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VALIDITY, RELIABILITY AND VARIATIONS OF PERCEPTION OF DIMENSIONS OF LEARNING ORGANISATION AT DIFFERENT ORGANISATIONAL LEVELS IN MALAYSIAN MANUFACTURING COMPANIES

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ABSTRACT

This paper describes the study that was carried out to investigate the validity and reliability of the Dimensions of Learning Organisation Questionnaires (DLOQ) as a tool to measure the presence of learning culture in Malaysian manufacturing companies. The study was also carried out to examine the perceptions of senior managers and other employees with regards to the presence of dimensions of learning organisation in their respective companies. A total of 161 survey responses from senior managers and 156 from other employees were obtained and analysed. Results of the analysis indicated that the DLOQ, as a measuring tool, demonstrated adequate validity and reliability to be used as a way to measure the learning organisation culture in Malaysian manufacturing companies. The results also indicated there were no significant differences in the perception of learning organisation dimensions between senior managers and other employees, except for the dimension of empowerment. The study concluded that the DLOQ model was as applicable in Malaysian manufacturing companies as in other settings; thus giving more credence to the universality of the DLOQ model. The study also concluded that in the context of Malaysian manufacturing companies, the difference in perception of empowerment suggested that senior managers and other employees were not on the same page with regards to the development of learning organisation dimensions. The difference may be indicative of underlying issues such as lack of communication and lack of involvement by senior managers and employees alike. These issues need to be quickly addressed by Malaysian manufacturing companies in order to facilitate the development of learning organisation dimensions.

Keywords: *Learning organisation, employee perception, confirmatory factor analysis, Malaysia.*

1.0 INTRODUCTION

In today's increasingly competitive environment, it is imperative that an organisation employs an effective strategy to always stay ahead of its competitors. The notion of organisational learning has

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long been mooted as the factor that can sustain an organisation's competitive edges against its competitors in the future [1]. Organisational learning, if implemented correctly, can result in competitive advantages to the organisation in the form of increased performance, and higher productivity [2-4].

The core issue is the ability of the organisation to learn quickly and as much as it can, just like a human being does. The learning process involves typical processes such as acquiring knowledge, utilizing knowledge, storing and transferring of knowledge. The learning process also involves disseminating of knowledge to as many people as possible within the organisation. The dissemination of knowledge is crucial since it ensure the knowledge is shared by many people; thus the knowledge does not disappear from the organisation if one or two people leave the organisation. In the end, the success of the organisation against its competitors boils down to how it makes itself good at learning; in other word, transforming itself into a learning organisation.

However, the process of transforming into a learning organisation is no easy feat. Even the concept of learning organisation is still not clearly understood. Nevertheless, research on learning organisation has been going on for decades, and many leading researchers have contributed many ideas on how to build a learning organisation. One model of learning organisation that is significant to the research and practice of the learning organisation is The Dimensions of Learning Organisation Questionnaire (DLOQ) [5]. The DLOQ was developed by Watkins and Marsick [6]. The DLOQ has been validated in many different contexts before such as the United States, China, Korea, Iran, Rwanda and others [7-16].

In order to build a learning organisation, it is important that members at all organisational levels are involved in organisational learning [17]. Any efforts to become a learning organisation must get the buy-in and participations from everyone. Everyone at all levels should also share the same views and the common visions to move forward. For instance, senior managers and other employees should have the same understanding of the current amount of learning being practiced in the organisation. However, there is lack of research that looks into how senior managers and other employees perceive organisational learning in their respective organisation, particularly in the context of Malaysian manufacturing companies. The success of organisation learning is much dependent on every level of organisation; it is important to examine variations of perception of dimensions of learning organisation at different organisational levels.

Therefore, the objectives of this study were;

1) to investigate the applicability of the DLOQ in the context of Malaysian manufacturing companies; whether the DLOQ can demonstrate as adequate validity and reliability as in other settings.
2) to investigate the differences in opinion about the culture of learning organisation between senior managers and other employees in Malaysian manufacturing companies.

2.0 LITERATURE REVIEW

2.1 Organisational learning and learning organisation

The idea of an organisation as capable as a human to learn and improve itself is not entirely new. The earliest mention of organisational learning was back in the 1950's when March and Simon [18] published their book "Organization". Initially, the concept of organisational learning did not attract much attention even though some leading researchers, such as Argyris and Schon [19] and Levitt and March [20] are noted for their significant contributions in the field. Their works have been duly noted for highlighting the positive changes that organisational learning can do to an organisation. However, it was only from 1990's that organisational learning, as a new concept, has emerged at the forefront of management literature judging from the increase in the number of publications related to the organisational learning [21]. This sudden increase in interest is probably due to people's appreciation of learning as a means of competitive edge to fight off the constantly

changing nature of external threat to organisation survival [3, 22]. However, the concept of organisational learning itself is difficult to define, and so far, there has been no standard and consistent definition. As stated by Tsang [23], the many definitions of organisational learning, however diverse they may be, actually hinge on three key elements; changes in cognition, changes in potential behaviour, and changes in actual behaviour. In the end, organisational learning is primarily about increasing knowledge for the purpose of making a meaningful improvement.

All organisations are bound to learn something anyway to a certain degree, so learning in organisations is a relative matter [24]. What makes a good learning organisation is the management intervention that prescribes specific recommendations about the correct way for the organisation to learn. This approach is known by a different yet closely related term, learning organisation. The new word learning organisation is sometimes used interchangeably with organisational learning [25]. However, they are not exactly the same.

In a nutshell, organisational learning is seen as a process, whereas a learning organisation is a form of organisation. A learning organisation is the type of organisation that has excellent organisational learning capabilities [23]. Research on organisational learning is more descriptive, analytical and usually backed up by empirical evidence with the main objective of understanding how an organisation learns. It concentrates on how work is carried out by taking into consideration creativity, learning process, knowledge management, and improvements for everyone at all organisational levels [26]. A learning organisation, on the other hand, is a more prescriptive approach that deals with "how should an organisation learn". Research on learning organisation is more action oriented and focused on building of an ideal type of organisation that allows for learning to be carried to its maximum potential [27].

There has been no standard and consistent definition of what a learning organisation is. Nonetheless, several definitions have been offered by leading researchers over the years. Senge [3], for instance, defines a learning organisation as an "organisations where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning to learn together". Meanwhile, according to Pedler, Burgoyne [28], a learning organisation is "organisation that facilitates the learning of all its members and consciously transforms itself and its context". Watkins and Marsick [29] suggest that "a learning organisation is one that learns continuously and transforms itself". There are three main characteristics of a learning organisation; new ideas needed for learning, knowledge must be transferred throughout the organisation, and changes must occur. As ideas are necessary requirement for learning, a truly learning organisation needs to constantly inject itself with new ideas or information. This can be achieved by, among other things, active monitoring of its external environment, searching and hiring new talents when necessary, and by training and development of its own members [22, 28, 30].

2.2 Learning organisation model

Over the last few decades, many works have been carried out on how to build a learning organisation. Several models of learning organisation were constructed and mooted by leading researchers. At the moment, there are a few learning organisation models that can be found in the existing literature. Even though these models were developed many years ago, they are still being referred to or used by current researchers. Senge [3]'s model, for instance, emphasize that five disciplines; systems thinking, personal mastery, mental models, building shared vision, and team learning, should be developed to build a learning organisation. Senge [3]'s model is a popular model that has been taken up by many researchers, among others are Yaghoubi, Raeisi [31], Mehrabi, Soltani [32], Erdem and Ucar [33], and Sulphey [34].

Pedler, Burgoyne [28]'s model consists of eleven characteristics; "adopt a learning approach to strategy, participative policy making, information systems, formative accounting and control, internal exchange, reward flexibility, enabling structure, boundary workers as intelligence agents, company-to-company learning, learning climate, and self-development opportunities for all". The

model combines both organisational designs and human resource management functions in order to strengthen quality of work life and improve organisational performance [35]. Pedler, Burgoyne [28]'s model has also been used in recent years; for example Farrukh and Waheed [36], Villiers [37], and Wilson and Beard [38].

Meanwhile, Garvin [22]'s model is characterised by experimentation, systematic problem solving; learning either from one's own experience or from other people's experience; and adequate transfer of knowledge. Garvin [22]'s model is less popular but nonetheless some researchers such as Zhou, Hu [39] and Jerez-Gomez, Cespedes-Lorente [40] have used it recently.

Watkins and Marsick [29]'s model, meanwhile, is very popular and has been widely used by many researchers; among the most recent works are Mbassana [11], Ghaffari, Burgoyne [14], Jaaron and Backhouse [15], and Nazari and Pihie [16]. Watkins and Marsick's model presents a more concise approach using seven dimensions. It is worth to note that Watkins and Marsick's model consists of building blocks that are aligned with models that were developed earlier (i.e. Senge's model and Pedler's model), and are adopted by later models (i.e. Garvin's model). In this study, Watkins and Marsick's model was selected as the basis for measuring the presence of dimensions of learning organisation in Malaysian manufacturing companies.

2.3 Watkins and Marsick's model of learning organisation

Watkins and Marsick's model of learning organisation consists of seven dimensions or imperative actions that characterise an organisation journeying towards a learning organisation. Those seven dimensions are creating continuous learning opportunities, promoting inquiry and dialogue, encouraging collaboration and team learning, empowering people toward a collective vision, establishing systems to capture and share learning, connecting an organisation to its environment, and providing strategic leadership for learning. The brief descriptions of the dimensions are shown in Table 1.

Table 1: Watkins and Marsick's Seven Dimensions of the Learning organisation [41]

Dimension	**Description**
Continuous learning	Learning is designed into work so people can learn on the job; opportunities are provided for ongoing education and growth
Inquiry and dialogue	People express their views and listen and inquire into the views of others; questioning, feedback, and experimentation are supported
Team learning and collaboration	Work is designed to encourage groups to access different modes of thinking, groups learn and work together, and collaboration is valued and rewarded
Embedded system	Both high- and low-technology systems to share learning are created and integrated with work, access is provided, and systems are maintained
Empowerment	People are involved in setting, owning, and implementing joint visions; responsibility is distributed close to decision making so people are motivated to learn what they are held accountable for
System connection	People are helped to see the impact of their work on the entire enterprise, to think systemically; people scan the environment and use information to adjust work practices; and the organisation is linked to its community
Strategic leadership	Leaders model, champion, and support learning; leadership uses learning strategically for business results

This model has several advantages over other models. First, in this model, the variable of a learning organisation has been defined in a clear and inclusive manner [1]. Second, the model can be used to adequately cover all levels of learning within an organisation; individual, team and organisational

level [1]. Third, the model not only highlights the necessary dimensions for building a learning organisation but also specifies the relationships between those dimensions in a neat theoretical framework [1]. Finally, its proposed seven dimensions of a learning organisation are very action-oriented and thus have practical consequences [1]. The model proposes measurable actions to be carried out in order to develop a learning organisation [1].

2.4 Employees' perception of dimensions of learning organisation

If an organisation embarks on building a learning organisation, senior managers are typically more privy to information than other employees, thus are more knowledgeable in many aspects (i.e. strategy, finance, future plans) of the learning process. They are the first to have the first-hand knowledge of whatever actions being taken or to be taken to develop dimensions of learning organisation. In that case, it is logical to assume that the senior managers will have different opinions regarding the development of learning organisation dimensions than other employees. These managers usually have a more positive perception of their organisation than members from the lower levels [17]. What is needed then is for people at the top to disseminate the necessary information so that people at other levels can have a better perception of the progress towards a learning organisation.

Research by Weldy and Gillis [17] did indicate that managers had different perception than supervisors and other employees with regards to dimension of system connection and empowerment. Any such variations in perceptions may indicate a lack of communication between people in the organisation or lack of organisation-wide participation, and it is not good for the development of a learning organisation. As mentioned before, senior managers and other employees must be on the same page. If there is a perception gap, then the sources of the gap should be identified and addressed accordingly.

3.0 RESEARCH METHODOLOGY

3.1 Survey questionnaire

This study used a cross-sectional self-administered quantitative survey. This type of survey is most appropriate since it could provide both descriptive and analytical information about dimensions of learning organisation in a sample of Malaysian manufacturing companies. Data obtained from quantitative survey can be effortlessly coded, sorted and statistically analysed. The statistical nature of the data can also be useful in identifying statistically significant differences (or, similarities) between different groups of respondents (e.g. between senior managers and other employees). Findings from the statistically analysed data can also be generalised to make inferences about a larger population.

The presence of dimensions of learning organisation in Malaysian manufacturing companies were measured by using survey questionnaire that was adapted from Watkins and Marsick's Dimension of Learning Organisation Questionnaire (DLOQ). The DLOQ is a form of close-ended questionnaire that consists of forty-three items. However, in this study, a simplified version of DLOQ, developed by Yang [42] was used, instead. The simplified version has only twenty-one items to measure seven dimensions of learning organisation (i.e. three items for each dimension). Even though the simplified version is shorter, it has a better psychometric properties and highly suitable to investigate the relationships between learning organisation and other entities such as organisational performance or organisational capability [42]. The detailed survey questionnaire (with five-point Likert scale) is shown in Table 2.

The survey questionnaires were sent to manufacturing companies, either locally owned or foreign owed, which were located in Malaysia. Information regarding Malaysian companies was obtained by using Federation of Malaysian Manufacturers (FMM) directory. FMM directory

consists of over 2,000 manufacturing companies, and was deemed useful for the purpose of this study.

Table 2: Survey questionnaire

Dimensions (latent variables)	**Questions (observed variables)**
Continuous learning	In my company, people help each other learn.
	In my company, people are given time to support learning.
	In my company, people are rewarded for learning.
Inquiry and dialogue	In my company, people give open and honest feedback to each other.
	In my company, whenever people state their view, they also ask what others think.
	In my company, people spend time building trust with each other.
Team learning and collaboration	In my company, teams/groups have the freedom to adapt their goals as needed.
	In my company, teams/groups revise their thinking as a result of group discussions or information collected.
	In my company, teams/groups are confident that the company will act on their recommendations.
Embedded system	My company creates systems to measure gaps between current and expected performance.
	My company makes its lessons learned available to all employees.
	My company measures the results of the time and resources spent on training
Empowerment	My company recognizes people for taking initiative.
	My company gives people control over the resources they need to accomplish their work.
	My company supports employees who take calculated risks.
System connection	My company encourages people to think from a global perspective.
	My company works together with the outside community to meet mutual needs.
	My company encourages people to get answers from across the company when solving problems.
Strategic leadership	In my company, leaders mentor and coach those they lead.
	In my company, leaders continually look for opportunities to learn.
	In my company, leaders ensure that the company's actions are consistent with its values.

Each company that had been identified earlier was sent with the survey questionnaire. The survey questionnaire was sent to company human resources manager, or equivalent, in a self-addressed stamped envelope; including a cover letter from the researcher that specifies the purpose of research, the confidentiality of the participants and the researcher's contact details. The human resource manager, or equivalent, was specifically asked to distribute the questionnaire to employees from two different levels of the company (i.e. senior managers, and other employees), and different job categories commonly found in a typical manufacturing company (i.e. marketing/sales, operation/production, R&D/technical support, logistics, and general administration). The selection of participants from different job areas and hierarchical position is to ensure adequate representation of different subgroups in the sample so that the results can be generalised.

3.2 Data Analysis Technique

Confirmatory factor analysis (CFA) was carried out to determine the validity of the DLOQ model in the context of Malaysian manufacturing companies. CFA is best used whenever a researcher, based on review of theories and/or empirical works, is already aware of how the observed variables are related to the unobserved latent variables [43]. In this study, the DLOQ was already postulated, as shown in Table 2, as a model with seven latent variables, and each latent variable is measured by three observed variables. The use of CFA was to confirm whether the factor structure of the DLOQ model would remain valid when compared against data from Malaysian manufacturing companies.

In addition to CFA, other tests to determine scale reliabilities, convergent validity and discriminant validity were also carried out. Scale reliabilities, for instance, were determined based on the Cronbach's alpha values. Cronbach's alpha will be computed based on the number of observed variables used for each unobserved latent variable and the average correlations of each observed variable with other variables. Cronbach's alpha value of 0.70 or above is normally accepted as an indication of good reliability [44]. Convergent validity, meanwhile, was determined by examining the values of composite reliability (CR) and average percentage of variance extracted (AVE). Composite reliability is computed from the sum of factor loadings, squared for each unobserved latent variable and the sum of the error variance terms for an unobserved latent variable. The AVE is calculated as the mean squared factor loading and a value less than 0.50 indicates the proportion of unexplained variance that remained in the observed variables is greater than the variance explained by the latent factor structure. If AVE is more than 0.50 and less than CR, then there is adequate convergent validity for the model. The DLOQ model was also checked for its discriminant validity. Discriminant validity can be determined by examining the values of average percentage of variance extracted (AVE), average share variance (ASV) and maximum shared variance (MSV). If both MSV and ASV are less than AVE, then there is an adequate level of discriminant validity. Additionally, discriminant validity can also be checked by comparing the square root of AVE for each latent variable with the correlations between that latent variable and all other latent variables; i.e. the square root of AVE should be larger.

For the purpose of comparing the perception of dimensions of learning organisation between senior managers and other employees, Mann-Whitney test was carried out. The independent two-sample non parametric Mann Whitney test was meant to identify any significant differences between senior managers and other employees with regard to their scores of the dimensions of learning organisation in their respective companies.

4.0 RESULTS AND DISCUSSION

4.1 Descriptive statistics of survey respondents

At the end of the data collection period, 352 survey responses were received out of 3000 survey questionnaires that were sent out. All the survey responses were analysed using SPSS software. It was found that 31 of those survey responses contained more than 10% missing values that they were deemed unusable and were later discarded. The remaining 321 survey responses still had some variables with missing values. Nonetheless, the missing percentages were only between 5% to 10%, and the subsequent missing value analysis showed that Little's MCAR (Missing Completely At Random) chi-square statistic was not significant $\chi^2 = 1017.6$ ($df = 1059$, $p = .815$), suggesting that data was missing in a random pattern, and not according to any systematic pattern. The missing values however still needed to be compensated to make it possible to carry out further statistical analyses. To compensate for the missing data, imputation procedure using expectation-minimisation (EM) method was carried using SPSS. From the 321 survey responses, 161 responses came from those who identified themselves as holding senior management positions in their respective companies. The remaining 156 respondents identified themselves as other employees. 4 respondents

however did not mention anything about their hierarchical positions. Details profile of the survey respondents are shown in Table 3.

Table 3: Profile of survey respondents

Categories		**# of respondents**	**Percent**
Size	Large	196	61.06%
	SME	125	38.94%
Regions	Northern Malaysia	147	45.79%
	Central Malaysia	82	25.55%
	Southern Malaysia	92	28.66%
Respondents' position*	Senior Managers	161	50.79%
	Other employees	156	49.21%
Type of manufacturing	Electrical & Electronics	124	38.63%
	Automotive	86	26.79%
	Metal	36	11.21%
	Wood&Paper	10	3.12%
	Plastics	7	2.18%
	Others	58	18.07%

*note: some respondents did not provide answer

4.2 Confirmatory factor analysis results

Results of the CFA are shown in Table 4. As shown in Table 4, the χ^2=308.3 was statistically significant (p=.001), thus indicating a lack of fit. However, the model can also be holistically evaluated by looking at other alternative fit indices too. Other alternative fit indices such as ratio χ^2/df, Root Mean Square Error of Approximation (RMSEA), standardized root mean square residual (SRMR), Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI) were also used. Each fit index has its own strength so the use of multiple fit indices can ensure a more balanced and substantive assessment of a model [45]. Small magnitude of residuals (RMSEA = 0.051, and SRMR = 0.0351) were indicative of model fit. High CFI and TLI values above 0.90 were also indicative of a good fit. As shown in Figure 1, the factor loadings of each observed variables on the seven latent variables also provided additional evidence of the fitness of the DLOQ model. All factor loadings of the observed variables were greater than the threshold value of 0.50. The results indicated that the construct validity of the DLOQ model in the context of Malaysian manufacturing companies was confirmed.

Table 4: Fit indices for learning organisation dimensions model

	χ^2	RMSEA	SRMR	CFI	TLI
Learning organisation dimensions model	χ^2(N=321, df=168)=308.3 p=0.00	.051	.0351	.967	.958

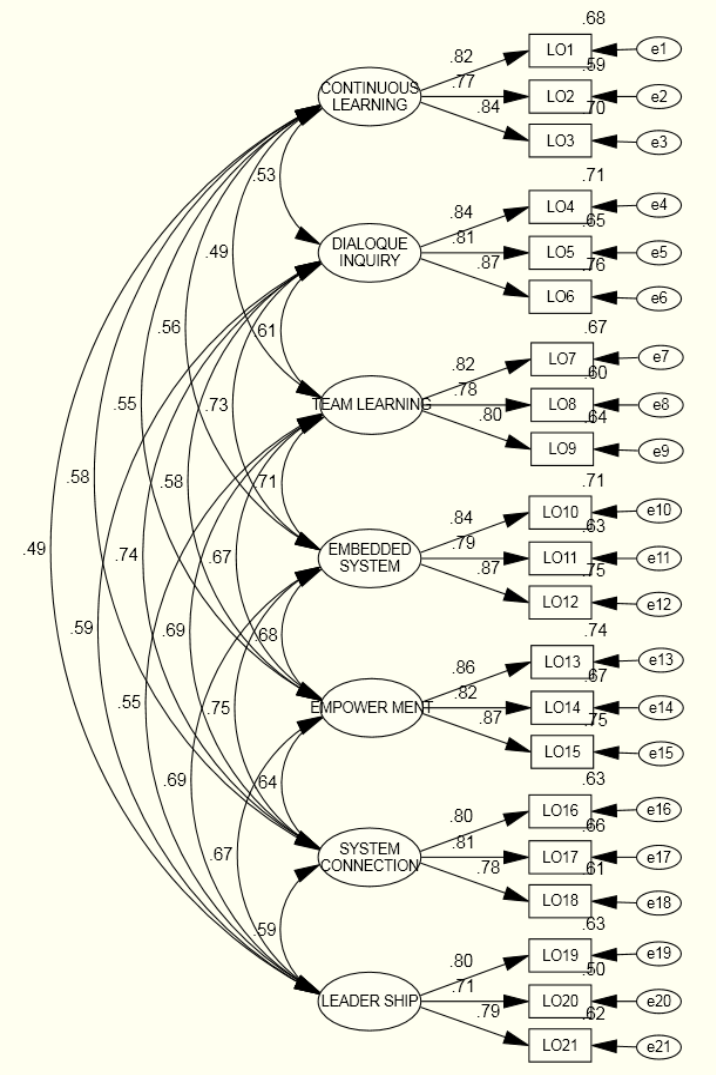

Figure 1: CFA for learning organisation dimensions model

4.3 Reliabilities, convergent and discriminant validity of the DLOQ

Table 5 shows the Cronbach's alpha for sets of observed variables that load onto individual unobserved latent variables. The observed variables seemed to correlate together with reasonable Cronbach's alpha, ranging from 0.808 to 0.884. As all Cronbach's alphas were above the threshold limit of 0.70, the internal consistency (reliability) of the model was confirmed.

As shown in Table 5, the DLOQ model also exhibited acceptable level of convergent validity since the standardised regression weights between observed variables to their respective latent variables were all significant with values above the threshold limit 0.50. The convergent validity was also proven based on the values of composite reliability (CR) and average variance extracted (AVE) for each unobserved latent variables; all CRs were larger than the corresponding AVEs, and all AVEs were above 0.50.

As shown in Table 6, the DLOQ model also exhibited an adequate level of discriminant validity; all AVEs were larger than both maximum shared variance (MSV) and average share variance (ASV), and square root of AVE for all latent variables were larger than their corresponding correlations with other latent variables.

Table 5: Convergent validity of learning organisation dimensions model

Latent variables	Observed variables	Regression weight	Alpha	CR	AVE	Convergent validity? (CR>AVE, AVE>.5)
Continuous learning	LO1	.822	.848	.851	.655	yes
	LO2	.769				
	LO3	.836				
Dialogue & Inquiry	LO4	.844	.878	.880	.710	yes
	LO5	.808				
	LO6	.874				
Team Learning	LO7	.822	.841	.841	.638	yes
	LO8	.776				
	LO9	.798				
Embedded System	LO10	.844	.871	.874	.698	yes
	LO11	.793				
	LO12	.868				
Empowerment	LO13	.861	.884	.885	.720	Yes
	LO14	.817				
	LO15	.867				
System connection	LO16	.796	.837	.838	.633	Yes
	LO17	.810				
	LO18	.781				
Leadership	LO19	.796	.808	.809	.587	Yes
	LO20	.709				
	LO21	.790				

Table 6: Discriminant validity of learning organisation dimensions model

Latent variables	AVE	MSV	ASV	Continuous learning	Dialogue & Inquiry	Team Learning	Embedded System	Empowerment	System connection	Leadership	Discriminant validity?
Continuous learning	.655	.335	.287	.810							Yes
Dialogue & Inquiry	.710	.542	.403	.531	.842						Yes
Team Learning	.638	.503	.394	.493	.612	.799					Yes
Embedded System	.698	.567	.476	.563	.732	.709	.836				Yes
Empowerment	.720	.465	.404	.552	.582	.674	.682	.849			Yes
System connection	.633	.567	.447	.579	.736	695	.753	.640	.796		Yes
Leadership	.587	.469	.360	.492	.590	.553	.685	.670	.590	.766	Yes

Notes: Square root of AVE on diagonals

Results from the data analysis indicated that the seven-latent factor DLOQ model demonstrated adequate validity and reliability when compared against data from Malaysian manufacturing companies. The model can be applied in the context of Malaysian manufacturing companies with the same accuracy and consistency as in the other settings that have been validated before. This study provides more evidence of the robustness and the universal application of the DLOQ model in settings that are different from where it was first developed

Practically speaking, the DLOQ can be used as a tool to manage a manufacturing company. The validity and reliability of the DLOQ model was supported by sound empirical data, thus the model can be seen as a justified way to transform the manufacturing company into a learning organisation. The transformation into a learning organisation is difficult; nonetheless the DLOQ model can become the starting point for the transformation. As a starting point, the DLOQ model can be used to measure the existing culture of learning in the manufacturing company. The initial measurement is the starting yardstick that can be used to identify the strengths and weaknesses of the company. For instance, with the DLOQ model, the manufacturing company can identify which dimensions of learning organisation are lacking; and those dimensions should be given the highest priority and be allocated the necessary resources to be developed.

4.4 Mann-Whitney Test

An independent two-sample non parametric Mann Whitney test was carried out to determine if there was any significant difference in the perception of dimensions of learning organisation between senior managers and other employees. The results of the Mann Whitney test are shown in Table 7.

Table 7: Mean comparison between senior managers and other employees

	Senior managers (N=161)	**Other employees (N=156)**	***p***	**Significant?**	**All employees**	
Latent variables	**Mean**	**mean**			**mean**	**SD**
Continuous learning	3.57	3.49	0.599	No	3.53	.783
Dialogue & Inquiry	3.71	3.78	0.230	No	3.75	.810
Team Learning	3.60	3.45	0.124	No	3.52	.838
Embedded System	3.50	3.54	0.724	No	3.52	.873
Empowerment	3.41	3.17	0.009	Yes	3.29	.855
System connection	3.52	3.52	0.934	No	3.52	.751
Leadership	3.48	3.42	0.530	No	3.45	.776

Table 7 shows that both senior managers and other employees gave slightly above average score for each dimension of learning organisation. The figures suggested that they, senior managers and other employees alike perceived that dimensions of learning organisation still have not been fully developed and established in their respective companies.

Generally speaking, there was no statistical difference in the way senior managers and other employees perceived the level of learning organisation dimensions in their respective companies. The only exception is the dimension of empowerment where senior managers' perception of empowerment is significantly higher than other employees' perception. It is good that in Malaysian companies, in most cases, there were no significant differences between senior managers and other employees. The results suggested that all people in the companies, senior managers and other employees alike have developed a common understanding about the culture of learning in their respective companies. It augurs well for the development of dimensions of learning organisation. Since previous studies have shown that building a learning organisation does require participation

from everyone at every organisational levels [17]. Widespread participation from employees would be difficult if they were not on the same page with the senior managers.

As shown in Table 7, senior managers had significantly higher perception of empowerment than the other employees. The senior managers may think that they have given or allowed adequate empowerment to the other employees, whereas the other employees thought otherwise. In the context of Watkins and Marsick's model of learning organisation, dimension of empowerment boils down to three main issues; recognition, control over resources and experimentation. For whatever reasons, the senior managers believe that they have given enough recognition to efforts taken by the employees, but the employees do not think so. The other employees may feel that their works are somehow obstructed because they do not have control over the resources needed to accomplish the works; the senior managers however think otherwise. The other employees may think that the senior managers do not support them to experiment with new ideas because of the risks involved. The other employees think that the ideas should be implemented regardless of the risks; even if the ideas do not work, there are still lessons to be learned from the failure. But, senior managers may have a totally different opinion regarding the risks.

Malaysia is a high power distance society [46]. Senior managers in Malaysian manufacturing companies may be influenced by the prevailing national culture of high power distance. In a typical high power distance organisation, there is a strong hierarchical structure, centralized authority and a top-down approach. Senior managers are not particularly willing to delegate decisions; instead they expect subordinates to play the role of taking instruction and orders from them. The other employees may perceive this as a lack of empowerment. The senior managers however may think they are acting within the norm.

The different perception of empowerment is a clear case of senior managers not in the same page with the other employees. This is a cause for concern since it indicates a lack of communication and lack of understanding that easily hinder progress toward becoming a learning organisation.

There is no information about the actual amount of empowerment in those manufacturing companies. It is not known whether or not the senior managers have given enough empowerment to the other employees. Nonetheless, the senior managers of manufacturing companies need to address the perception gap by investigating the true nature of empowerment in their respective companies. If empowerment is lacking, then the senior managers need to improve initiatives relevant to empowering employees (i.e. giving more recognition, more control over resources). If there is already adequate amount of empowerment, then the managers ought to improve two-way communication between them and the other employees to explain the situation clearly and to ensure buy-in and commitment from everyone.

5.0 CONCLUSIONS

Organisational learning can be an effective strategy to enhance competitive edges of Malaysian manufacturing companies. However, the process of transforming into a learning organisation is not easy. Malaysian manufacturing companies first need to be able to measure the current status of learning. The measurement process can be done by using Watkin and Marsick's DLOQ model. This study has achieved its first objective to investigate the applicability of the DLOQ in the context of Malaysian manufacturing companies. The study has shown that the model is indeed valid and reliable in the context of Malaysian manufacturing companies. Thus, the study adds more support for the universality of the DLOQ model; the model can be applied in many different contexts. The study has also achieved its second objective to investigate the differences in opinion about the culture of learning organisation between senior managers and other employees in Malaysian manufacturing companies. The study adds to the existing literature by investigating the variation of perceptions of dimensions of learning organisation between members of different hierarchical

positions within manufacturing companies. As far as the objective of the study was concerned, it was found that, in the context of Malaysian manufacturing companies, there were no significant differences in perception except for the dimensions of empowerment. The difference perception of empowerment was, however, not good for the development of a learning organisation in Malaysian companies. Therefore, the management team of Malaysian manufacturing companies need to address the difference of perception accordingly.

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