

ORGANISATIONAL LEARNING CAPABILITY: MEASUREMENT, VALIDATION, AND APPLICATION IN MALAYSIA

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ABSTRACT

This study aimed to validate the measurement of organisational learning capability originally developed by Chiva et al. (2007) in the Malaysian context. This organisational learning capability scale comprises 14 items grouped into five dimensions, namely experimentation, risk-taking, interaction with the external environment, dialogue, and participative decision-making. An analysis of the scale's content validity, convergent validity, and discriminant validity was conducted using a total of 251 valid survey responses obtained from Grade 7 construction companies in Malaysia. The findings showed that the five dimensions of organisational learning capability are highly suited for measuring organisational learning capability in the Malaysian context. The validation of the organisational learning capability measurement provides useful insights to organisations wishing to develop a learning culture or enhance their learning capability. This study also enriches the literature by proving that the organisational learning capability measurement is a valid and consistent scale that can be applied at the organisational level and across different cultures and sectors.

Keywords: organisational learning, organisational learning capability, measurement, validation, Malaysia.

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1. INTRODUCTION

Organisations today face a variety of challenges such as intense competition, technology advancement, short product life cycle, shrinking market share, cyber insecurity, talent retention, globalisation, and increased workplace diversity (Marin-Garcia et al., 2018). To remain competitive in this rapidly changing VUCA (i.e. volatile, uncertain, complex, and ambiguous)

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environment, organisations' ability to learn has been found to be critical (e.g. Kim & Park, 2020; Odlin, 2019; Pudjiarti & Priagung-Hutomo, 2020). Organisational learning capability (OLC) is the ability of an organisation to acquire, transfer, and integrate knowledge to modify its behaviour to reflect the new cognitive situation, which helps the organisation sustain or advance its competitive advantage (Jerez-Gomez et al., 2005). Organisations with a high capability to learn are in a better position to absorb, transform, and apply new knowledge for idea generation, work process streamlining, breakthrough product development, and high speed production, all of which lead to the organisations' high survival rate in the highly challenging environment (Easterby-Smith et al., 2000; Gomes & Wojahn, 2017; Lyles & Easterby-Smith, 2003).

Among the many business industries in Malaysia, the construction industry is one that encounters major challenges due to the VUCA environment. Specifically, it has been severely impacted by the global Covid-19 outbreak (Hana & Safwah, 2020), facing challenges including: supply disruption of materials, equipment, and tools; closure of offices and factories due to the movement control order (MCO); suspension of on-site construction work; manpower shortage; and unsold properties (Ng, 2020). These issues have led to a decline in the productivity, profits, and sustainability of construction businesses (Construction Sector Lost, 2020; Hanis, 2020). Hence, OLC has emerged as an essential organisational asset in a highly disruptive environment. Pudjiarti and Priagung-Hutomo (2020), Xiang et al. (2019) and Yeniaras et al. (2020) claimed that there is a penalty for organisations that are incompetent in learning, because their low knowledge absorption capacity renders them unable to react to the fast-changing and uncertain environment. The point here is that the ability of an organisation to pre-empt disruptions from the VUCA environment is highly dependent on its OLC, as learning capacity facilitates novelty in problem solving and innovation that is useful for business sustainability. Yet, what constitutes OLC for Malaysian construction organisations and how to develop their OLC remains ambiguous and elusive to both researchers and practitioners (Miller et al., 2019; Yap & Lock, 2017). Hence, a well-defined operationalisation of OLC with the support of valid empirical data is necessary to shed light on organisational learning, with the aim of offering not only theoretical insights on the characteristics of OLC but also practical insights on the managerial practices that foster organisational learning.

Prior researchers (e.g., Calantone et al., 2002; Chiva et al., 2007; Dibella et al., 1996; Jerez-Gomez et al., 2005) have developed instruments to measure OLC, which served as diagnostic tools to identify the effect of OLC on organisational performance. Nevertheless, limited studies have attempted to validate OLC measures (e.g. Gomes & Wojahn, 2017; Hooi, 2019; Pham & Hoang, 2019; Salisu & Abu Bakar, 2019), resulting in low universal application and acceptance (Dedeoglu et al., 2020; Marques et al., 2018). In particular, without proper validation in the Malaysian context, measures of OLC (which have been developed and validated mainly by Western scholars in their respective countries) may not be suitable for wider use in Malaysia.

Since an organisation's managerial practices are key to facilitating the organisational learning process (Chiva et al., 2007), the top-down approach of Malaysia's high power distance culture may restrain organisational learning at all levels (Lau et al., 2020). In this culture, top management does not empower employees as it controls information access and sharing (Lau et al., 2020). This signifies that Malaysian organisations need culture-specific managerial practices to encourage the learning process. In this regard, the effectiveness of OLC measurements developed and validated in Western cultures is confined to Western samples. According to Carmona and Gronlund (1998)

and Hedlund and Nonaka (1993), cultures have formed different expectations and norms regarding organisational learning. In line with this notion, studies in various countries have verified the presence of cultural differences in organisational learning (e.g. Thomas et al., 2017; Wang & Ahmed, 2003). These findings underscore the importance of rigorously validating the measurement of OLC in different contexts to ensure its validity, reliability, and applicability.

Based on the above discussion, the objective of this study was to explore the validity of an OLC measurement in the Malaysian context, specifically at the organisation level of the construction industry. Five dimensions of OLC were examined in this study to provide theoretical insights that build organisational learning research in Malaysia. The present article is structured as five sections. The next section reviews the existing literature on OLC. Subsequently, methods and findings are discussed. The article concludes with the study's implications, limitations, and suggestions for future research.

2. LITERATURE REVIEW

2.1. *Theoretical Background of Organisational Learning Capability*

Scholars have attempted to define OLC in myriad ways. Dibella et al. (1996) defined OLC as “the capacity of an organisation to maintain and improve performance based on experience,” while Goh and Richard (1997) and Chiva et al. (2007) both defined OLC as “organisational characteristics that facilitate the organisational learning process or allow an organisation to learn.” According to Jerez-Gomez et al. (2005), OLC refers to the ability of an organisation to develop knowledge to improve its performance. Likewise, Calantone et al. (2002) defined OLC as the organisational activities of building and applying knowledge to enhance competitive advantage. Hult and Ferrell (1997) delved further by classifying OLC into four orientations (i.e. team orientation, learning orientation, systems orientations, and memory orientation) that are requisite for organisational learning. Upon a review of these definitions, the present study adopted Chiva et al.'s (2007) definition, which proposes five dimensions to assess an organisation's OLC, namely experimentation, risk-taking, interaction with the external environment, dialogue, and participative decision-making. Experimentation is the extent to which new ideas and suggestions are attended to and treated sympathetically; risk-taking is the tolerance of ambiguity, uncertainty, and errors; interaction with the external environment is the extent of the relationships that an organisation maintains with an environment that is beyond the organisation's direct control and determines the organisation's opportunities and risks; dialogue is a sustained collective inquiry into the processes, assumptions, and certainties that compose everyday experience; and participative decision-making is the level of employee influence in the decision-making process (Chiva et al., 2007). It is believed that an organisation with a higher level of experimentation, risk-taking tendency, external interactions, dialogue, and participative decision-making is likely to have better learning effectiveness.

3. METHODS

3.1. *Research Instrument and Construct Measure*

The instrument to measure OLC was adapted from Chiva et al. (2007). It has 14 items rated on a 5-point Likert scale (1=strongly disagree to 5=strongly agree). The 14 items are divided into five dimensions, i.e. experimentation (2 items), risk-taking (2 items), interaction with the external environment (3 items), dialogue (4 items), and participative decision-making (3 items). Based on these dimensions, OLC was operationalised as a reflective-formative second order construct, whereby its five dimensions were considered reflective first-order constructs and OLC itself was considered a formative second-order construct. The five first-order constructs (i.e. experimentation, risk-taking, interaction with the external environment, dialogue, and participative decision-making) were reflective because their items were equivalent and eliminating an item would not have altered the content of each dimension. OLC was measured as a second-order formative construct because the reflective first-order constructs form OLC; as such, OLC is affected by the modification of any reflective first-order construct.

3.2. *Data Collection and Sampling*

The participants of this survey were Grade 7 (i.e. large-sized) construction companies registered under the Construction Industry Development Board (CIDB) Malaysia. Grade 7 construction companies have an unlimited tendering capacity as well as satisfactory management systems that promote learning. Initial contact was made with the Grade 7 construction companies to request their participation. A total of 623 companies agreed to participate in this study by answering an online survey. Questionnaires were then sent via email to the participant companies, specifically the companies' managing director or executive director who were used as proxies. The researcher informed the participants of the study's objective and data confidentiality. After an average completion time of two weeks, responses from 271 Grade 7 construction companies were collected, yielding a response rate of 43.5 percent. As 20 of the 271 responses were incomplete, data from 251 surveys was used for further analysis. In terms of sample composition, 171 (69.5%) construction companies had Malaysian ownership, 141 (57.3%) were run by professional management, 143 (58.1%) operated in the domestic market, and 77 (31.3%) had been in the industry between 11 and 15 years.

4. DATA ANALYSIS AND RESULTS

The Statistical Package for Social Sciences (SPSS) version 22 and Partial Least Squares Structural Equation Modelling (PLS-SEM) techniques were employed for data analysis. SPSS was employed to check for missing values, univariate/multivariate outliers, and data normality. The SPSS results revealed no missing values or univariate outliers in the 251 responses. On the other hand, five responses had a Mahalanobis distance value that exceeded the chi-square (X^2) value 20.515 ($df=5$; $p<0.001$). As such, these multivariate outliers were removed. Subsequently, only data from 246 responses was permitted for further analysis. As for data normality, the OLC constructs appeared to be normally distributed because the Z-scores of skewness and kurtosis were less than 3.29.

4.1. Content Validity and Pilot Study

According to Lynn (1986), content validity requires three but not more than 10 experts for best results. In line with this suggestion, the assessment of content validity in this study involved four academic experts (Tay et al., 2020) who have extensive experience in organisational learning research and scale development. The experts were required to rate each measurement item's relevance to the construct on a four-point scale (i.e. 1=not relevant, 2=somewhat relevant, 3=quite relevant, 4=highly relevant). The four experts' content validity indices or CVIs (i.e. quite relevant and highly relevant scores divided by total number of items) for the OLC construct, presented in Table 1, were above 0.70 and thus deemed acceptable (Polite et al., 2007). In summary, the four experts verified the content validity of the OLC measurement. Additionally, the four experts provided comments to clarify confusing items and delete repeated items. For example, the item "people feel involved in main company decisions" was changed to "in this organisation, employees feel involved in the organisation's decisions." The original and modified items for OLC are illustrated in Appendix A.

Following the establishment of content validity, the researcher pilot-tested the OLC measurement with 50 construction companies in the Kedah state, Malaysia. The pilot test participants offered their feedback upon completing the survey, which showed that the participants understood the OLC items well. Therefore, no changes were made to the questionnaire. The reliability analysis results of the pilot test data further reported reliability coefficients above 0.70 for the OLC scale, thereby satisfying Nunnally's (1978) threshold value (refer to Table 2).

Table 1: CVIs for OLC measures (14 items)

	Expert 1	Expert 2	Expert 3	Expert 4
Organisational Learning Capability				
Items rated "not relevant" and "somewhat relevant"	0	4	0	0
Items rated "quite relevant" and "highly relevant"	14	10	14	14
Total	14	14	14	14
CVI	1	0.71	1	1

Table 2: Reliability analysis results

Construct	Number of Items	Cronbach's Alpha
Organisational learning capability	14	0.926
Dimensions	Number of Items	Cronbach's Alpha
Experimentation	2	0.909
Risk-taking	2	0.745
Interaction with the external environment	3	0.782
Dialogue	4	0.789
Participative decision-making	3	0.913

4.2 Reliability and Validity Testing

4.2.1 Evaluation of First-Order Constructs

Data from 251 companies was analysed using PLS-SEM. The reliability and validity of the first-order constructs (i.e. OLC dimensions) were checked through convergent validity and discriminant validity (Hair et al., 2017). Convergent validity indicates a construct's items are equal in measuring the construct (Carmines & Zellar, 1979). Item loadings, composite reliability (CR), and average variance extracted (AVE) were employed to assess convergent validity (Hair et al., 2017). First, the individual items' loadings were calculated, whereby values larger than 0.70 are acceptable. Based on the analysis results, all the item loadings exceeded this threshold. Hence, the dimensions of experimentation, risk-taking, interaction with the external environment, dialogue, and participative decision-making were satisfactorily correlated with one another in measuring OLC.

Second, the constructs' reliability was checked by examining their CRs. As shown in Table 3, the first-order constructs of OLC showed satisfactory CR values greater than 0.70 in line with Hair et al. (2017), thereby establishing the constructs' reliability. Third, AVE values were reported above 0.50 (refer to Table 3) for all the constructs. Therefore, the construct of OLC achieved convergent validity.

Finally, discriminant validity was evaluated using the Fornell-Larcker criterion (1981). Discriminant validity refers to the extent that a construct is dissimilar from other constructs, such that it is unique (Carmines & Zellar, 1979). The value of the square roots of AVE of each first-order construct exceeded the square roots of the correlations of other first-order constructs in the model (see Table 4). It was thus concluded that the results supported the constructs' discriminant validity.

Table 3: Convergent validity results

First-order construct	Items	Loadings	CR	AVE
Experimentation (EM)	EM1	0.963	0.962	0.927
	EM2	0.963		
Risk-taking (RS)	RS1	0.955	0.952	0.909
	RS2	0.952		
Interaction with the external environment (IWEE)	IWEE1	0.893	0.935	0.827
	IWEE2	0.932		
	IWEE3	0.904		
Dialogue (DG)	DG1	0.895	0.937	0.787
	DG2	0.872		
	DG3	0.876		
	DG4	0.905		
Participative decision-making (PDM)	PDM1	0.885	0.933	0.823
	PDM2	0.926		
	PDM3	0.910		

Table 4: Fornell-Larcker (1981) assessment results

	Dialogue	Experimentation	IWEE	PDM	Risk-Taking
Dialogue	0.887				
Experimentation	0.777	0.963			
IWEE	0.807	0.793	0.910		
PDM	0.782	0.763	0.810	0.907	
Risk-Taking	0.648	0.764	0.774	0.700	0.953

Note: The values in bold are the square roots of AVE

4.2.2 Evaluation of the Second-Order Construct

To assess the reliability and validity of the second-order construct, OLC, the construct's Variance Inflation Factor (VIF) and its items' outer weights as well as significance were examined (Hair et al., 2017). VIF values were calculated to eliminate the presence of collinearity. The items' VIF values, which were lower than five, indicated that collinearity issues did not exist in the formative construct (Hair et al., 2017) (refer to Table 5). With regard to the items' significance, as per Hair et al. (2017), all items were maintained as the items' outer weights were significant at $p < 0.05$, with the exception of 'interaction with external environment'. However, this item was not removed because according to Hair et al. (2017), a construct can be retained if its items' outer loadings are greater the threshold value of 0.50. Overall, the reliability and validity of OLC as a reflective-formative second-order construct was confirmed.

Table 5. VIF and t values

Second-order Construct	Dimensions	VIF	t values	Outer loadings
Organisational learning capability	Experimentation	3.843	2.337*	0.903
	Risk-taking	3.002	2.054*	0.840
	Interaction with the external environment	3.808	1.607	0.915
	Dialogue	3.688	2.920*	0.898
	Participative decision-making	3.571	4.087*	0.928

Note: * t value > 1.96 reflects significance at $p < 0.05$

5. DISCUSSION

This paper presents the validation of the OLC measurement in the context of Malaysian construction companies. To achieve this objective, the OLC scale by Chiva et al. (2007) was validated through rigorous processes. First, content validity assessments by four experts indicated that the OLC measurement had a satisfactory CVI. In addition, several changes were made to the scale's items following the advice of the chosen experts to improve readability.

This shows that it was indeed necessary to validate the OLC items before administering them to Malaysian construction companies to prevent misinterpretation of the questions. Next, the pilot

study reported high reliability values, indicating that no dimensions had to be removed from the constructs. Finally, the PLS-SEM analysis of item loadings, CR, AVE, and outer weight significance revealed that the five dimensions were appropriate to measure OLC. The OLC scale is therefore a reliable and valid measurement in the Malaysian context. As such, the results imply that the OLC scale is significant in non-Western settings like Malaysia besides Western countries like Brazil and Spain. These results may motivate further studies on OLC in the Malaysian context. Consequently, future researchers may utilise the OLC measurement in a similar cultural context or in comparison studies.

5.1. Theoretical and Practical Implications

This study offers several theoretical implications. First, it enhances the existing OLC measurement by re-validating the conceptualisation of OLC in the Malaysian context, particularly in the construction industry. As indicated by Yang (2016), previous literature (e.g. Gomes & Wojahn, 2017) lacks a consensus on the dimensions of OLC due to diverging dimensions without theoretical explanations. Therefore, this study shows that the five dimensions of OLC should be maintained, despite the items being revised to measure at the unit analysis of organisation. In fact, this study expands the application of the OLC scale to the organisation level, proving that it does not only suit the individual unit of analysis originally tested by Chiva et al. (2007) in developing the items. Besides that, this study improves the understanding of the OLC measurement validation process. It thus serves as a foundation for future researchers to enhance the understanding of the measurement validation process. Finally, this study can be used to enrich research on organisational learning as it provides a valid and reliable tool to measure OLC.

From a practical perspective, this study on the OLC measurement assists construction companies in better understanding their level of learning ability. Specifically, construction companies can use the OLC measurement to assess their own learning abilities and identify their underperforming or inefficient areas. In doing so, these companies can explore and strengthen their weakest attributes of OLC. Thus, by gaining insights on learning improvement, construction companies can know and act on the current state of their OLC. Notably, based on the study's findings, construction companies should consider developing their OLC in terms of the five dimensions: (1) experimentation; (2) risk-taking; (3) interaction with the external environment; (4) dialogue; and (5) participative decision-making. Specifically, to put organisational learning into practice, construction companies should (1) encourage the search of new business ideas to prevent declined construction projects; (2) design a learning environment that embraces risk-taking and accepts mistakes; (3) anticipate and monitor the changes in the business environment to adapt quickly to rapid changes; (4) use videoconferencing, screen sharing, and digitally shared file storage to communicate work matters; and (5) empower employees to take ownership of their work, make decisions, and choose how to complete their tasks. Together, these dimensions form the basis for construction organisations to foster organisational learning, which enables them to stabilise their business operations and survive in the VUCA environment.

5.2. Limitations, Suggestions for Future Research, and Conclusion

One of the limitations of this study is its exclusive focus on the construction industry. Hence, generalisation of the findings should be made with caution. Future research in different industries is necessary to revalidate the OLC measurement. The use of a self-reported OLC measure is

another limitation. This choice was made due to difficulties obtaining objective OLC measurements, which in turn reduces the precision of the findings. Therefore, the qualitative research method may be useful in future studies. For example, in-depth interviews can be carried out to examine different dimensions of OLC and reveal organisations' learning activities. Moreover, this study was solely based on the interpretations of the companies' managing or executive directors. It is possible that these directors have the tendency to choose socially desirable answers. Future research could improve on this potential bias by including supervisors and employees to ensure comprehensive responses. In summary, the OLC measurement can be applied within the Malaysian setting. This measurement highlights five valid dimensions that are enablers of the learning process in Malaysian construction companies. To fully capture and represent OLC, future scholars should not neglect any one of these dimensions.

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Appendix A

Organisational learning capability: original and modified items

Original item	Modified item
1. People here receive support and encouragement when presenting new ideas.	Employees in this organisation receive support and encouragement when presenting new ideas in ambiguous situations
2. Initiative often receives a favourable response here, so people feel encouraged to generate new ideas	Initiative often receives a favourable response, so employees feel encouraged to generate new ideas
3. People are encouraged to take risks in this organisation	Employees in this organisation are encouraged to take risks
4. People here often venture into unknown territory	Employees in this organisation often venture into unknown territory
5. It is part of the work of all staff to collect, bring back, and report information about what is going on outside the company	It is part of the work of all staff to collect, bring back, and report information about what is going on outside the organisation
6. There are systems and procedures for receiving, collating, and sharing information from outside the company	There are systems and procedures for receiving, collating, and sharing information from outside the organisation
7. People are encouraged to interact with the environment: competitors, customers, technological institutes, universities, suppliers, etc.	Employees in this organisation are encouraged to interact with the environment: competitors, customers, technological institutes, universities, suppliers, etc.
8. Employees are encouraged to communicate	Employees in this organisation are encouraged to communicate with each other
9. There is a free and open communication within my work group	In this organisation, there is a free and open communication within work groups
10. Managers facilitate communication	In this organisation, managers facilitate communication
11. Cross-functional teamwork is a common practice here	Cross-functional teamwork is a common practice in this organisation
12. Managers in this organisation frequently involve employees in important decisions	In this organisation, managers frequently involve employees in important decisions
13. Policies are significantly influenced by the view of employees	In this organisation, policies are significantly influenced by the view of employees
14. People feel involved in main company decisions	In this organisation, employees feel involved in the organisational decisions