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RESEARCH ARTICLE

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The culture of learning organizations in Chinese state-owned and privately-owned enterprises: An empirical study

Abstract By using a Western concept—the instrument called dimensions of learning organization questionnaire (DLOQ), and the data collected from 919 employees in nine companies located in Guangdong Province, China, the present empirical study explores the culture of learning organizations in Chinese business settings. Findings suggest that the DLOQ is applicable to the context of China as well, and those demographic variables, such as age and educational level, together with the types of ownership of Chinese companies, such as state-owned enterprises (SOEs) and privately-owned enterprises (POEs), suggest differences in the culture of learning organizations. Results also indicate that the learning organization culture of a firm has strongly positive impact on employees' job satisfaction and perceived organizational performance. Two implications should be noted. First, as employees in middle age and with college education show the strongest sense of improving the learning culture, it can be inferred that demographic characters and groups may influence the organization's learning culture differently. Second, as POEs have a better learning atmosphere than SOEs, it can be inferred that POEs have a stronger competitiveness than SOEs in terms of learning ability and organizational performance. To indigenize the Western construct and instrument of learning organizations, the present study, as

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an exploratory research, gives substantial knowledge on the subject and seeks to fill the gap in the literature, despite the limitations of cultural nuances and a narrowly-concentrated sample.

Keywords culture of learning organizations, demographic variables, Chinese SOEs and POEs, job satisfaction, perceived performances

The concept and culture of learning organizations and their applications to business organizations in the West have been discussed for over a decade (e.g. Dixon, 1992, 1994; Marquardt, 1997, 2002; Marsick and Watkins, 2003; Senge, 1990). However, few studies have been conducted on these constructs in China, while reports have been published in some other Asian regions, such as Malaysia (Sta. Maria, 2003), Korea (Lim et al., 2004), and Taiwan (Lien et al., 2002).

While China's economy has been developing rapidly, theories and concepts of management and organizational studies are still borrowed from Western countries, especially those based on well-refined theoretical foundations and empirical methodologies. China's increasing presence on the world economic stage and the dramatic increase in business education have not influenced the fact that one of the important regions in business has not been studied the least by management scholars; however, scholars have considered China as a legitimate empirical context, and it is important for them to fill gaps in the global management and organization knowledge (Tsui et al., 2004). The present paper is designed to overcome the paucity that exists in examinations of the culture of learning organizations and its applicability in the context of China.

The Chinese economy has successfully experienced transition from a mandatory, planned economy to a free market-based economy. During this transition, the reform in ownership of business organizations has been dramatic. The state-owned enterprises (SOEs) dominated from 1949 but started waning since 1980, while the privately-owned enterprises (POEs), as the conventional dominant ownership type before, waned from 1949 but started resurging since 1980; and this trend still continues. The domestic enterprises, both SOEs and POEs, play the most important roles, not only because they are the principal forces in Chinese economy, but also because they are traditional, native Chinese enterprises in terms of managerial practices and corporate culture. In addition, while a small volume of studies on related human resource problems in foreign investment and Sino-foreign jointly owned enterprises (e.g. Bruton et al., 2000) and a number of studies on employees' attitudes and behaviors in general enterprises (Farh et al., 2004; Chen, et al., 2003) have been reported, little effort has been made to investigate the culture of learning organizations in Chinese SOEs and POEs by using Western concepts and empirical methods except for one recent article about SOEs (Zhang et al., 2004). Therefore, it is meaningful for us to conduct a study on Chinese SOEs and POEs.

1 Research purpose and questions

Focusing on the culture of learning organizations in Chinese SOEs and POEs, the purpose of this study is to examine the culture of learning organizations in different types of Chinese organizations and its impact on selected outcomes. This is important because it will generate new knowledge of management in general and will provide practical suggestions to native Chinese companies in particular. The reason for choosing this topic was that the culture of learning organizations has been considered as an antecedent of other organizational outcomes, such as work performance, turnover intention, productivity, job satisfaction and organizational commitment; and that pure SOEs and POEs respectively represent the two poles in native Chinese enterprises if measured by the extent of public ownership—the most publicly owned and the least publicly owned, thus, choosing SOEs and POEs as the study sample of enterprises could investigate the differences in managerial practice and yield significant findings as well as infer the findings to the whole of Chinese enterprises.

The theoretical foundation of this study was based on the conceptual frameworks developed in Western countries. Specifically, the DLOQ developed by Watkins and Marsick (1997) was used to guide the evaluation on the culture of learning organizations in Chinese enterprises. By the fundamental assumption that Western theoretical foundations and measurement instruments are applicable to Chinese context, this study addresses four research questions.

1) Are the DLOQ and its subscales reliable and valid in the Chinese context?

2) Are there any differences of perceived culture of learning organizations in terms of employees' demographic characteristics, particularly, age and educational level?

3) By employees' perception, are there any differences in the cultures of learning organizations between Chinese SOEs and POEs?

4) What is the impact of the culture of learning organizations on job satisfaction and organizations' perceived financial performance in Chinese firms?

2 Brief literature review and hypotheses

The theory of a learning organization is based on the earlier developed and comprehensive theories of learning. While learning at the individual level has long dominated scholarly literature, learning at the organizational level has become popular in organizational literature in recent years.

2.1 Concepts and perspectives

A learning organization refers to a prescribed set of strategies that can be used to enable organizational learning. However, there is no unified definition of learning

organizations. A learning organization is an organization that is continually expanding its adaptive and generative learning capacity to create its future; and it is also the organization that works as a whole, in which all individuals work together across traditional boundaries to create innovative solutions (Senge, 1990). Garvin (1993) defined a learning organization as "an organization skilled at creating, acquiring and transferring knowledge, and at modifying its behavior to reflect new knowledge and insights". Watkins and Marsick's (1993) definition stated that "learning organizations are characterized by total employee involvement in a process of collaboratively conducted, collectively accountable change directed towards shared values or principles" and emphasized that a learning organization is one that learns continuously and transforms itself constantly. Confessore and Kops (1998) defined a learning organization as an organizational environment in which organizational learning is structured so that individual learning, teamwork, collaboration, creativity, and knowledge distribution have a collective meaning and value. Thus, most dimensions described in the literature on learning organizations are not new, but they become new since they are coordinated into a system focused on organizational learning (Swanson and Holton, 2001).

Organizational learning is the intentional utilization of learning processes/approaches at the levels of individual, group, and system to continuously transform the organization (Dixon, 1994). According to Argyris and Schon (1996), when cognitive outcomes and newly shared mental models are embedded in the minds of all members, in the organizational culture and in the organizational systems, including work processes and individual jobs, learning becomes organizational learning. Hence, organizational learning involves the sharing of knowledge, beliefs, and assumptions among individuals and groups of the organization (Argyris, 1999). A learning organization is supported by a learning culture in which people work together to nurture and sustain a knowledge-creating system, and organizational learning is just one major aspect of a learning organization.

Organizational culture refers to an organization's values, beliefs, practices, rituals, and customs; it helps to shape behaviors and to fashion perceptions (Marquardt, 2002). According to Smircich (1983), culture is a system of shared cognitions by which organizational members choose behaviors and, thus, are guided by their behaviors. Organizations can create cultures that are specifically and intentionally focused on learning. Building learning organizations can be seen as the widely accepted strategy of making this attempt. Marquardt (2002) argued that "in a learning organization, the corporate culture is one in which learning is recognized as absolutely critical for business success; in such an organization, learning has become a habitual and integrated part of all organizational functions".

In this study, the term, the culture of learning organizations contains two aspects of meanings. Theoretically, the culture of learning organizations derives from the concept of learning organizations and relates to the concepts of organizational learning and organizational culture. Practically speaking, the culture of learning organizations can be the vital aspect of organizational culture and the core part of learning organizations.

2.2 Theoretical and empirical studies

Since early 1990, learning organizations have received vast theoretical and practical studies. However, most writings in this area tend to be prescriptive and lack systematic and solid empirical research (Tsang, 1997). Ortenblad's (2002) typology suggests four major understandings of the learning organization concept—the old organizational learning perspective, the learning at work perspective, the learning climate perspective, and the learning structure perspective. Watkins and Marsick's (1997) approach, represented by the "dimensions of learning organization questionnaire" (DLOQ), offers an integrative model of measuring learning organizations and the only theoretical framework that covers all the four "understandings" (Yang et al., 2004).

A number of empirical studies on organizational learning culture and related variables were conducted in Western contexts. Through the DLOQ, an exploratory research examined the relationship between organizational learning culture and organizations' financial performance (Ellinger et al., 2002). Using the short form of the DLOQ, Egan et al. (2004) investigated relationships among organizational learning culture, job satisfaction, and organizational performance-related outcomes, such as motivation, to transfer the intention of learning and turnover. In Chinese context, Zhang et al. (2004) made the first and the only effort to examine the applicability of the learning organization concept and its measurement through an empirical methodology and data collected from six Chinese SOEs. Research on learning organizations and organizational learning culture in Chinese literature is still in the stage of conceptual development. Although these concepts have become hot topics in both academics and practice, the literature review identifies almost no relative empirical studies. In addition, integrative and comparative studies among demographic groups and between SOEs and POEs with regard to these constructs are still missing in both English and Chinese literatures.

2.3 Hypotheses

Based on the research questions and relevant studies reviewed, this study sets forth the following research hypotheses.

Reliability and validity are two key psychometric properties that should be established in social and behavioral studies. In order to examine the applicability of Western management theories and concepts in the Chinese context, it is crucial to test whether the instrument developed in the Western countries is reliable and valid when it is translated into Chinese and used in a sample of Chinese organizations. A study conducted by Zhang et al. (2004) reported that an instrument measuring organizational learning culture, the DLOQ, demonstrated adequate evidence of reliability and validity when it was used in Chinese SOEs. This study reasoned that the newly translated Chinese version of the DLOQ would have the same reliable and valid evidence in a larger sample population of both Chinese SOEs and POEs.

Hypothesis 1: the correlation matrix implied by the measure assessing seven dimensions of learning organizational culture, namely DLOQ, is equal to that of empirical data collected from Chinese organizations.

Little research has explored the demographic impact on the culture of learning organizations. However, a study under a Korea context showed that demographic variables of employees, such as educational level, position ranking, years in the position, and years in the organization, are related to differences of the organization's learning culture (Lim et al., 2004). There is no identified theoretical base to support the link between employees' demographic variables and the culture of learning organizations, although logically, it is reasonable to assume that employees' demographic characteristics are associated with their perceived cultures of learning organizations, because an organization's actual learning culture can be shaped and represented by employees' perception toward it. Although all demographic features may relate to the differences in terms of the culture of learning organizations, there is no compelling need to test all of them at this time, as the demographic issue is not the only concern in this study. Among demographic variables, age and education probably have the greatest influence on learning culture, because age in a transitional country such as China informs very different perspectives toward learning and organizational culture, and educational level tends to have the greatest potential to impact individuals' perception on learning activities. Thus, the two demographic characters are chosen to examine their differences in impacting perceived learning culture, and the following hypothesis is proposed.

Hypothesis 2: there are differences among different demographic groups in age and educational level on impacting the dimensions of the learning organization culture.

Previous research has demonstrated that the economic form of a firm's ownership is significantly related to organizational commitment in both Western and Chinese contexts (Liu and Wang, 2004; Wang, 2004; Wetzel and Gallagher, 1990). In the Chinese literature, numerous studies have addressed the features caused by or related to different forms of ownership (e.g. Zhang et al., 2001). In the English literature, scholars have documented differences in the institutional environment both inside and outside different types of companies' ownerships in China (e.g. Walder, 2000). Evidence shows that SOEs and POEs differ significantly in many ways, such as leadership, promotion patterns, income allocations, human relations, etc. (Tang, 2005). Among the ownerships of Chinese firms, SOE and POE compose a pair of the most contrasting types. Despite more and more SOEs and POEs becoming blended in terms of ownership in recent years, most POEs and SOEs are complete in terms of ownership, meaning solely owned by individuals or by the government, respectively. With regard to organizational culture in China, Tsui et al. (2006), who assumed that the ownership structure is an antecedent of organizational culture, identified three distinct organizational cultures existed in SOEs, POEs, and foreign-invested enterprises, and revealed some uniqueness among them. Although there is a paucity of research conducted to verify the differences of employees' perception of the culture of learning organizations between SOEs and POEs, it can be inferably hypothesized that SOEs and POEs are significantly different in dimensions of learning culture, and the POEs better performs in promoting the culture of learning organizations than SOEs because POEs face stronger competition in their survival and development. Therefore, the third hypothesis is set as below.

> Hypothesis 3: there are significant differences between Chinese SOEs and POEs in terms of dimensions of the culture of learning organizations, and POEs are better than SOEs in most of these dimensions.

The relationship between employees' job satisfaction and organizational effectiveness has been supported by management theories in the literature (Likert, 1961; Organ, 1977). Ostroff (1992) found that employee satisfaction was positively related to organizational performance at the organizational level. Other studies have revealed a relationship between the attitudes and turnover of employees and customer satisfaction (Ryan et al., 1996; Harter et al., 2002). Schneider et al. (2003) found that job satisfaction was significantly related to return on assets and earnings per share.

Chinese management research emphasizes organizational performance but has paid relatively little attention to its antecedent variables. However, building a learning organization is being increasingly considered as one of the effective

management tools which have impact on an organization's performance in China (Benson and Zhu, 2002; Zhang et al., 2004). Ellinger et al. (2002) obtained managerial responses of USA firms to the instrument of DLOQ, along with both perceptual and objective measures, which suggested a positive association between the concept of learning organizations and the firms' financial performance. Through analyzing the evidence from Australia, Chen et al. (2003) found that the culture of learning organizations and the balanced scorecard of performance were correlated, and the former was a prerequisite for the latter. Although performance of business organizations can be examined in a number of ways, Marsick and Watkins (2003) stated that a number of studies across organizational and national contexts have shown a correlation between the dimensions of learning organizations and the knowledge and financial performances. We reason that financial performance is of more concern to management and more understandable to ordinary employees than knowledge performance, because the former is broadly considered as the ultimate outcome. So, this study only includes financial performance as the outcome measure.

Previous studies (e.g. Lim et al., 2004) demonstrated that job satisfaction was influenced by both the culture of learning organizations and employees' organizational commitment. Because all measurement items were answered by the same person, there might be a common method bias as those who rated high on the culture of learning organizations may also give higher scores on organizational performance and vice versa. The authors followed the suggestion of Podsakoff et al. (2003) by using job satisfaction as a common factor, so that to control the common method variance. Thus, the following hypothesis can be set forth.

Hypothesis 4: there will be positive associations between the culture of learning organizations, job satisfaction and financial performance in Chinese firms.

3 Research methods

This research adopted an empirical method design—a self-report questionnaire survey—to collect individual employees' perceptions of organizational learning culture, and then several statistical analysis techniques were used to process the data collected. The authors acknowledged the fact that the culture of learning organizations is a variable of organizational level, while a self-reported questionnaire measures perception at individual level. But, using the perceptions of employees to report the most important values, beliefs or attributes that described their company's culture is a typical approach in past studies of organizational culture (e.g. Chatman and Jehn, 1994; O'reilly et al., 1991).

3.1 Instrument

Dimensions of learning organization questionnaire (DLOQ) developed by Watkins and Marsick (1997) was chosen, and modified for this study, because it may be the most widely accepted self-reporting instrument measuring the culture of learning organizations. In the modified Chinese version of DLOQ, its original six-point Likert-type scale was changed to a five-point scale, and the items on participants' organization information were deleted. Yang (2003) simplified the DLOQ by reducing its 43 items of the seven dimensions to 21 items with each dimension including three items and with better psychometric properties. The short form of the DLOQ is more concise and thus suitable to the present study.

The original DLOQ included three participants' demographic variables: primary responsibility, personal role, and educational experience. In the modified Chinese version of DLOQ, this part was revised to include seven demographic variables. Except age and educational level, the other five demographics are surveyed in this study but to be examined in a further study.

In the DLOQ, the construct of financial performance was drawn on traditional financial metrics such as return on investment and operational effectiveness, while the construct of knowledge performance was based on literature of intellectual capital and practice sources of knowledge management. For research purposes, the six items that embrace the measure of knowledge performance were deleted from the questionnaire used in this study, but the six items that measure financial performance were adopted. Marsick and Watkins (2003) acknowledged limitations of the performance measures: 1) participants at most organizational levels can take the DLOQ, but often, only those who are in middle- and high-level positions are comfortably answering the performance questions; 2) it is just a snapshot of perceptions of change in performance, not hard financial or company data.

The Minnesota satisfaction questionnaire (MSQ) developed by Weiss et al. (1967) was incorporated into the Chinese version of the questionnaire to measure participants' job satisfaction. The original MSQ comprised of two dimensions, intrinsic job satisfaction and extrinsic job satisfaction, with 20 items. Wang (2005) translated the MSQ from English into Chinese, tested and confirmed its applicability in the Chinese context. So, the questionnaire used in this study adopted Wang's (2005) Chinese version of the MSQ. Table 1 summarizes the key contents of the Chinese-version survey.

Several empirical studies have provided adequate psychometric properties of the DLOQ from its English version (Yang et al., 2004; Marsick and Watkins, 2003; Yang, 2003; Hernandez, 2003). In order to ensure the validity of the Chinese version of the instrument, an English-to-Chinese translation of the instrument was undertaken carefully to ensure that this process was done

appropriately. Content validity was checked with subject experts, a pilot test was conducted.

Table 1 Contents of the final questionnaire

Section	Contents/subscales	*N* of items
Culture of learning organization	LOC-1: creating learning opportunity	3
	LOC-2: promoting inquiry and dialogue	3
	LOC-3: promoting collaboration and team learning	3
	LOC-4: empowering people toward a collective version	3
	LOC-5: establishing systems to capture and share learning	3
	LOC-6: connecting the organization to its environment	3
	LOC-7: providing strategic leadership for learning	3
Perceived financial performance	PFP-1: return on investments in the organization	1
	PFP-2: average productivity per employee	1
	PFP-3: time to market for products and services	1
	PFP-4: response to customer complaints	1
	PFP-5: the organization's market share	1
	PFP-6: the cost per business transaction	1
Job satisfaction	JS-1: extrinsic satisfaction	8
	JS-2: intrinsic satisfaction	12
Demographic information	Gender	1
	Age	1
	Education	1
	Level of position	1
	Type of position	1
	Years in current position	1
	Years in current organization	1

3.2 Sample selection and sample frame

The targeted population consisted of all employees who work in SOEs and POEs located in the area of Pearl River Delta, Guangdong Province, especially in two major cities, Guangzhou and Shenzhen. The sampling strategy of this study combined both purposeful and convenience sampling. Nine companies agreed to participate—four SOEs and five POEs. All companies were considered large in terms of their ownership characteristics, industrial features, and localities. Table 2 shows the basic information regarding the sample size and the sample frame used in this study.

By using both purposeful and convenience sampling strategies, a total of 1,300 employees were chosen in an attempt of representing the general demographics and other characteristics of all the other employees in a company. Returns were received from 991 participants including 72 in the pilot study. Useable surveys totaled 919 for a high return rate of 70.6%, and the non-defective responses were 852 with a rate of 65.5%. Most respondents were male, ages 23–40 years old,

Table 2 Characteristics of nine selected companies and sample size

Selected company	Type of ownership	Type of business	Located city[a)]	Number of employees	Sample size
A[a)]	SOE	Multiple industries	Guangzhou, Foshan, etc.	32,000	160
B[a)]	SOE	Banking and financing	Guangzhou, Huizhou, etc.	30,000	160
C	SOE	Ground transportation	Guangzhou	4,500	140
D	SOE	Comprehensive retailing	Guangzhou	2,500	140
E	POE	Detergent products	Guangzhou	3,000	150
F	POE	Automobile services	Shenzhen	2,000	150
G	POE	Housing construction	Dongguan	1,700	140
H[b)]	POE	Health-care products	Shenzhen	1,600	140[b]
I	POE	Information technology	Shenzhen	1,100	120
Total	2	9	5	78,400	1,300

Notes: [a)] Companies A and B are large group corporations with more than 25 affiliates/branches located in 15-20 cities of Guangdong Province, particularly, in the Pearl River Delta. However, this survey was distributed to only 2–3 cities' affiliates in both companies.
[b)] Included 72 survey participants of the pilot test.

with a college education. Table 3 shows total response rates and individual response rates in the nine participating companies.

Table 3 Response rate of the survey

Company	Sample size	Responses returned	Non-defective[a)] responses	Initial response rate (%)	Non-defective response rate (%)
A (SOE)	160	76	61	47.5	38.1
B (SOE)	160	111	96	69.4	60.0
C (SOE)	140	101	87	72.1	62.1
D (SOE)	140	121	114	86.4	81.4
E (POE)	150	115	98	76.6	65.3
F (POE)	150	124	117	82.6	78.0
G (POE)	140	110	99	78.5	70.7
H (POE)	140	122	92	87.1	65.7
I (POE)	120	111	88	92.5	73.3
Total	1,300	991	852	76.9	65.5

Notes: [a)]A non-defective response means that all items in the questionnaire were completed appropriately, evidenced by high quality and preferred.

4 Results

Several techniques for data analysis were used in this study in accordance with the four research questions. The first question was addressed by using reliability

analysis and confirmatory factor analysis (CFA). For the second and third questions, besides descriptive statistics to provide the basic information about the instrument variables, one-way analysis of variance (ANOVA) was conducted to identify the differences among demographic groups, and independent samples *t*-test was conducted to identify the differences between Chinese SOEs and POEs. For the fourth question, the structural equation modeling (SEM) was used to examine the relations among the culture of learning organizations, job satisfaction, and perceived organizational performance. Two statistical programs, SPSS 12 and LISREL 8.7, were used for statistical analyses.

4.1 Reliability and validity evidences for the instrument

Cronbach's alpha, also known as the coefficient of reliability, indicates the extent of internal consistency for a set of items (or variables), assuming that they measure a one-dimensional latent construct. Cronbach's α at 0.70 or higher can satisfy a conservative minimum level of reliability (Hair et al., 1998). The α values of subscales of the instrument ranged from 0.75 to 0.84 and showed acceptable reliability with α totaling 0.94. Details are presented in Table 4.

Table 4 Reliability of the Chinese-version questionnaire ($n = 919$)

Scale	Sub-scale	Number of items	Cronbach's alpha (α)
Culture of learning organizations	LOC-1	3	0.75
	LOC-2	3	0.75
	LOC-3	3	0.75
	LOC-4	3	0.80
	LOC-5	3	0.76
	LOC-6	3	0.82
	LOC-7	3	0.84
	Total scale	21	0.94

Confirmatory factor analysis (CFA) is a technique used to test explicitly if a pre-specified factor model fits the data of a study. In this study, the CFA technique depicted the measurement model developed in the USA for data collected from China to examine the relationships between the measurement items and the underlying dimensions in the pre-specified factor structures. Fig. 1 shows the measurement model of the DLOQ, including seven dimensions and 21 items.

Several model–data fit indices were applied to evaluate the properties of the model, including chi-square, chi-square/df, goodness-of-fit index (GFI) (Joreskog and Sorbom, 1996), comparative fit index (CFI) (Bentler, 1990), non-normed fit index (NNFI) (Bentler and Bonett, 1980), Joreskog and Sorbom's (1996) root

mean Square residuals (RMR), and Seiger's (1990) root mean square error of approximation (RMSEA). Table 5 reports these fit indices.

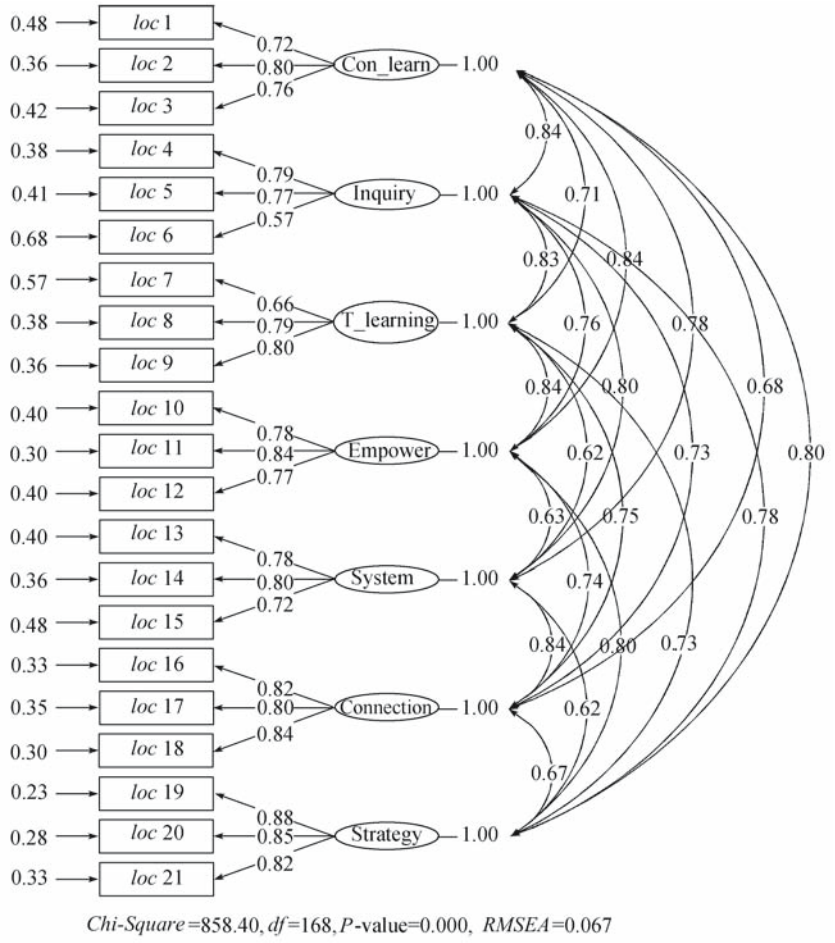

Fig. 1 Confirmatory factor analysis for DLOQ

Table 5 Fit indices for the measurement model

χ^2	*df*	χ^2/df	*GFI*	*NNFI*	*CFI*	*RMR*	*RMSEA*
858.40	168	5.11	0.92	0.98	0.99	0.04	0.07

From the results, the Chinese version of DLOQ showed appropriate fit between the proposed measurement model and the data, because several comparative fit indices, *GFI*, *NNFI*, and *CFI* were all much higher than 0.90, and *RMSEA* and

RMR were relatively small. In addition to good fit indices, all factor loadings reached over 0.70 ($p < 0.01$) with only two exceptions (0.57 and 0.66), strongly supporting the adequacy of the measurement items included in the instrument.

Therefore, the evidence results indicated that the seven-dimension structure of DLOQ fit the data well, and its Chinese version is well accepted in the Chinese context. Hypothesis 1 was supported.

4.2 Differences among demographic groups

It is reasoned that employees' demographic status may be associated with their perceptions of the organization's learning culture. Despite the fact that all demographic features listed in the questionnaire may relate to differences regarding the dimensions of learning culture, only age and education were chosen to compare the means scored on each subscale in this study. Table 6 tells the participants' demographic composition in terms of age and educational level.

Table 6 Sample composition by demographics

Demographic characteristic	Category	SOEs frequency (%)	POEs frequency (%)	Total frequency (%)
Age (y)	18–22	4 (1.0%)	29 (5.9%)	33 (3.7%)
	23–30	97 (24.6%)	292 (59.1%)	389 (43.8%)
	31–40	134 (33.9%)	138 (27.9%)	272 (30.6%)
	41–50	135 (34.2%)	29 (5.9%)	164 (18.4%)
	51–60	25 (6.3%)	6 (1.2%)	31 (3.5%)
	Total	395 (100.0%)	494 (100.0%)	889 (100.0%)
Highest level of education	Junior high school	1 (0.3%)	17 (3.5%)	18 (2.0%)
	Senior high school	63 (16.0%)	121 (24.6%)	184 (20.8%)
	Two-year college	176 (44.7%)	232 (47.2%)	408 (46.0%)
	Four-year college	140 (35.5%)	112 (22.8%)	252 (28.4%)
	Graduate school	14 (3.6%)	9 (1.8%)	23 (2.6%)
	Total	394 (100.0%)	492 (100.0%)	886 (100.0%)

As Table 6 demonstrates, employees' age variable was measured in five categories/groups. Two age groups, 23–30 and 31–40, represent the largest proportion of the sample (over 70%). The age group, 41–50, is the third largest proportion of the sample. There were relatively few respondents in two age categories—those who were below 23 and those who were older than 50. Given the fact that most Chinese enterprises prefer younger employees, the age distribution is reasonable and tends to reflect the demographic information of overall Chinese employees. For a better comparison, the five groups were merged into three, the age group of 18–22 was merged into the next older group, and the

group of 51–60 was merged into the adjacent younger group. A one way ANOVA was conducted to test the age differences in employees' perception on organizational learning culture and the results are shown in Table 7.

Table 7 Demographic differences by age in the culture of learning organizations as determined by ANOVA ($n = 869$)

Dimension/ variable	Mean			*F*	*Sig.*	Multiple (differencessignificant at 0.05 level)
	A (18 − 30) $n = 414$	B (31 − 40) $n = 265$	C (41 − 60) $n = 190$			
LOC1	3.39	3.26	3.60	9.65	0.000	C > A, C > B
LOC2	3.38	3.24	3.36	3.27	0.038	A > B
LOC3	3.39	3.20	3.41	6.72	0.001	A > B, C > B
LOC4	3.53	3.35	3.71	12.61	0.000	C > A, C > B, A > B
LOC5	3.47	3.28	3.57	8.02	0.000	A > B, C > B
LOC6	3.65	3.44	3.87	17.87	0.000	C > A, C > B, A > B
LOC7	3.71	3.50	3.90	13.67	0.000	C > A, C > B, A > B
Overall LOC	3.50	3.32	3.63	14.14	0.000	C > A, C > B, A > B

The results in Table 7 indicate that almost in every comparison component, employees in different age groups showed differences. This finding was surprisingly different from the findings of a study conducted in the Korean context (Lim et al., 2004), which reported no differences by age. Senior employees (between ages 41–60) had the highest evaluation of the company's learning organizational culture, the youngest employee group (between ages 18–30) of employees had median evaluation, and the middle-age employee group (between ages 31–40) reported the lowest scores.

The variable of education also had five categories/groups (middle school, high school, two-year college, four-year college, and graduate school) from the survey, but, again for the purpose of effective comparison, they were merged into three groups: (a) senior high school or less; (b) two-year college; (c) four-year college or above. Then, an ANOVA analysis was performed to analyze the differences among the three groups. Table 8 shows the results.

Table 8 reveals that, in all subscales and overall scores on the culture of learning organizations, the employees in the three groups by educational level showed differences. Specifically, those with the lowest educational level had the highest evaluation; those with the highest educational level had the lowest evaluation; and those with the middle educational level gave the middle evaluation to the organization.

From the above two tables, it can be concluded that demographic groups in age and educational level show important differences in all dimensions of learning culture, and that the results of ANOVA analysis strongly support hypothesis 2.

Table 8 Demographic differences by educational level in the culture of learning organizations by ANOVA ($n = 866$)

Variables	Mean (A: senior high school or less; B: two-years college; C: four-years college or above)			*F*	Sig.	Multiple differences (significant at the 0.05)
	A ($n = 198$)	B ($n = 401$)	C ($n = 267$)			
*LOC*1	3.61	3.40	3.23	12.88	0.000	A > B, A > C,B > C
*LOC*2	3.46	3.33	3.24	5.07	0.007	A > C
*LOC*3	3.47	3.30	3.30	3.90	0.020	A > B, A > C
*LOC*4	3.76	3.53	3.32	19.47	0.000	A > B, A > C,B > C
*LOC*5	3.59	3.43	3.34	5.46	0.004	A > C
*LOC*6	3.84	3.62	3.51	11.44	0.000	A > B, A > C
*LOC*7	3.86	3.72	3.52	10.63	0.000	A > C, B > C
Overall LOC	3.66	3.48	3.35	13.68	0.000	A > B, A > C,B > C

4.3 Differences between SOEs and POEs

To analyze whether there were differences in the culture of learning organizations between SOEs and POEs, the *t*-test was used after a descriptive analysis. Overall and individual means and standard deviations from the seven subscales and the 21 items were calculated and presented in Tables 9 and 10, respectively.

Table 9 Descriptive statistics on subscales of the DLOQ ($n = 889$)

Subscales	*Mean*	*SD*
*LOC*1: creating learning opportunity	3.40	0.81
*LOC*2: promoting inquiry and dialogue	3.33	0.73
*LOC*3: promoting collaboration and team learning	3.34	0.76
*LOC*4: empowering people with a collective vision	3.43	0.81
*LOC*5: establishing systems to share learning	3.51	0.76
*LOC*6: connecting organization to its environment	3.63	0.77
*LOC*7: providing strategic leadership for learning	3.68	0.82
Overall score of organizational learning culture	3.47	0.63

As Table 9 shows, employees in both sample SOEs and POEs gave moderately and evenly high scores on the seven dimensions. The overall score on the culture of learning organizations only reached 3.47, just a little higher than the median. The results imply that employees of the sample Chinese firms are not satisfied with the process of building learning organizations.

As Table 10 shows, all items scored again evenly, ranging from 3.18 (LO15) to 3.72 (LO21), which may imply that most participant companies pay relatively

Table 10 Descriptive statistics of items of the DLOQ scale ($n = 870$)

Item	*Mean*	*S. D.*
*LO*1: in my organization, people help each other learn	3.48	0.94
*LO*2: in my organization, people are given time to support learning	3.42	0.99
*LO*3: in my organization, people are rewarded for learning	3.30	1.04
*LO*4: in my organization, people give open and honest feedback to each other	3.29	0.98
*LO*5: in my organization, whenever people state their view, they also ask what others think	3.39	0.90
*LO*6: in my organization, people spend time building trust with each other	3.33	0.89
*LO*7: in my organization, teams/groups have the freedom to adapt their goals as needed	3.25	0.95
*LO*8: teams/groups revise their thinking as a result of discussion or information collection	3.49	0.87
*LO*9: teams/groups are confident that the organization will act on their recommendations	3.26	0.94
*LO*10: creating systems to measure gaps between current and expected performance	3.50	0.89
*LO*11: my organization makes its lessons learned available to all employees	3.63	0.88
*LO*12: my organization measures the results of time and resources spent on training	3.41	0.93
*LO*13: my organization recognizes people for taking initiative	3.71	1.00
*LO*14: giving people control over the resources they need to accomplish their work	3.39	1.01
*LO*15: my organization supports employees who takes calculated risks	3.18	0.93
*LO*16: my organization encourages people to think from a global perspective	3.66	0.89
*LO*17: my organization works together with the outside community to meet mutual needs	3.67	0.90
*LO*18: encouraging people to get answers from across the org. when solving problems	3.59	0.88
*LO*19: in my organization, leaders mentor and coach those they lead	3.64	0.96
*LO*20: in my organization, leaders continually look for opportunities to learn	3.70	0.94
*LO*21: leaders ensure that the organization's actions are consistent with its values	3.72	0.92

equal attention to the aspects of the culture of learning organizations. However, the lowest scored item, *LO*15 ("my organization supports employees who take calculated risks"), may imply that many Chinese companies still do not encourage employees to do reasonable but risky things.

A *t*-test assesses whether the means of the two organizational types (SOEs vs. POEs) in the seven dimensions plus the overall in the DLOQ data collected are statistically different from each other. Table 11 shows the results from the *t*-tests.

In Table 11, all comparisons of the culture of learning organizations revealed significant differences except for the dimension of creating continuous learning opportunities. The results demonstrated that POEs had significantly higher scores

on six of the seven dimensions plus the overall learning culture. From the eyes of employees, the POEs paid more attention to promoting the culture of learning organizations than the SOEs, and the SOEs received much lower scores than POEs in several dimensions, such as promoting inquiry and dialogue, promoting collaboration and team learning, empowering people toward a collective vision, and establishing systems to capture and share learning. In short, the results from the *t*-test yield several important differences between SOEs and POEs, thus confirming hypothesis 3.

Table 11 *t*est results for mean comparisons of DLOQ between SOEs and POEs ($n = 889$)

Variable	*t* value	*Sig.*	*Mean*		*SD*		Difference
			SOEs $n = 403$	POEs $n = 486$	SOEs $n = 403$	POEs $n = 486$	
LOC-1	−1.54	0.124	3.35	3.43	0.90	0.74	None
LOC-2	−4.24	0.000	3.22	3.42	0.77	0.68	POEs > SOEs
LOC-3	−4.27	0.000	3.22	3.43	0.86	0.65	POEs > SOEs
LOC-4	−4.41	0.000	3.39	3.61	0.87	0.64	POEs > SOEs
LOC-5	−4.31	0.000	3.30	3.53	0.88	0.73	POEs > SOEs
LOC-6	−2.16	0.031	3.57	3.68	0.87	0.67	POEs > SOEs
LOC-7	−2.98	0.003	3.59	3.76	0.91	0.73	POEs > SOEs
O. LOC	−4.21	0.000	3.38	3.55	0.73	0.52	POEs > SOEs

4.4 The culture of learning organizations and perceived financial performance

By means of LISREL 8.7, the authors modeled the relationship between perceived learning organizational culture and perceived financial performance using job satisfaction as a mediating variable, then examined the proposed relationship among the three variables. Figure 2 shows standardized estimates for the structural model. Table 12 reports the fit indices of the structural model, and the results suggest that the model fit the data very well.

Table 12 Fit indices for the structural model

χ^2	*df*	χ^2/df	*GFI*	*NNFI*	*CFI*	*RMR*	*RMSEA*
416.02	72	5.78	0.94	0.98	0.99	0.03	0.07

The results of structural equation modeling indicate that the culture of learning organizations has significant impact on employees' job satisfaction and perceived organizational performance (standardized structural coefficients are 0.76 and 0.69 respectively). However, employees' job satisfaction tends to have some negligible impact on perceived organizational performance (0.07, not significant

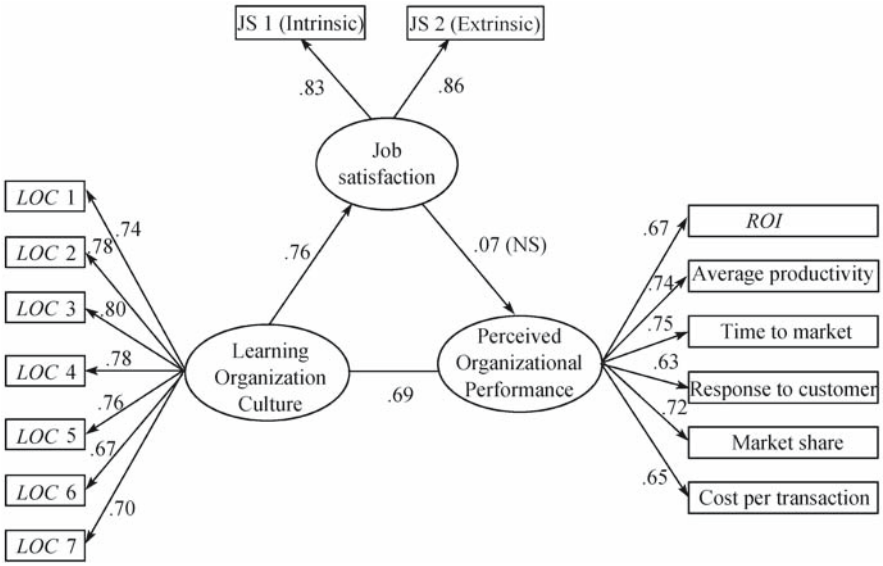

Fig. 2 Standardized estimates for the structural model of the culture of learning organizations, job satisfaction, and perceived organizational performance

at $p < 0.01$) when the culture of learning organizations is taken into consideration. In other words, the culture of learning organizations has both direct and indirect impact on perceived organizational performance, but the indirect impact mediated by job satisfaction was little. All measurement items have loaded on their designated factor significantly as most of the factor loadings were above 0.70 and a few of them were in 0.60s. Thus, hypothesis 4 is moderately confirmed.

5 Discussion and implications

The short-form DLOQ was first translated into Chinese and examined by Zhang et al. (2004) from a sample of 477 employees in a Chinese SOE setting. Their study revealed both reliability and validity evidence, and thus demonstrated the applicability of the DLOQ's to Chinese companies. The present study used a larger sample from two business settings, and showed slightly better results. Consequently, this study reconfirmed the DLOQ's applicability to the Chinese context.

There have been very few studies determining how demographic variables are associated with organizational learning culture, so whether demographic compositions characterize organizational learning culture or not remains unknown. The results of this study show that different demographic groups of

age and educational level had different perceptions on organizational learning culture. In terms of age, it could be roughly generalized that while in most dimensions employees over 41 gave higher scores, employees less than 30 gave lower scores, and employees between 31 and 40 gave the lowest scores. This phenomenon indicated that employees between 31 and 40 showed the least satisfaction with the present status and had the strongest need of improving the company's organizational learning culture.

In terms of the education, it seems that employees with high school education gave the highest scores on all seven dimensions, employees with two years of college education gave median scores, and that employees with four years of college education gave the lowest scores. This phenomenon indicated that employees with the highest level of education showed the least satisfaction with their present status and had the strongest sense of the need to improve companies' cultures of learning organizations.

These two findings imply that if a company has a larger portion of employees whose ages are between 31 and 40, then the company is more likely to have a higher level of organizational learning culture; if a company has a large portion of employees who have a four-year degree or higher qualification, the company is more likely to have a higher level of organizational learning culture. However, further study is needed to determine whether demographic compositions are antecedent variables of the organizational learning culture.

The results from this study showed that POEs performed better than SOEs in all dimensions except the dimension of creating continuous learning opportunities (no difference). This might be explained by the fact that SOEs have been required by the government to institute continuous training and educational programs. This finding indicates that POEs are facing more stringent pressures for their survival and development; thus, they are more active in the search of ways to improve themselves. Through this comparison, POEs have a better learning atmosphere than SOEs as perceived by employees; it can be inferred that POEs have a stronger competitiveness over SOEs in terms of an organization's learning capability.

In Table 11, comparisons in the cultures of learning organizations revealed significant differences for most aspects except for one in the dimension of creating continuous learning opportunities. The results demonstrated that POEs had significantly higher scores on six of the seven dimensions plus the overall learning culture. From the eyes of employees, POEs paid more attention to promoting the culture of learning organizations than SOEs, and SOEs received much lower scores than POEs in many areas of the culture of learning organizations. In short, the results from the *t*-test yield several important differences between SOEs and POEs with POEs being superior to SOEs overall.

The results of structural equation modeling confirm the research of hypothesis 4 that the culture of learning organizations has a strong association with

employees' job satisfaction and perceived organizational performance. Many propositions have been found in the literature, which posit that organizational culture has only indirect impacts on organizational performance and such impacts are normally mediated by employees' attitudinal variables such as job satisfaction. For example, Siehl and Martin (1990) suggested that culture influences an employee's attitude and that the attitude, in turn, impacts organizational effectiveness. However, this study revealed a strong direct impact of the culture of learning organizations on perceived organizational performance. Perhaps this result can be explained by the fact that the culture of learning organizations becomes an important factor in explaining organizational effectiveness. Although the culture of learning organizations can be interpreted as a sub-domain of the organizational culture, a learning organization can directly enhance an organization's capability and thus influence overall effectiveness.

The results of the structural equation modeling verify that organizations valuing learning and strive toward becoming a learning organization are able to increase their employees' satisfaction and ultimately enhance overall effectiveness. Although previous studies have demonstrated positive outcomes of the culture of learning organizations (Ellinger et al., 2002; Egan et al., 2004), little empirical evidence exists concerning the outcomes of the culture of learning organizations in Chinese enterprises. This study represents a first attempt to establish a linkage between the culture of learning organizations and organizational effectiveness. The results of this study indicate that a learning organization is not only an academic concept that management practitioners should learn; it also has a real impact on organizational effectiveness. Here the implication is that those organizations with high learning ability will perform better, and improving learning ability can start at an individual level. For example, when individuals perceive that their organizational values and encourages learning, they will feel that they have better chance to advance and develop their career and potentials. Consequently, they will have higher job satisfaction, do their jobs better, and believe that their organization is performing well. Thus, Chinese enterprises and managers should not only understand what the concept of learning organizations is, but also develop and implement effective strategies and concrete measurements to execute.

The existing literature tends to reflect the view that building a learning organization is a crucial practice to enhance organizational performance and generally treats organizational performance as the dominant outcome variable. Wang's (2005) study suggests that the culture of learning organizations, as an extended construct of learning organizations, is strongly associated with employees' job satisfaction and organizational commitment, and strongly associated with the health and stability of an organization's workforce in Chinese context, which ultimately influences the organization's performance and other

outcome variables. So, it indicates that more research needs to be conducted on the construct of the culture of learning organizations.

6 Conclusions

Despite the limitations of cultural nuances and geographically narrow sampling, several findings of the present study are important and have filled a gap in the literature on the culture of learning organizations of Chinese business settings.

By confirming the applicability of the DLOQ, this study indicates that the Chinese context and the Western context share a high-level similarity. It suggests that a concept or instrument in organization research works both in the Western context and Chinese context.

The concept of a learning organization is the abstract for many practitioners, and how to build a learning organization is somewhat vague. But this study provides practitioners with a simple and viable way to build a learning organization—focusing on the seven dimensions described in the DLOQ to nurture an organizational learning culture. The seven dimensions center on Watkins and Marsick's (1996) theoretical proposition that empowering employees is one of the key measures for building a learning organization. Hence, in order to enhance an organization's learning culture, it is recommended that organizations and HR practitioners start at the aspect of people and then that of the system.

This study evokes some compelling needs for further research on the culture of learning organizations in Chinese contexts. First, there is a need for further investigating the relationships between an organization's learning culture and performance, and differences reflected in the various relationships, such as learning's impact on different domains of performance and so on. Second, there is a need for further investigating the differences among enterprises in different forms of economic ownership, including SOEs, POEs, joint ventures, foreign-invested firms, and so on, and demographic differences in these various firms should also be considered. For differences between SOEs and POEs, it is recommended that deeper comparisons be made, and factors or reasons leading to differences and how they impact an organization's learning culture be explored; for differences among various demographic groups, the exploration of whether demographic characteristics can be predictive variables or antecedents of the organization's learning culture is recommended.

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