The Relationships Between The Extent of TQM Practices and the Importance on Business Performance: A Survey in Malaysia

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ABSTRACT

In today's highly competitive market, business performance is one of the critical factors for companies to survive in the global marketplace. The concept of total quality management (TQM) has been developed as a result of intense global competition for improving business performance. Many previous studies discussed about TQM and the extent of the TQM practices, however, almost previous works were given less emphasis on the relationships between the extent of TQM factors and it's importance to business performance based on the individual factors in TQM, which is identified as theoretical gap. The main contribution of this study is to identify the most effective TQM factors based on the level of practices and it's importance to the business performance. A questionnaire was prepared and sent to 1500 companies from the automotive industry in Malaysia which gave a 21.9% response rate or 319 respondents. This study reveals that perception of ranking based on the practices is different compared to ranking based on it's importance to business performance. Furthermore, Kendall tau correlation test for rank analysis shows that correlation coeffient. r is -0.333 between rank of practices and its importance. It means that higher extent of TQM practices has less importance with business performance. Thus, the final ranking is finalized based on the practices level and it's importance to business performance as follows; (1)Management strategy and policy; (2)Customer focus; (3)Continuous improvement; (4)Supplier management; (5)Work process; (6)Business ethics; (7)Top management leadership; (8)Information and analysis; (9)Human resource development; (10) New product management. This research will help the academicians and industry players to have better understanding on the importance of TQM practices in effective way to the company in improving business performance.

INTRODUCTION

The concept of total quality management (TQM) has been developed as a result of intense global competition (Laosirihongthong, 2005; Santos-Vijande & Álvarez-González, 2009; Valmohammadi, 2011). Companies that manage the international trade in global competition have put emphasis on TQM philosophy, procedures, tools and techniques (Miyagawa & Yoshida, 2010). According to Garvin, (1988), international competition requires higher levels of quality achievement to meet the customer satisfaction. Besterfield (2009) defined TQM as "the mutual cooperation of everyone in an organization and associated business process to produce products and service which meet the need and expectation of customer's. Juran (1998) views TQM as philosophy aimed at achieving business excellence through the application of tools and techniques, as well as the management of soft aspects, such as human motivation in work. The role of TQM in improving business performance is broadly agreed in the literature and empirical study (Fynes *et al*., 2008; Prajogo & Hong, 2008; Sila, 2007). TQM helps to manage the firm to improve the effectiveness and business performance to achieve world class status for the past two decades (Arumugam *et al*., 2008; Salaheldin, 2009). Many previous studies discuss about TQM and the extent of the TQM practices, however, almost previous works were given less emphasis on the relationships between the extent of individual TQM factors and its importance to business performance, which identified as theoretical gap. Some authors evaluate TQM based on TQM practices and others thorugh regression analysis. However, the importance factor based on the extent of TQM can be argued

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and questioned because it should be also based on the importance level to business performance (Robbins *et al*., 2011). Some of TQM factors have high level of importance but less practices such as design development (Ibusuki & Kaminski, 2007; Prajogo & Sohal, 2006; Prajogo & Hong, 2008).

There are strong relationship between TQM and business performance as in previous studies (Agus & Hassan, 2011; Arumugam *et al*., 2008; Brki *et al*., 2011; Konecny & Thun, 2011; Miyagawa & Yoshida, 2010; Ahmad *et al*., 2012) Most previous studies show a positive relationship between TQM practices and business performance (Bou & Beltrán, 2005; Gunday *et al*., 2011; Jun *et al*., 2006; Miyagawa & Yoshida, 2010). However, there are also studies that show TQM did not improve the business performance (Corredor & Goñi, 2011; Demirbag, Tatoglu *et al*., 2006). Some of the findings also partially correlated with the business performance (Arumugam *et al*., 2008; Feng *et al*., 2006). The benefits of TQM are improved quality, employee participation, teamwork, working relationships, customer satisfaction, employees satisfaction, productivity, communication and market share (Besterfield, 2004; Pinho, 2008; Sila, 2007; Zakuan *et al*., 2010). Based on literature review and preliminary study, the authors have identified ten important elements of TQM practices namely: (1) Top management leadership; (2) Human resource development; (3) Work process; (4) Customer focus; (5) Information and analysis; (6) Management policies and strategy; (7) Supplier management; (8) Continuous improvement; (9)New product management and (10)Business ethics. In addition, business performance generally refers to the company's goals and achievements. The success of the company, however, can be evaluated by a variety of performance measurement (Agus & Hassan, 2011; Ahmad *et al*., 2013; Kakkar & Narag, 2007; Lam, Lee, & Ooi, 2011; Parast & Adams, 2011;Ahmad *et al*., 2008). Authors have identified and concluded six constructs for measuring performance; (1) Customer satisfaction; (2) Production performance; (3) Financial performance; (4) Quality performance; (5) Employee satisfaction (6) and Transformation performance.

In this analysis, author want to answer the following question;

(1) To what extent Malaysian automotive industries implement TQM?

(2) What is relationship between individual TQM factors and business performance?

(3) What is relationship between the rank of TQM practices and the rank of importance to business performance.

Hypotheses H1 until H10 have been made to examine the relationship between individual factors of TQM and business performance by using correlation analysis in SPSS. First, desciptive analysis was conducted to examine the extent of TQM practices. Secondly, correlation analysis was performed to test the relationship between individual contructs of TQM with business performance.

H1: Top management leadership for TQM practices is positively correlated with business performance.

H2: Human resource development for TQM practices is positively correlated with business performance.

H3: Work process for TQM practices is positively correlated with business performance.

H4: Customer focus for TQM practices is positively correlated with business performance.

H5: Information and analysis for TQM practices is positively correlated with business performance.

H6: Management strategy and policy for TQM practices is positively correlated with business performance.

H7: Supplier management for TQM practices is positively correlated with business performance.

H8: Continuous improvement for TQM practices is positively correlated with business performance.

H9: New product development for TQM practices is positively correlated with business performance.

H10: Business ethics for TQM practices is positively correlated with business performance.

Methodology:

For the purpose of scoring TQM practices and business performance, a seven-point Likert scale was employed. When the questionnaire had been validated by quality experts, it was pilot tested and finalised. A sample of 1500 related to automotive industry companies, was selected from the directories of the Federation of Malaysian Manufacturers (FMM) and the foreign companies directory list in Malaysia. 324 questionnaires were returned which represented 21.6% response rate. The number of returned questionnaires that were found to be usable in this study was 319, which represented about 21.3% response rate. Descriptive and correlation test have been used to analyze the data. Finally, based on decision making method by Robbins *et al*., (2011), authors have ranked the variable based on TQM practices and the importance to business performance.

Survey Result:
General profiles of respondents:

The first aspect analysed was the general profiles of the respondents. Table 1 shows that the main respondents are Japanese companies (47.6%) and Malaysian companies (36.7%). The total number of companies are 319 companies. It means the data have high degree of reliability and validity since there is an adequate frequency of response, i.e. more than 30.

Table 1: Major shareholder in the company

Ownership	Frequency	Percent	Cumulative Percent
Malaysian	117	36.7	36.7
American	15	4.7	41.4
Singaporean	11	3.4	44.8
Japanese	152	47.6	92.5
European	12	3.8	96.2
Taiwanese	9	2.8	99.1
Others	3	.9	100.0
Total	319	100.0	

4.7% of the respondents are from the companies that employ between 1 and 50 employees as shown in Table 2. 21.3% of the respondents are from the companies that employ between 51 and 150 employees, 25.4% of the respondents have between 151 and 300 employees, and 48.6% of the respondents are from companies employing more than 300 employees. This shows that 51.4% of the respondents can be categorised as SMEs, the remaining 48.6% being large companies.

Table 2: Distribution of Japanese companies according to number of employees

	Frequency	Percent	Cumulative Percent
Less than 50	15	4.7	4.7
51 to 150	68	21.3	26.0
151 to 300	81	25.4	51.4
More than 300	155	48.6	100.0
Total	319	100.0	

After an initial understanding of the owner and company size, it was felt important to identify whether they have implemented some certification system. In terms of quality certification, almost 80.3% of the respondents have MS ISO 9001:2000 (Malaysian standard adopted from ISO 9000) certification as shown in Table 3. This is followed by ISO 14000 (environmental management system) certification with 64.9%, TS 16949 (automotive based business) certification 49.5% and OHSAS (occupational safety and health) certification 21.0%. Some companies have more than one certification.

Table 3: Types of quality system certification

	Frequency (n)	Percent (n % of N) N=319
ISO 9001	256	80.3
TS 16949	158	49.5
OHSAS	67	21.0
ISO14001	207	64.9
Others	20	6.3
None	3	100.0

Normality Test:
Normality test was conducted to confirm whether the data is normal. Kolmogorov-Smirnov test result shows that p value is 0.69 (p>0.05) as shown in Table 4, it means that business performance as dependent variable is normal data and parametric test has been selected for inferential test.

Table 4: Normality test

Kolmogorov-Smirnov[a]			Shapiro-Wilk		
Statistic	df	Sig.	Statistic	df	Sig.
.052	319	.069	.981	319	.054

Descriptive Statistic for TQM:
Descriptive analysis have been conducted to examine the level of TQM practices in Malaysia by categorized TQM into three category; Low level (0-3 likert scale), moderate level (3-5 likert scale) and high level (5-7 likert scale), and analysis result as shown in Table 5. Based on overall result, low level (0%), moderate level (32.7%) and high level (67.3%). It shows that most of the companies have practiced TQM in high level, 67.3%. However, result also shows that high percentages in moderate level (32.7%), which should be improved to the high level. Overall descriptive analysis of TQM practices has been presented in Table 6. Based on the mean results it shows that overall mean for TQM constructs is 5.38, which can be categorised as high level. The mean scores for all perceived value items ranged from 5.14 to 5.64, indicating a high level of agreement. The standard deviation ranged from 1.121 to 0.828, indicating a strong consensus where scores are tightly packed around the mean (Field, 2009). The standard deviation of each item was less than 1.50, which

suggests that the data are consistent and close to the mean (Field, 2009). Ranking of TQM constructs based on degree of practices are: (1) Customer focus, (2) Management strategy and policies, (3) Business ethics, (4) Top management leadership, (5) Work process, (6) Supplier management, (7) New product management, (8) Information and analysis (9) Human resource development and (10) Continuous improvement. It indicates that customer focus is the most important factor based on practices of TQM(Agus & Hassan, 2011; Pinho, 2008; Tanninen *et al*., 2010). The second important factor is management strategies and policy, which shows this factor is effective in implementing TQM through clear vision, mission and strategy (McGaughey & Casey, 2006; Oltra & Flor, 2010). It is suprising that business ethics is the third ranking out of ten factors. The least implemented activities is continuous improvement, which need to improve in future. The next step, authors analyze wheater the extent of TQM have correlation with it's important to business performance.

Table 5: The extent of TQM

	Frequency	Percent	Cumulative Percent
Low (0-3)*	0	0.0	0.0
Moderate (3-5)*	101	32.7	32.7
High (5-7)*	208	67.3	100.0
Total	309	100.0	

*Likert Scale

Table 6: Descriptive Statistic for TQM

	Factor	Mean	Standard deviation	Rank
1	Top Management Leadership	5.48	.82839	4
2	Human Resource Development	5.23	.87377	9
3	Information and Analysis	5.30	.83842	8
4	Continuous Improvement	5.14	.97271	10
5	New Product Management	5.31	1.12046	7
6	Supplier Management	5.32	.93123	6
7	Customer Focus	5.64	.92410	1
8	Work Process	5.34	.98032	5
9	Management Strategy and Policies	5.56	.85551	2
10	Business Ethics	5.49	1.00523	3
	Average mean	5.38	0.93301	

Correlation test:

    Pearson correlation has been selected for testing the relationships. The analyzed results presented in Table 7 indicating that the hypotheses H1, H2, H3, H4, H5, H6, H7, H8, H9 and H10 were supported and significance (ß = .597, .606, .612, .657, .546, .621, .547, .610, .619, and .57, respectively). The following suggested values for low, medium and high effects for r (correlation coefficient) based on Cohen, (1988): (1) $r \geq 0.10$ => Small effect; (2) $r \geq 0.30$ => Moderate effect; (3) $r \geq 0.50$ => High effect. Thus, these hypotheses were supported and the relationships are considering high. r^2 value range is between 0.30 and 0.43 which suggest that 30% until 43% of the variance are sharing amongst TQM and business performance, which can be categorized by high (Cohen, 1988). Continuous improvement has the highest value of r^2, 43.0%. It is followed by supplier management (39%) and management policies and strategy (38%). The lowest rank is new product management (30%).

Table 7: Correlation test

No	Hypotheses	Standardize estimate (r)	Rank	r^2	Results
1	H1	.597**	7	0.36	Sig.
2	H2	.606**	6	0.37	Sig.
3	H3	.612**	4	0.37	Sig.
4	H4	.657**	1	0.43	Sig.
5	H5	.546**	10	0.30	Sig.
6	H6	.621**	2	0.39	Sig.
7	H7	.547**	9	0.30	Sig.
8	H8	.610**	5	0.37	Sig.
9	H9	.619**	3	0.38	Sig.
10	H10	.570**	8	0.32	Sig.

    Based on ranking of descriptive and correlation test, the results have been compared and compiled in Table 8. The result shows that higher practices factors to be less importance and lower practices factors to be more importance. For example, customer focus is the highest in practices (rank 1) but less important in business performance (rank 9). Continious improvement is lowest practices (rank10) but the most importance in business performance. Kendall tau correlation test has been conducted to analyze the relationship between the practices and importance as shown in Table 9. The correlation, r is -0.333, means negative relationship. Based on Robbin *et al* (2011), practices (p) multiply importance (I) have been calculated for the final ranking as shown in Table 8.

Table 8: Final Ranking Base on Practices and Importance

		Practices	Importance	IXP	Final Result
1	H1	4	7	28	7
2	H2	9	6	54	9
3	H3	8	4	32	8
4	H4	10	1	10	3
5	H5	7	10	70	10
6	H6	6	2	12	4
7	H7	1	9	9	2
8	H8	5	5	25	5
9	H9	2	3	6	1
10	H10	3	8	24	6

Table 9: Correlation between Importance and Practices

			P	I
H11	Practices (p)	Coefficient (r)	1.000	-.333
		Sig. (2-tailed)	.	.180
		N	10	10
	Importance (I)	Coefficient (r)	-.333	1.000
		Sig. (2-tailed)	.180	.
		N	10	10

Discussion:

Based on descriptive analysis, this study shows that most of the companies in automotive in Malaysia are in moderate and high level of TQM practices. However, it is believed to compete in intense global market, the companies must level up their TQM practices to the higher level. Therefore, TQM implementations in Malaysia should have to move forward by improving their TQM practices from moderate to high level practices. However, it seems many companies are still struggling to level-up their TQM to the high level.

One of the causes of unsuccessful to survive in global market is ineffective TQM implementation (Ahmad & Yusof, 2010; Soltani *et al*., 2005). It is surprising that the rank of practices is not correlated with its importance to business performance. For example, continuous improvement is ranked the lowest ranking (rank 10) in practices, but it is ranked the highest rankings in importance based on the correlation result with business performance. The extent of practices itself did not represent the contribution to the business performance. In contrast, some of TQM factors that are in high level of practices but the contributions are smaller to the business performance such as customer focus and human resource development. Therefore, this study has identified the ranks of TQM based on practices and its importance with the business performance. Consideration the importance is not only the extant of TQM practices but also its importance to the business performance. The reason is the practices and importance has their own limitation. Some items have higher contribution to business performance but there is limitation of practices such as continuous improvement, which need investment of resources and technical advancement (Temponi *et al*., 2005). The result shows that negative relationship between TQM factors and the importance based on business performance. It can be concluded that higher practices of TQM factors is not guarantee for contributing to the business performance, but should be based on the practices and its importance. Finally, based on Robbins *et al*., (2011), the final ranking is finalized based on the practices level and the importance to business performance as shown in Table 9; (1)Management strategy and policy; (2)Customer focus; (3)Continuous improvement; (4)Supplier management; (5)Work process; (6)Business ethics; (7)Top management leadership; (8)Information and analysis; (9)Human resource development; (10) New product management.

Conclusion:

This study reveals that perception of ranking based on the practices is difference compared to ranking based on it's importance to business performance. Thus, the final ranking is finalized based on the practices level and it's importance to business performance.

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