

Learning organization and mentoring practice: An empirical investigation

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Abstract. The Architecture, Engineering and Construction industry (AEC) of the 21st century is undergoing significant changes to address issues such as the economic integration, international partnering and globalization. These changes are initiating a challenge for AEC industry in regard to how to educate personnel to appropriately respond to the rapid change. A needs-driven approach to mentoring recognizes the fact that employees in the workplace are required to engage in continuous learning to keep pace with changes taking place inside the organization. The foundation of this challenge focuses on how to facilitate learning organization and establish continuous human resource development throughout all levels of the organization. Organization has a great demand of transforming into learning organization. Quantitative research is designed in order to achieve four main objectives: 1) To validate 'learning organization' concept in Hong Kong AEC organizations 2) To set out the benchmark for learning organizations 3) To evaluate differences among demographics characteristics. 4) To determine the relationship between organizational learning cultures, mentoring practice, and organizational commitment. The Dimensions of the Learning Organization Questionnaire (DLOQ) is adopted in light of the review to assess Hong Kong AEC industry toward learning organization. The questionnaire was administered to young professionals, and drew on responses from a total sample of 151 employees to gauge the progress towards learning organization and mentoring practice in local AEC industry. Emphasis has been placed on young professionals' view towards organization to ensure learning and knowledge transfer as a means of increasing the knowledge base of workers and improving performance. The achievement of either could lead to improvements in overall performance.

Introduction

The Architecture, Engineering and Construction industry (AEC) of the 21st century is undergoing significant changes to address issues such as the introduction of advanced technologies, the aging of the workforce, globalization, economic integration, and international partnering (P Chinowsky & P Carrillo, 2007). These fluctuating environment and unanticipated changes (Drew & Smith, 1995; Klimecki & Lassleben, 1998) are initiating a challenge for the AEC industry in regard to how to educate personnel to appropriately respond to the rapid change. The foundation of this challenge focuses on how to facilitate learning organization and establish continuous human resource development throughout all levels of the organization. There is a great demand of transforming into learning organization in AEC industry.

Incorporate with the concept of learning organization, Hong Kong Institution of Engineers (HKIE) initiated 'Graduates Scheme "A" training' for young professionals in AEC industry. For young professionals, to become full member or acquire full membership of

this professional institute, they have to find a supervisor to sign his/ her logbook and to pass an assessment of professional competence. Hence, a mentor and mentorship relationship formally or informally established between supervisor and graduates. Mentoring practice therefore serves as a medium for learning organization by continuously evolving through new knowledge and continuously educating their workforce as valuable assets. At meantime, their organizational commitment will be finally improved as an intangible organizational performance.

This study attempts to determine the impact of an organizational learning culture on the outcomes of mentoring practice in AEC industry, which lead to improvements in organizational commitment. With the need to study relationship between organizational learning culture, mentoring practice and organizational commitment the research questions are formulated as follow:

1. Are the integrated questionnaire instrument derived from DLOQ, MSS and OCS reliable and valid in Hong Kong AEC industry context?
2. What are the differences of organizational learning culture, mentoring practice, and organizational commitment in terms of demographic characteristics?
3. What are the relationships among organizational learning culture, mentoring practice, and organizational commitment in AEC industry in Hong Kong?

Definition of learning organization

The concept of the learning organization has been around since the early twentieth century. Although the concept was probably introduced by Garratt in 1987, the seminal and much quoted work is Senge's (1990; 1995) book *The Fifth Discipline* is viewed as the guru of the learning organization (De Tienne & Jackson, 2001; Katzenbach & Smith, 2003). At the core of the *Fifth Discipline* is the identification of the widely quoted five disciplines of the learning organization: personal mastery, mental models, team learning, building shared vision and systematic thinking.

Though Peter Senge's definition are still on hot debate, publications striving to define the concept of the learning organization have shaped the evolution over time, as Calvert, Mobley, & Marshall (1994); Campbell & Cairns (1994); Coopey (1995); Daft & Marcic (1998); Jashapara (1993); Loermans (2002); McGill, Slocum, & Lei (1993); Sankar (2003); Kontoghiorghes, Awbrey, & Feurig (2005), but without any consensus on a single definition. The ambiguity still exists as what a learning organization is or should be (Dima, Yusuf, & Charbel, 2009). Table 1 displays some definitions of learning organizations often discussed in the literature and summarized into four main approaches: learning oriented, strategy oriented, target oriented and organizational culture oriented.

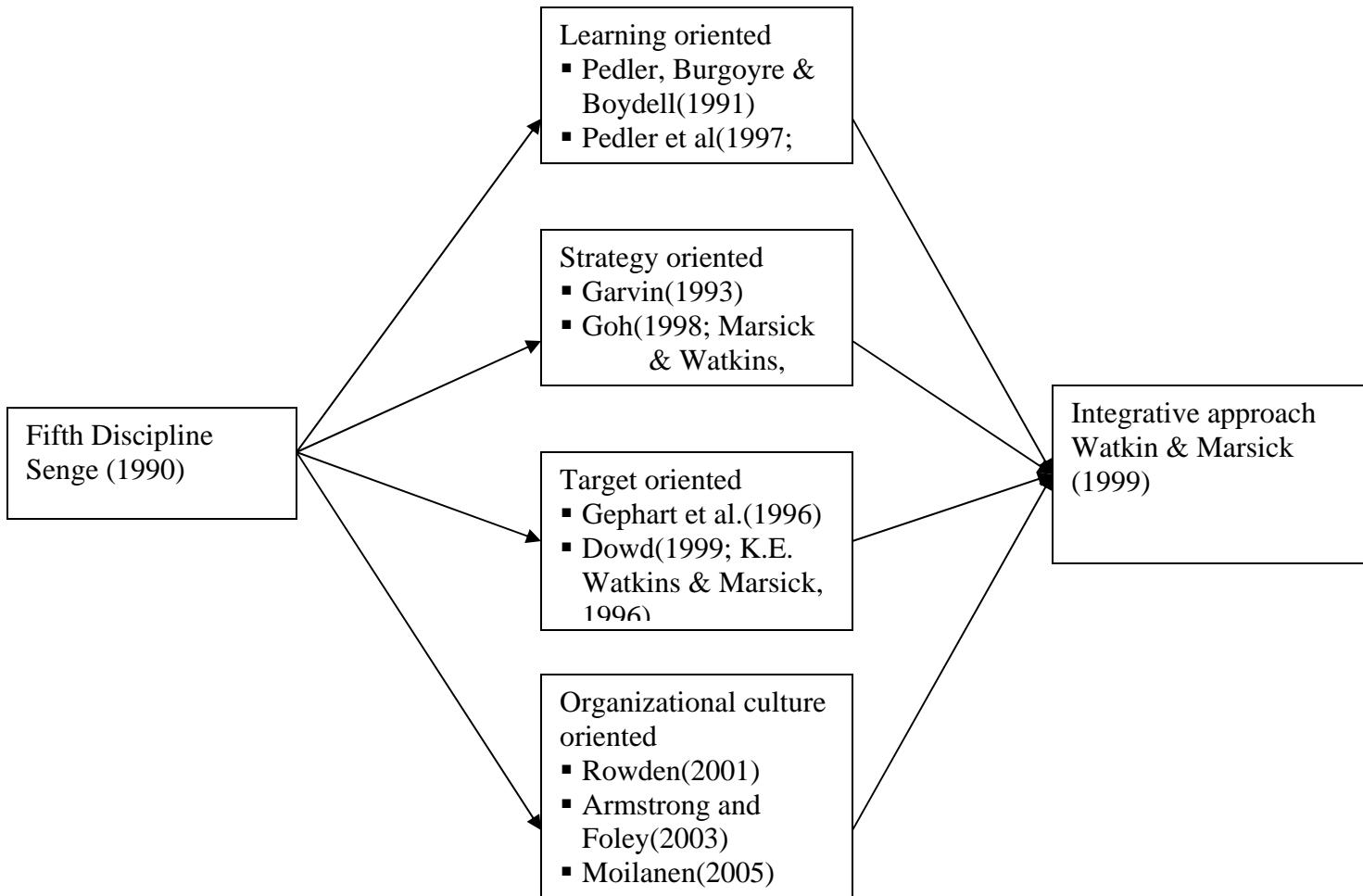


Figure 1. Conceptual Development of Learning Organization

Approaches	Definitions of learning organization
<i>System thinking</i>	
Senge (1990)	A learning organization processes five disciplines as team learning, shared visions, mental models, personal mastery and system thinking
<i>Learning oriented</i>	
Pedler, Burgoyne, and Boydell (1991)	An organization that facilitates the learning of all of its members and continuously transforms itself in order to meet its strategic goals
Pedler et al., (1997)	An organization that facilitates learning for all its members and consciously transforms itself and its context
<i>Strategy oriented</i>	
Garvin (1993)	An organization skilled at creating, acquiring and transferring knowledge, and at modifying its behavior to reflect new knowledge and insights
Goh (1998)	An organization characterize on clarity and support for mission and vision, shared leadership and involvement, a culture that encourages experimentation, the ability to transfer knowledge across organizational boundaries, and teamwork and cooperation
Lewis (2002)	An organization in which employees are continually acquiring and sharing new knowledge and are willing to apply that knowledge in making decisions or performing their work
<i>Target oriented</i>	
Gephart et al. (1996)	An organization in which learning processes are analyzed, monitored, developed, managed and aligned with improvement and innovation goals
Dowd (1999)	A group of people dedicated to learning and improving forever
Griego et al. (2000)	An organization that constantly improves results based on increased performance made possible because it is growing more adroit
<i>Organizational culture oriented</i>	
Rowden (2001)	An organization in which everyone is engaged in solving problems, enabling the organization to continuously experiment, change, and improve, and increasing its capacity to grow, learn and achieve its purpose
Armstrong and Foley (2003)	A learning organization has cultural facets (visions, values, assumptions and behaviors) that support a learning environment; processes that foster people's learning and development by identifying their learning needs and

	facilitating learning; and structural facets that enable learning activities to be supported and implemented in the workplace
Moilanen (2005)	A learning organization is a consciously managed organization with learning as a vital component in its values, visions and goals as well as in its everyday operations and their assessment
<i>Integrative approach</i>	
Watkin & Marsick(1993,1996),	An organization that is characterized by continuous learning for continuous improvement, and by the capacity to transform itself.
Watkin & Marsick (1999)	An organization that emphasizes three keys: system-level, continuous learning; created in order to create and manage knowledge outcomes; which lead to improvement in the organization's performance, and ultimately its value

Table 1 Definitions of learning organization: modified from (D Jamali & Sidani, 2008)

Later Watkins and Marsick (1996) provide an integrative model of a learning organization. It integrates two main organization constituents: people and structure as interactive components of organizational change and development. They integrated the four into one universal as 'one that learns continuously and transforms itself... learning is a continuous, strategically used process- integrated with and running parallel to work' (1996). Their proposed learning organization emphasizes: 1) systems-level and continuous learning 2) that is created in order to create and manage knowledge outcomes 3) which lead to improvement in the organization's performance. The learning organization is viewed as one that has the capacity to integrate people and structures in order to move toward continuous learning and change.

Learning organization in AEC industry in Hong Kong

The term 'learning organization' has entered the vocabulary of many managers and is providing an alternative basis for evaluating the organization performance in Architecture, Engineering and Construction (AEC) industry (Kululanga, Edum-Fotwe, & McCaffer, 2001). Researchers such as Peter Senge at MIT have written extensively of the benefit and challenges associated with adopting organizational learning culture. However, the existence of these resources and success cases does not automatically translate into cross-industry adoption because of its uniqueness (Paul Chinowsky & Patricia Carrillo, 2007). For the AEC industry to adopt a learning organization the concept of continuous learning and personal advancement would become a fundamental operating concept within organizations at every level.

Kululanga et al (2001) and Chinowsky et al (2007) outline the importance and principals that underlie learning organization and they identify dimensions for learning in AEC industry. Besides, Chinowsky et al (2007) emphasis the transformation of organization from production-oriented entities to learning organization entities that continuously leverage the knowledge of the workforce is a primary object of management researchers. In AEC industry, learning organization is emerging with greater demand of educated workforce, organization growth and globalization. A learning organization is focused on success by continuously evolving through new knowledge and preparation for the future rather than codification of the past (Chinowsky, et al., 2007). The vision transforming an organization into learning organization could lead to improved performance. Learning organizations can consider as a 'better' solution for organizations (Huysman, 2000).

Mentoring as a forum of learning organization

Mentoring is defined as the interpersonal relationship between an older and more experienced individual (mentor) and a younger and less experienced one (protégé'; Kram, 1985). Mentoring has long been proposed as a dynamic process that stimulates mutual learning and social interaction between mentors and protégés, suggesting that both mentors and protégé's benefit from mentoring relationships (Allen, Poteet, & Burroughs, 1997; Kram, 1996). Employees with rich work experience are valuable resources with the potential to increase organizational effectiveness. Understanding the mentoring practices through which protégé's benefit may have useful implications for organizations seeking to facilitate individual career success and improve the organizational effectiveness of their diverse workforce. Due to uniqueness of AEC industry, employees are more likely to work together as a team. Mentoring practice is

a desirable opportunity for mentors and protégés to learn from each other and make progress.

The link between mentoring and learning is relatively new in the mentoring literature (Mentoring handbook, 2007). Allen and Eby (2003) examined learning from the mentor's perspective. The few empirical studies provide preliminary evidence that mentoring practice can contribute to employee development and organization competitive advantages. Research suggests that learning organization and mentoring are both critical for learning and managing knowledge in organizations. In a learning organization, learning occurs as part of work, often between peers and co-workers.

Research Design and Methods

The objectives of the study are to explore the organizational learning culture profiles, the level of mentoring functions, and subsequently to determine the relationships in between. The study therefore seeks to find out if the learning organization measurement tool 'DLOQ' is valid in Hong Kong AEC industry context, and to approve that mentoring practice are more likely to facilitate the dimensions of a learning organization.

This research uses an empirical research design; specifically, it uses a questionnaire survey method with several statistical analysis techniques. It aims to capture the main characteristics of the population from a pool of young professionals who are working in the Architecture, Engineering and Construction industry (AEC) in Hong Kong.

The pilot test is conducted through a self-administered survey to ensure the existence of high reliability and the appropriateness of the survey for the intended context. The instrument is revised and finalized after pilot test. Finally, 83 items in the instrument are confirmed, including 75 items for measuring all constructs with a 6-point Likert-type scale and 8 items for examining demographic variables. The questionnaire used is integrated from three original surveys developed in western countries (CCS, DLOQ, MS). The main survey is prepared in mixed method, both hard copies for self-administered survey and electronic ones for web survey.

Respondents in the study are young professionals in AEC industry and having studied in local universities in Hong Kong. A sample of 1186 professionals is selected, and 269 participants responded for a total response rate of 22.7% and usable response rate of 14.3%. Most respondents are male, with a bachelor education and engaged in profession of engineering.

To address the three research questions, several statistical techniques are utilized. Confirmatory factor analysis (CFA) is used to assess the validity of the instrument used in Hong Kong context; descriptive analysis is used to depict the current status, and the results are compared among demographic groups. Correlation analysis is used to examine the relationships among the constructs of organizational learning culture, mentoring practice and organizational commitment.

Reliability and validity

Based on the reliability and validity tests, the questionnaire derived from the three western instruments (DLOQ, OCS, and mentoring practice), as a whole, is moderately acceptable. However, the organizational commitment scale in the questionnaire

remains questionable. Only after delete all negative worded items from scale, it has better reliability and a clear three-factor structure in PCA.

The short form of DLOQ. It is widely accepted in western countries and validated in other types of organizations (banking and IT) (Lien, Hung, Yang, & Li, 2004; Wang, Yang, & N.Mclean, 2007). It has also been revised many times and scientifically validated to be reliable (K.E. Watkins & Marsick, 2003) as well as validated in several Asian contexts, such as Malaysia (Maria, 2003), Korea (Song, 2008), Taiwan (Lien, et al., 2004), and Mainland China (Wang, et al., 2007). The latest research (Dima Jamali, Sidani, & Zouein, 2009) has been using DLOQ to diagnosing learning organizations in Banking and IT. The DLOQ has depth and integrates important attributes of learning organizations (e.g. continuous learning opportunities, learning and dialogue, team learning, empowerment, systems, and leading learning). Consequently, this study confirmed the DLOQ's applicability to Hong Kong Architecture, Engineering and Construction Industry.

The mentoring practices scale. This study examines the applicability of the scale in Hong Kong AEC industry. After testing factor structures with Principal Component Analysis (PCA) and the subsequent reliabilities, a three-factor structure is selected, this yield good validity and acceptable reliability. The results show that most of the items loaded on their original factors proposed by Kram& Isabella (1985). However, two items from vocational scale (VM5=0.57; VM6=0.632) and one item from psychosocial scale (PM3=0.725) are significantly loaded on another factor of role modeling dimension. The Cronbach's coefficient alpha reliability estimates for the mentoring relationship tend to be acceptable; all are above 0.80 and overall reliability estimates are satisfactory (0.947).

Organizational commitment scale. The Organizational Commitment Scale (OCS) is developed to test aspects of a three-component model of commitment (Allen & Meyer, 1990). Three subtests, Affective (ACS), Normative (NCS) and Continuance (CCS) aspects of commitment are factor analyzed and tested for reliability. However, PCA does not yield a clear factor structure, nor do the items show an acceptable inter-item correlation. After excluding the unstable items one by one from pool, different options are tested in terms of PCA structure and reliability. All reversed items (ACS4-6, ACS8, NCS1-3, NCS 8, CCS1, CCS4) deleted, the scale has better reliability (Cronbach's alpha is 0.858) and a clear three-factor structure in PCA. Low reliability and validity of reversed items is because respondents are not used to responding to reversed questions culturally and psychologically, especially when the questionnaire had most items in the form of positive statements.

Learning organization benchmark

The DLOQ is used preliminarily to establish the extent to which young professionals perceive their company to be a learning organization. In addition to approved reliability and validity, there is a need to set up a passing mark for learning organization. Because normative data have not yet been recommended for the DLOQ, an appropriate level is established by which to judge the organization as worthy of further study. Consequently, a mean score of 3.500 or above (on a six-point scale) on at least five of the seven dimensions is used as the somewhat arbitrary decision point from which to proceed with the study (Oblinger & Hawkins, 2005). This established

an average to slightly above-average benchmark by which to conclude that AEC organizations could overall be considered as learning organizations.

As shown in table 2, means for all seven factors exceeded the 3.500 benchmark previously established, ranging from a low of 3.626 for encouraging collaboration and team learning to a high of 3.843 for providing strategic leadership for learning. Whereas the team learning factor has the lowest mean, the mean of 3.743 for the two individual factors of creating continuous learning opportunities and promoting inquiry and dialogue is only slightly higher than the mean of 3.707 for the four organizational factors (i.e., creating systems to capture and share learning, empowering people toward a collective vision, connecting the organization to its environment, and providing strategic leadership for learning).

	Factor	Items	Mean	SD
1	Create continuous learning opportunities	1-3	3.787	1.0857
2	Promote inquiry and dialogue	4-6	3.698	1.0049
3	Encourage collaboration and team learning	7-9	3.626	1.0060
4	Create systems to capture and share learning	10-12	3.626	1.1681
5	Empower people toward a collective vision	13-15	3.633	1.0153
6	Connect the organization to its environment	16-18	3.727	1.0681
7	Provide strategic leadership for learning	19-21	3.843	1.0976

Table 2 Means and Stand Deviation of DLOQ

To summarize, means for the instrument's seven factors suggest that although organizations in AEC industry has room to improve in its quest to become a learning organization, it offers a potentially rich context for studying learning organization.

Differences between organization types

Table 3 shows that organization types are categorized into five groups, including client, contractor, consultant, supplier and others from the survey. Then, ANOVA is performed to analyze the differences among the five groups.

	Organization type	Frequency	Percent
Valid	Client	42	27.8
	Contractor	44	29.1
	Consultant	38	25.2

	Supplier	12	7.9
	Other	12	7.9
	Total	148	98.0
Missing		3	2.0

Table 3. Categories and frequencies on organization type (n=151)

Figure 2 shows the value of the mean scores of the responses on dimension of learning organization by type categorization. All types of organizations achieve slightly above-3.5 benchmark by which to conclude that organizations of client, contractor, consultant or supplier could overall be considered learning organization. It is also observed that response from client and supplier are characterized by above-average and better practice than from contractor and consultant.

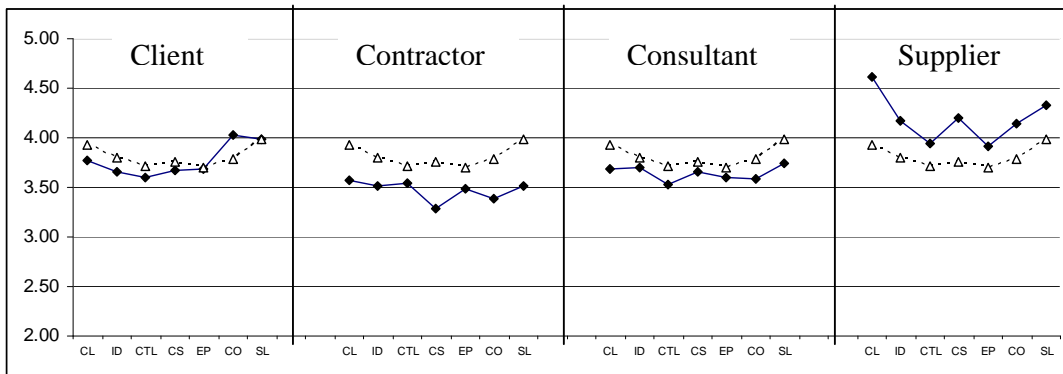


Figure 2-value comparison with mean scores of organizational learning culture

Comparing to client, contractor, consultant and supplier, participants working in supplier show relatively higher evaluation of mentoring practice. Those working in client have moderately lower scores, and it draws attention that employees in great demand respond mentoring practice.

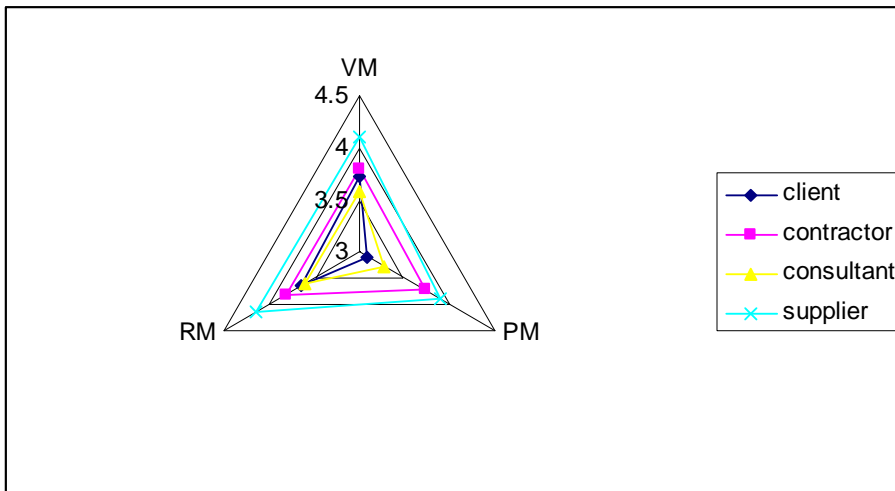


Figure 3 mentoring practice and organization type

Comparing to client, contractor, consultant and supplier, participants working in supplier show relatively high evaluation of organizational commitment. Those working in client have moderately low scores.

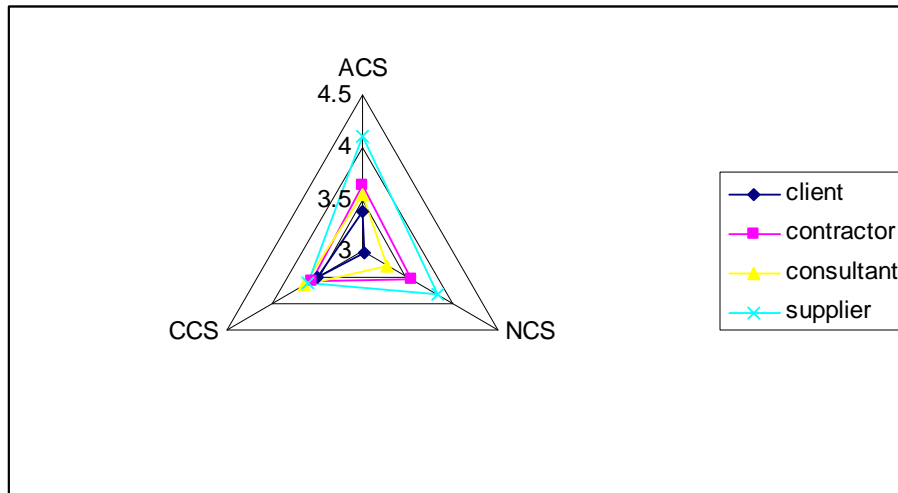


Figure 4 organizational commitment and organization type

Table 4 shows the result from ANOVA, revealing that in over half comparison components the employees in the five groups by organization types show differences. First, employees from supplier showed a higher evaluation of creating learning opportunities, empowering people toward a collective version, connecting the organization to its environment, and providing strategic leadership for learning. However, contractors have relatively the lowest scores on above four subscales. Second, employees show significant differences in psychosocial support between different organization types. Employees from client organization are reported having lower evaluation of psychosocial support. Third, the results show significant differences of organizational commitment between different organization types. Employees from supplier organization have higher commitment while employees from client organization have the lowest scores on organizational commitment.

Variable	Mean							
	A (client) N=42	B (contractor) N=44	C (consultant) N=38	D (supplier) N=12	E (other) N=12	F	Sig.	Multiple Differences*
LOC 1	3.78	3.57	3.68	4.61	4.00	3.37	0.01	D>E>A>C>B
LOC 2	3.66	3.51	3.70	4.17	3.94	1.65	0.16	None
LOC 3	3.59	3.55	3.53	3.94	3.97	1.07	0.37	None
LOC 4	3.67	3.28	3.66	4.19	3.97	2.68	0.03	D>E>C>A>B
LOC 5	3.68	3.49	3.61	3.92	3.81	0.76	0.55	None
LOC 6	4.03	3.38	3.58	4.14	3.83	3.88	0.01	D>A>E>C>B
LOC 7	3.98	3.51	3.75	4.33	4.33	3.23	0.01	D=E>A>C>B
VS	3.67	3.73	3.62	4.22	3.68	1.12	0.35	None
PS	3.10	3.65	3.36	4.05	3.29	3.11	0.02	D>B>C>E>A
RM	3.64	3.74	3.69	4.23	3.87	1.02	0.40	None
ACS	3.37	3.55	3.60	4.17	3.98	2.69	0.03	D>E>C>B>A
NCS	2.99	3.53	3.32	3.77	3.52	3.28	0.02	D>B>E>C>A

CCS	3.59	3.52	3.66	3.40	3.60	0.26	0.90	None
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*The mean differences are significant at the 0.05 level

Note:

LOC1, creating learning opportunity; LOC2, promoting inquiry and dialogue; LOC 3, promoting collaboration and team learning; LOC4, empowering people toward a collective version; LOC5, establishing systems to capture and share learning; LOC6, connecting the organization to its environment; LOC7, providing strategic leadership for learning; VS, vocational support; PS, psychical support; RM, role modeling; ACS, affective commitment; NC, normative commitment; CC, continuance commitment.

Table 4 Demographic differences by organization type in organizational learning culture, mentoring practice and organizational commitment as determined by ANOVA (n=151)

Relationships among three constructs

The concepts of learning organization culture, organizational commitment, and mentoring practice and their applications to business organizations in western contexts have been discussed for several decades (Marsick & Watkins, 2003; Meyer & Allen, 1997; Spector, 1997). However, these constructs have not been under researched in AEC industry in Hong Kong. Previous researches suggest that the learning organization and mentoring are both critical tools for learning and managing knowledge in organizations. Learning organization(Davis & Daley, 2008; Korth, 2007; P.M.Buhler, 2002) and mentoring(Berk, Berg, Mortimer, Walton-Moss, & Yeo, 2005; Lankau & Scandura, 2002; Ragins, 1997; Turban & Dougherty, 1994) are considered to be important competencies for organizations to develop in order to succeed in today's turbulent marketplace.

The results from this study support the widely accepted hypothesis that learning organization culture is positively related to mentoring practice and organizational commitment. Specifically, the DLOQ serves as a benchmark to establish the extent to which young professionals perceive their company to be a learning organization. This study investigates the relationships among the three key organizational variables in HK AEC industry.

The findings from this study suggest that organizational learning culture can be viewed as an important antecedent factor for mentoring practice, and mentoring practice can be viewed as an important antecedent factor for organizational commitment. Organizational learning culture has a strongly positive association with mentoring practice; and mentoring practice, as a mediator, also positively impacts organizational commitment.

This finding not only provides a new direction for organizational research on key variables, but also generate an important implication for organization practice: building and strengthening organizational learning culture is a powerful way to foster employees' mentoring practice and organizational commitment, and to create a healthy and stable workforce.

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. The results of this study suggest that organizational learning culture, as an extended construct of learning organization, is strongly associated with employees' mentoring practice. The

mentoring practice is strongly associated with the stability of an organization's workforce, which ultimately influences the organizational commitment.

Conclusions

This empirical study, using western concepts and instruments, explores relationships among organizational learning culture, mentoring practice and organizational commitment in Hong Kong AEC industry. Despite the limitations of cultural nuances and narrowly geographically concentrated sampling, this study yields several important findings and contributes to filling a gap in the literature.

This study extends the current research on relationships in Hong Kong Architecture, Engineering and Construction industry. It also recognizes positively reciprocal relations of organizational learning culture, mentoring practice and organizational commitment; this study finds that mentoring practice is a mediator influencing on the two variables.

This study examines the applicability of the three scales (DLOQ, mentoring practice and organizational commitment scale) originally developed in western countries. Despite the fact that the three original scales have been well structured and broadly accepted in other countries' context, it does not mean that they should be the same in Hong Kong and in Architecture, Engineering and Construction Industry. However, this study, by confirming the applicability of the three scales, indicates that the HK AEC context and other contexts share a high level of similarity. This study also investigates the present status and differences among demographic groups in organizational learning culture, organizational commitment and mentoring practice.

Recommendations for practice

The result of this study have practical importance and provide valuable suggestions and implications for professionals and managers to understand the present status, difference, and relationships in organizational learning culture, mentoring practice and organizational commitment in HK AEC industry.

First, valid and reliable measurement scales can be valuable managerial tools in practice. Practitioners should become more aware of choosing and utilizing well defined and indigenized measurement scales in their daily work. Measurement scale, such DLOQ, if appropriately applied, can help to diagnose problems, weaknesses, and strengths, and to improve the current situation in organizational learning culture, mentoring practice, and organizational commitment.

Second, organizational learning culture, mentoring practice and organizational commitment are not isolated but are closely and systematically correlated. Particularly, nurturing an organization's learning culture can lead to a higher level of mentoring practice and organizational commitment in that organization. Improving employees' mentoring practice can also result in an increase in employees' organizational commitment.

Third, nurturing organizational learning culture should be based on the seven dimensions in the DLOQ. The concept of learning organization for facilitating learning and knowledge management has been described as an important strategy for

making improvements in performance and maintaining a competitive advantage (Davis & Daley, 2008; Korth, 2007; P.M.Buhler, 2002). 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 to building a learning organization. Hence, in order to enhance an organization's learning culture, organizations and practitioners need to start at the people level and then at the system level.

Fourth, relatively low organizational commitment can serve as an alert to organizations and practitioners. The result from this study shows that employees in AEC industry have relatively low organizational commitment, particularly low in normative commitment. Organizations and practitioners should consider fostering organizational norms and values to encourage employees to stay with the organization.

Fifth, organizations should pay more attention to less experienced employees' mentoring and organizational commitment. This study shows less experience employees, normally less one year working experience, have lower evaluation level of mentoring and lower organizational commitment. The reasons behind this phenomenon may be they newly joined organizations or lack of internal communication within organizations. Thus, it is suggested that managements and practitioners explicitly state the organization's goals and values to young employees to enhance the linkage between the company's and the individual's goals, and improve mutual trust between employees and organizational management.

Sixth, client organization should pay more attention to employees' mentoring and organizational commitment. The result of this study highlights relatively low psychosocial support featured in mentoring practice, and lower affective and normative commitment. The reasons behind this phenomenon may be a lack of effective internal communication or an unhelpful relationship between ordinary employees and top management. So, it is suggested that managers and practitioners in client organizations raise their organizational commitment by pushing employees to realize personal goals and by expanding employees' future career development opportunities.

Seventh, apart from years of working experience, organization type and professional affiliation, other demographic characteristics do not associate with organizational learning culture, mentoring practice and organizational commitment. This study reveals that variables such as employees' gender, tenure and organization size do not relate to these three variables.

Last, in order to improve employees' mentoring practice, organizations should pay more attention to three dimensions of organizational learning culture which are 'inquiry and dialogue', 'strategic leadership' and 'collaborative and team learning'. These improvements of mentoring practice will then lead to higher organizational commitment. In addition, many organizations prefer/ welcome employees with long working experiences, but the study reveals that employees with more working experience have lower organizational commitment and mentoring practice. This policy again does not fully consider of the issue of keeping a stable and healthy

workforce, and their future development. It is suggested that organizations and managers should pay more attention to those experienced employees' learning and their organizational commitment.

Limitations and directions for future research

The present study helps practitioners and researchers understand organizational learning culture in Hong Kong AEC industry, but several limitations, including, generalizability, common method variance, survey error, antecedents of organizational learning culture, and economic environment, are addressed in order to guide the direction of future research.

First is generalizability of the results. Because the sample size is around one hundred and fifty, surveying from employees studied in The University of Hong Kong. The results may have restricted generalizability to individuals outside of this university but within HK AEC industry. However, as researcher reports the difficulty in retaining young professionals, this is an appropriate population for a sample. The present study appropriately examines the perceptions of an organizational learning culture from young professionals and how it affects organizations. Thus, it may not applicable to a more general population. Gathering data from different perspectives, such as from management or mentors' view, compare these two groups to see the differences and extend the findings to the whole AEC industry. Moreover, due to the limited sample size, demographic variables are not equally distributed and the group comparison may remain problems, further restricting its generalizability.

Second, an important concern raised by adopting this type of mixed-mode survey is whether demographic of the sample is different in each mode. Consider, for example, how to determine whether mail survey differ from post survey in their scores of measurement scales, and whether respondents from mail survey behave differently from web survey. Though the t-test for independent samples shows there is no significant difference between two survey modes, mail survey is recommended due to the relatively high response rate and validity.

Third, this study investigates organizational learning culture by applying DLOQ for analysis. Apart from testing reliability and validity of DLOQ, an important assumption is made that the seven dimensions weigh the equal importance. Therefore, this study uses the average score of all subscales to analysis and set up the benchmark for similarity. However, it is reasonable to challenge dimensions may weigh differently from each other among demographic variables, e.g., different contexts, professions and organization types. It is suggested that, for future research, analytical hierarchy process (AHP) is recommended to analyze data. AHP is a systematic method for comparing a list of objectives or alternatives (Forman, 2001).

Fourth, this study is conducted during an economic recession when many organizations made polices and strategies for their survival. There is possibility that organizations may also make changes to learning and mentoring practice provided for young professionals. Therefore, respondents' perceptions regarding organizational learning culture, mentoring practice and organizational commitment are different comparing to other time set or when the economic is better. This study helps practitioners and professionals in AEC industry have better view of employees'

reactions to organization changes and their responses to organizational learning culture, mentoring practice and organizational commitment. It is suggested that conduct the survey again, in order to check any differences or whether economic environment will change employees' perceptions.

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