency in a culture that has not previously been investigated.

In their initial research, Yang, Watkins, and Marsick (2004) stated: "Constructing a valid instrument is an ongoing process. Although evidence of convergent validity of the seven dimensions of the DLOQ has been shown, the discriminant nature of the seven dimensions needs to be fully explored in the future…More studies are also needed to cross-validate the instrument with different organizational cultures and populations in order to establish firmly its utility and validity" (p. 51). This research generally accomplishes two critical tasks called for by the original authors, a) it adds to the stream of research that builds the overall validity and utility of the DLOQ, and b) it investigates properties of the instrument scores in an additional cultural context.

There are three key conclusions that can be drawn from this research. First, results indicate that Watkins and Marsick's *Dimensions of the Learning Organization Questionnaire (DLOQ)* produces valid and reliable scores in a Korean cultural context. Second this research lends credibility to previous research studies and practical applications of the DLOQ in Korea that have overlooked the need to examine if the instrument is appropriate in the Korean cultural context. Third, this research lays the foundation for future studies in Korean organizations that are intent on developing learning cultures and internal systems to support ongoing learning in hopes of fostering creativity and performance. These three conclusions are based on good model-data fit from this research.

An additional general conclusion is that this research has added to the growing body of research examining the DLOQ by Watkins and Marsick. In theory building terms, continued research studies using the DLOQ seem to confirm the assumptions and conceptualization of the learning organization offered by Watkins and Marsick. As

HRD increasingly concerns itself with theory and theory construction in the social sciences, examples of theory construction that come directly from HRD professionals will be increasingly useful. The DLOQ by Watkins and Marsick is one such example.

Finally, the practical implication of this research is that the DLOQ produces accurate and reliable measures of learning organization culture. Thus, its utility goes beyond academic research, and the DLOQ should be thought of as a useful means for obtaining information about an organization's learning culture. For example, OD consultants might consider taking a "reading" from the DLOQ to determine how the organizational members view the culture before implementing a major change effort. Marsick and Watkins also provided valuable tips on using their instrument in this way (1996).

As Yang, Watkins and Marsick stated: "Constructing a valid and reliable instrument is an ongoing process" (2004, p. 51). The present research is one more piece of the puzzle but additional studies are needed. For example, this research has only involved a single Korean organization. Questions can still be raised about the nature of any generalizations that might be made from this research as the sample size (given the population) was relatively limited. Larger, more diverse sample sizes are needed to further examine the claims made in this research, and to continue examining the validity and reliability of the DLOQ in general.

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