Analysis of Total Quality Management dimensions towards Market Orientation in Electric Utility Industry in Malaysia: A Structural Approach

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***Abstract*— Total quality management (TQM) philosophy and principle targeting on the regular changes for customer satisfaction, were proposed to be used in guiding the change process in electric utility industry towards market orientation through quality improvement of TQM practices. The aim of this study to analyses the TQM dimensions of; employee relation, training, and customer focus towards market orientation of electric utility industry in Peninsular of Malaysia. Total of 127 questionnaires distributed and 80 questionnaires useable for further analysis. A structural approach using Partial Least Square was adopted to analyze this relationship. The findings showed that all studied variables influence market orientation. Future direction was proposed for further research.**

***Index Terms*— TQM, employee relation, training, customer focus, market orientation.**

I. Introduction

The natural characteristics of electric utilities had not only shielded them from the turmoil of marketplace but also created a regulatory reality in minds of everyone within the organization [1]. Electric utilities refer to quality in terms of technical performance, which includes availability of power, maintenance of voltage and frequency within predetermined limits as suggested by [2]. The company mission would mostly focus on supplying electricity but not meeting customer needs and wants. In recent years, the electric utility industry is slowly changed. The transformation is in form of a regulation protected to a more open market. Most of electric utility company faced a several difficulties to transform themselves from their old method of doing business in the industry. In term of changing the method from internal focus to market orientation, electric utilities should view change not as a one-time event, but an ongoing process of change [3][4].

Thus, the implementation of market orientation requires the establishment and concern of an internal operating environment, in with the intention of the organization's culture is directed towards the fulfilment of the ever-changing customer expectations and needs. It involves an elementary revolutionize in management practices through the Total Quality Management (TQM) approach along with structure of the electric utility [5]. Therefore, this paper to identify the determinants factors that influence on the change management development for electric utilities to of market orientation will be investigated. The elements of employee relation, training, and customer focus are forms of studied variables as a framework in order to determine the organizational change from internal focused to market oriented.

II. Research Methodology

The proposed research method involved managers of Electric Utility Company in Peninsular of Malaysia to investigate the total quality management dimensions comprises of employee relations, training and customer focus towards market orientation of electric utility industry. Considering the empirical nature of this research project to explore the dimensions of TQM in guiding the changes for market orientation, data was collected using self-administered questionnaires to target respondent. A probability sampling using simple random sampling technique was applied due to probability all elements in the population are considered and each element has an equal chance of being chosen as the subject and it may often produce a gain in precision of the estimates of characteristics of the whole population. The research instruments were hand delivered to each manager and the total sample size is 127 as suggested by [6].

III. Analysis And Finding

Total of 127 questionnaires was distributed to Manager of Electric Utility Company and total of 80 questionnaires returned with 63% response rate and all questionnaires are valid for further analysis using Partial Least Square (PLS) software Version 2.0. PLS is a component-based modelling technique that simultaneously examines theory (structural model) and measures (measurement model). The advantages of using PLS are: (a) its powerful features are suitable for prediction-oriented research where the methodology helps

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researchers to concentrate on the explanation of endogenous constructs, (b) its particularly used in the consumer and service research field [7], and (c) its offers more meaningful and valid results compared to other methods of analysis [8].

TABLE 1. RESULT SUMMARY FOR REFLECTIVE OUTER MODEL

Variable	Items	Loading	Cronbach's Alpha	Composite Reliability	AVE
Employee Relation	ER1	0.887	0.702	0.839	0.641
	ER2	0.884			
	ER3	0.595			
Training	TR1	0.721	0.827	0.876	0.586
	TR2	0.708			
	TR3	0.788			
	TR5	0.817			
	TR6	0.785			
Customer Focus	CF1	0.761	0.799	0.856	0.504
	CF2	0.694			
	CF4	0.849			
	CF5	0.758			
	CF6	0.665			
	CF7	0.475			
Market Orientation	MO8	0.815	0.831	0.887	0.663
	MO9	0.830			
	MO10	0.796			
	MO12	0.816			

A proposal by [7] that the individual item loading with more than 0.5 was considered in acceptable level and items with a factor loading of 0.4 or greater should be retained and can be accepted [8]. This study showed that all items loading is accepted and used for subsequent analysis (refer to Table 1).

In PLS, the value of Cronbach's Alpha had to be greater than or equal to 0.80 for a good scale, 0.70 for an acceptable scale and 0.60 for a scale of exploratory purposes [7]. In this study market orientation and training showed a good scale finding with 0.831 and 0.827. Employee Relations and Customer Focus indicated an acceptable scale with 0.702 and 0.799. Thus, all constructs were conventional for the next analysis.

According to [7], construct reliability assessment was regularly focuses on composite reliability as an approximation of a construct's internal consistency. Composite reliability values of 0.60 to 0.70 in exploratory research and values from 0.70 to 0.90 in more advanced stages of research are regarded as satisfactory, while values below 0.60 indicate a lack of reliability. Table 2 indicated the composite reliability value for all model were greater than 0.7 where; employee relation (0.839), training (0.876), customer focus (0.856) and market orientation (0.887).

Validity test is measured using two methods: convergent validity and discriminant validity. Construct validity explained the convergent validity by measuring the average variance extracted (AVE). The average variance extracted (AVE) reflects the variance captured by the indicators relative to measurement error. In this study, the average variances extracted (AVE) values should be ranged between 0.5 and 0.7 indicating a good level of construct validity of the measures used [7]. However, if the AVE values are less than 0.5, [7], proposed these set of items has an adequate convergence in measuring the concern construct. Since the factor loading send the aspect of the convergent validity, [9] suggested that any items with the factor loading below than 0.4 can be deleted, and this study few items had been deleted due to the factor loading below than 0.4. The discriminant validity showed the degree to which items differentiate among distinct constructs. The discriminant validity was necessary in order to ensure the construct validity. This step was compulsory in order to test the hypothesis through path analysis technique. In this approach, the square root of AVE ($\sqrt{}$ AVE) of each construct should be greater than the construct's highest squared correlation with any other latent construct. On the other word, an indicator's loadings should be higher than all of its cross loadings.

TABLE 2. DISCRIMINANT VALIDITY

	CF	ER	MO	TR
CF	**0.710**			
ER	0.446	**0.800**		
MO	0.710	0.743	**0.814**	
TR	0.365	0.524	0.664	**0.765**

Therefore, based from above analysis it showed that the statistical tests of reliability and validity are adequate and appropriate for the measurement of the structural model.

IV. STRUCTURAL MODEL

According to [10], blindfolding procedure ignores a part of the data for a particular block during parameter estimation. The ignored data part is than estimated using the estimated parameter and the procedure is repeated until every data point has been ignored and estimated.

TABLE 3. PREDICTIVE RELEVANCE

R^2	Redundancy (Q^2)
0.810	0.246

Estimating path coefficient of the structural model is measured by observing R2 dependent variable and the path coefficient test. The result of this study on predictive relevance was indicated in Table 4. [10] recommended several principle of predictive relevance where; when Q^2 is 0.02 to 0.14 then the model has small predictive relevance, Q^2 is 0.15 to 0.34 then the model has medium predictive relevance whereas Q^2 is 0.35 and above then the model has large predictive relevance. Thus, the predictive relevance for this study was at medium level with 0.246. Guided by [10] approach, the R^2 values for endogenous latent variables are assessed as follows; (i) Substantial was 0.67 and above, (ii) Moderate was 0.33 to 0.66 and (iii) Weak was 0.19 to 0.32. Hence, the value of R2 was 0.810. According to [10] approach, the value of R2 is

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substantial for this study. This also indicated that 81% degree of market orientation was influenced by the three dimensions of total quality management in this study. The other 19% remains unaffected.

Moreover, path coefficient is assessed using bootstrapping procedure with 500 replacements [11] [12] [13] [14] to determine the strength relationship between constructs. A strong relationship between constructs is concluded if path coefficient exceeds 0.100 and is considered significant if its score is higher than 0.050 [15].

TABLE 4. RESULT OF PLS STRUCTURAL MODEL

	Path Coefficient	Standard Error (STERR)	T-Value	P-Value	Sig
CF -> MO	0.349	0.061	5.732	0.000	***
ER -> MO	0.267	0.099	2.685	0.008	***
TR -> MO	0.271	0.075	3.633	0.000	***

Note: *** significant at 1% (one-tailed); ** significant at 5% (one-tailed); *significant at 10% (one-tailed)

Table 4 above shows briefly that measurement structural model is adequate for this study.

V. DISCUSSION

The overall findings from this study (Table 4) clearly indicate that employee relation has a significant influence towards market orientation in Northern state of electric utility industry in Malaysia. A theory studied by [16], supported the result and showed a very high correlation where it points out that employee relation is one of the relevant dimensions in determining total quality management towards market orientation. In addition, [17] noticed that employee relation was important in explaining the successful of TQM implementation in an attempt for the organizational transformation to accomplish market orientation. Besides, the finding showed that training is one of the relevant dimensions in determining total quality management towards market orientation. All of the studies by [18] [19] [20] [21] [22] supported the hypothesis that there were positive relationships between training and market orientation. Besides these studies highlight the approached of training will allow individuals as well as organizations to grow up [23], hence, training for the quality change management is driven by a plan and strategy as well to relate with not only market orientation but also actively support the improvement of organization performance [24]. Furthermore, the third independent variable, customer focus also resulted as one of the dimensions in determining total quality management towards market orientation. By managing the relation of customer and recognizing their requirements and demands will eventually increase the successful results in long term, thus, customer focus and market orientation has a strong and positive relationship [23] [24] [25].

VI. CONCLUSION

The dimensions of total quality management included employee relation, training and customer focus had an impact and can influence the market orientation in the Electric TNB. By the way, future research can use hotel industry, manufacturing industry, electronic industry and service industry including the small and medium enterprises (SMEs) to analyze the implementation of total quality management towards market orientation. Future study also should focus the comparison study between electric utility industries with others could provide additional insights. What's more, new variations of results could be expanded the geographical area such as the whole Peninsular Malaysia. Another detail dimension of total quality management such management support and commitment, information and communication, benchmarking, employee involvement and encouragement, managing suppliers can be used to measure the relationship of this study. Some common variables such as competitive intensity and legal of regulation can be include as moderator in the framework in order to explore extremely whether it is influenced by these factors.

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