

## THE STRENGTH OF JAPANESE COMPANIES: A PROPOSED TQM FRAMEWORK USING ATLAS.TI

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**ABSTRACT:** Total quality management (TQM) has been implemented because of strong global market rivalry. One of Japanese companies' strength is TQM practices. Japanese companies have succeeded in global market mainly due to the effective adoption of TQM practices. It is proved that Japanese companies have dominated in much industry such as electrical and electronic, and automotive. Many previous studies discussed about comparing TQM performs between Japanese and non-Japanese companies. However, most of them were given less emphasis on exploring Japanese TQM strength based on relationship diagram amongst TQM, tools and techniques and business performance, which was identified as the theoretical gap. The main impact of this study is to identify the strength of Japanese companies through relationship diagram based on previous works. Qualitative study has been applied using Atlas.ti and meta-analysis. Based on the result, Japanese companies emphasise in application of tools and techniques and human resource developments in their companies. Tools and techniques have relationship between TQM and business performance to succeed higher impact of TQM practices on their business performance. Finally, authors have proposed a conceptual model for understanding the strength of Japanese companies.

**KEYWORDS:** *Total Quality Management (TQM); Business Performance*

## **1.0 INTRODUCTION**

Total quality management (TQM) has been developed as a result of global market competition amongst countries over the world [1-4]. Organisations that focus the international trade as their priority have put strengthen on TQM practices, tools and techniques [5-8]. According to Garvin [9], world quality standard needs higher levels of quality characteristics to meet the customer expectation. Customer demand is always being high prioritized in any fields for the future improvements depends on the market goal to be achieved. Besterfield [10] 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 [11] 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. TQM has proved in improving business performance in the literature and empirical study [12-14]. TQM has improved business performance in many companies to achieve world standard services and products for the past two decades [15-18].

Many previous studies discuss about comparing TQM practices between Japanese and non-Japanese companies, however, almost previous works were given less emphasis on exploring Japanese TQM strength based relationship diagram amongst TQM, tools and techniques and business performance, which identified as theoretical gap. Most of the authors evaluate based on their limited scope and TQM factors [13,19-22]. Previous researchers give less attention in comparing TQM practices between Japanese and non-Japanese companies in terms of its relationships with their performance including moderators and mediators.

### **1.1 Japanese Strength**

During the 1990’s, the growth rate of Japanese economy has markedly declined because of a long recession [23], which caused many companies to have financial losses. However, some well-managed Japanese companies have strong competitive advantage in the global market. The survival and prosperity of Japanese companies are achieved by the effective managements such as TQM, lean

production, TPM, and tools and techniques, besides their technological advantages [6,9]. TQM has been recognised as the most critical success factor in Japanese companies [24-26]. Furthermore, most Japanese companies employ TQM as a basis strategy to improve their positions in the global market [23]. TQM in Japan companies is based on company-wide participation with emphasis on employees training, quality circles, quality diagnoses, statistical methods, and national-wide campaign [6]. Employees from all levels in Japanese companies are involved in continuous improvement activities [25]. A study [6] argue that most Japanese companies in China and the USA have implemented TQM, which significantly related to business performances such as reducing cost, increasing profitability, and improving employee's satisfaction.

Some authors have examined comparative study of TQM between Japanese and non-Japanese companies such as Garvin [9], Dahlgaard [27], and Liker [28]. Garvin [9] investigates the quality of air conditioners manufactured by companies from Japan and the United States. The study shows significant differences between Japanese companies and U.S. companies in their quality management practices. Garvin [9] finds that the Japanese companies have vastly superior quality through reliability engineering, statistical quality control, training and education, preventive maintenance, and supplier management were all widely practiced in Japanese companies. Dahlgaard [27] compare quality management between Western companies (Denmark, Finland, Sweden and Australia) and Eastern (Japan, Korea and Taiwan) companies. Some of the key differences found between the Eastern and Western companies are Western companies are lagged behind Eastern companies in the formulation of quality policy, educational and training, quality audit by top management, quality motivation and suggestions, and application of quality tools and techniques. Liker [28] examines the management principles and business philosophy behind Toyota's worldwide reputation in quality and reliability. The study shows the gap between Toyota and Western companies. The strengths of Toyota Company are customer focus, learning organisation, process-oriented, continuous improvement and preventive measures to achieve best quality at the lowest cost with high safety and morale. In addition, the strengths of Japanese companies are further reviewed. Japanese

companies focus more on the communication with customers and involving customers in quality improvement activities [23]. Shop floor communication and information sharing of performance results are also important [6, 29]. The Japanese companies have better performance because they emphasise in implementation of small group problem solving, employee suggestions, and information feedback [23]. Based on a study [24], it was found that there are significant differences in TQM practices between Japanese and non-Japanese companies. Management leadership, measurement and feedback, product design and education and training are the significant factors, which show the strength of Japanese companies with superior practices in these four factors as against non-Japanese companies.

In this analysis, author wants to answer the following question:

- i. What is the strength of TQM practices in Japanese companies?
- ii. What is relationship between individual TQM practices, tools and techniques and business performance in Japanese companies?

Hypotheses H1 until H3 have been made to examine the relationship between TQM practices, tools and techniques and business performance by using Atlas.ti.

H1: Business performance has significant impact on business performance.

H2: Business performance has significant impact on tools and techniques.

H3: Tools and techniques has significant impact on business performance.

## **2.0 METHODOLOGY**

An extensive literature search was designed to identify and retrieve primary empirical studies relevant to the project's major research question. The databases searched were SpringerLink, Emerald, Taylor & Francis, ScienceDirect, Elsevier, ProQuest and Google Scholar. The descriptor Japanese and TQM were used when possible; otherwise, it

was searched as a keyword. The analysis tool that has been used is ATLAS.ti. ATLAS.ti helps the researchers to locate, code, examine and analyze the weighted based on frequency, and visualize the complex relations in a diagram [30] for qualitative data in the interview. ATLAS ti has been selected in this study because it helps in analyzing qualitative data such as interview into specific coding.

### **3.0 RESULTS AND DISCUSSION**

An extensive literature has been conducted from SpringerLink, Emerald, Taylor & Francis, ScienceDirect, Elsevier, ProQuest and Google Scholar. Based on the literature, all the information have been analysed by ATLAS.ti. ATLAS.ti helps the researchers to understand the relationship amongst the variables. The relationships are very important to understand the strengthen that contributes to business performance in Japanese companies.

#### **i. What is the strength of TQM practices in Japanese companies?**

Based on analysis using Atlas.ti based on previous works the strengths of Japanese companies are shown in Table 1. The overall results show that Japanese companies emphasise in application of tools and techniques in their companies. It shows that TQM requires tools and techniques for effective TQM practices. The second most important is human resource developments such as training and motivation. It shows that Japanese companies view human as an important asset to the companies and it starts from education and training [11]. The strengths of Japanese companies are summarised.

#### **ii. What is relationship between individual TQM practices, tools and techniques and business performance in Japanese companies?**

It was expected that tools and techniques are very important elements in Japanese companies. It is proven true, based on the analysis result as shown in Figure 1. This study indicates that Japanese companies emphasise tools and techniques in their TQM implementation. It explains that Japan have used tools and techniques to achive higher impact of TQM practices on their business performance [9, 24]. It is expected that Japan will continuously dominate the world market through TQM practices and customer satisfaction. Based on literature review, relationship diagram have been made to identify the

relationship amongst TQM, tools and techniques and business performance. Therefore, hypotheses H1, H2 and H3 have been proved true.

Table 1: The strength of Japanese companies in TQM

	Dahlgard et al. [27]	Garvin [9]	Liker [28]	Ahmad and Yusof [24]	Ahmad et al. [29]	Frequency
Tools and techniques	V	V	V	V	V	6
Human resources development	V	V	V	V		5
Work process			V	V	V	3
Management Strategy and policy	V		V	V		3
Top management	V	V		V		3
New product management		V		V	V	3
Information and analysis			V	V	V	3
Customer focus				V	V	3
Supplier management		V		V	V	3
Continious improvement			V	V	V	3

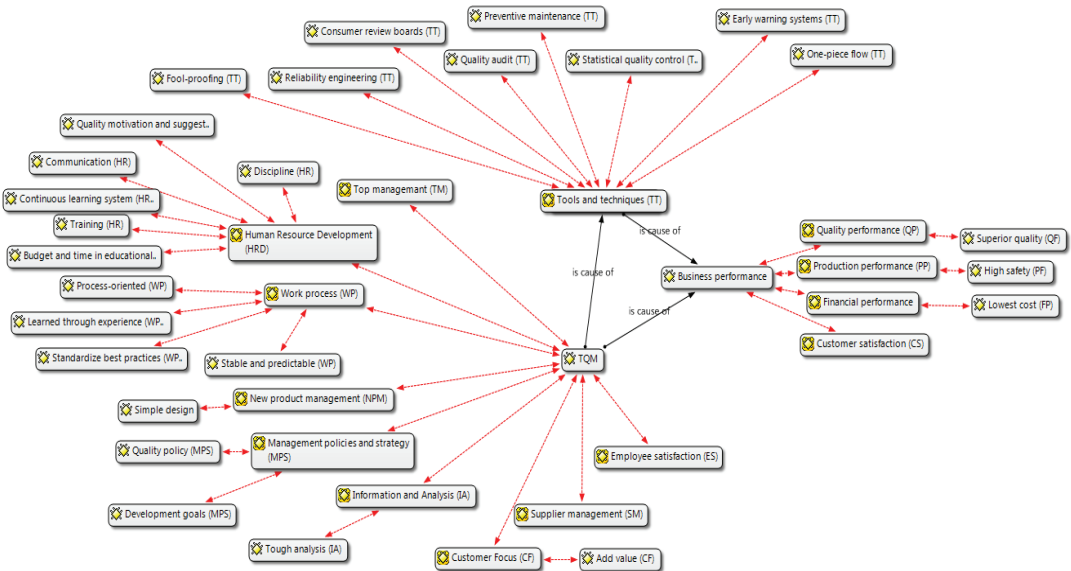


Figure 1: The strengths of Japanese companies

## 4.0 CONCLUSION

It can be concluded that Japanese companies emphasize in application of tools and techniques and human resource developments in improving their performance. Tools and techniques as mediator have significant relationship between TQM and business performance to achieve higher impact of TQM practices on their business performance. Therefore, Tools and techniques implementation should be focused on future improvement for improving TQM practices.

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## REFERENCES

- [1] M. Ahmad, M. Arif, N. Zakuan, S. Rahman, T. Abdullah and Fadzil, "The Effect of Demographics on Customer Satisfaction amongst Malaysia Hajj Pilgrims: Survey Result," *Applied Mechanics and Materials*, vol. 660, pp. 1000–1004, 2014.
- [2] T. Laosirihongthong, "A Comparative Study of Implementation of Manufacturing Strategies in Thai and Indian Automotive Manufacturing Companies," *Industrial Engineering*, vol. 24, no. 2, pp. 131-143, 2005.
- [3] C. Valmohammadi, "The impact of TQM implementation on the organizational performance of Iranian manufacturing SMEs," *The TQM Journal*, vol. 23, no. 5, pp. 496–509, 2011.
- [4] M. L. Santos-Vijande and L. I. Álvarez-González, "TQM's contribution to marketing implementation and firm's competitiveness," *Total Quality Management Business Excellence*, vol. 20, no. 2, pp. 171–196, 2009.
- [5] M. F. Ahmad, N. Zakuan, A. Jusoh and J. Takala, "Review of relationship between TQM and business performance," *Applied Mechanics and Materials*, vol. 315, pp. 166–170, 2013.
- [6] M. Miyagawa and K. Yoshida, "TQM practices of Japanese-owned manufacturers in the USA and China," *International Journal Quality Reliability Management*, vol. 27, no. 7, pp. 736–755, 2010.

- [7] A. Ionică, V. Băleanu, E. Edelhauser and S. Irimie, "Total Quality Management Business Excellence," *Business*, vol. 10, no. 4, pp. 125–134, 2010.
- [8] M. Naser, F. Alolayyan, K. Anuar, M. Ali and F. Idris, "Total Quality Management & Business Excellence Advance mathematical model to study and analyse the effects of total quality management ( TQM ) and operational flexibility on hospital performance," *Total Quality Management Business Excellence*, vol. 22, no. 12, pp. 37–41, 2011.
- [9] A. G. Garvin, *Managing Quality*. New York: The Free Press, 1988.
- [10] D. H. Besterfield, *Quality Control*, 8th ed. New Jersey: Pearson Prentice Hall, 2009.
- [11] J. M. Juran, *Juran's Quality Handbook*. Singapore: McGRAW-HILL, 1998.
- [12] B. Fynes, S. De Búrca and J. Mangan, "The effect of relationship characteristics on relationship quality and performance," *International Journal of Production Economic*, vol. 111, no. 1, pp. 56–69, 2008.
- [13] D. I. Prajogo, and S. W. Hong, "The effect of TQM on performance in R&D environments: A perspective from South Korean firms," *Technovation*, vol. 28, no. 12, pp. 855–863, 2008.
- [14] I. Sila, "Examining the effects of contextual factors on TQM and performance through the lens of organizational theories: An empirical study," *Journal Operation Management*, vol. 25, no. 1, pp. 83–109, 2007.
- [15] V. Arumugam, K.B. Ooi and T.C. Fong, "TQM practices and quality management performance: An investigation of their relationship using data from ISO 9001:2000 firms in Malaysia," *The TQM Journal*, vol. 20, no. 6, pp. 636–650, 2008.
- [16] S. I. Salaheldin, "Critical success factors for TQM implementation and their impact on performance of SMEs," *International Journal Product Performance Management*, vol. 58, no. 3, pp. 215–237, 2009.
- [17] M. F. Ahmad, N. Zakuan, A. Jusoh, Z. Tasir and J. Takala, "Meta-analysis of the relationship between TQM and Business Performance," *Materials Science and Engineering*, vol. 46, no. 1, pp.1-5, 2013.
- [18] M. Ahmad, N. Zakuan, J. Ahmad and J. Takala, "Meta-analysis of the TQM impact on business performance amongst regions and countries," *International Journal Industrial System Engineering*, vol. 20, no. 2, pp. 155–164, 2015.



- [19] S. P. Robbins, D. A. DeCenzo and M. Coulter, *Fundamentals of Management*. New Jersey: Pearson, 2011.
- [20] D. I. Prajogo and A. S. Sohal, "The integration of TQM and technology/R&D management in determining quality and innovation performance," *Omega*, vol. 34, no. 3, pp. 296–312, 2006.
- [21] K.D. Frohner and K. Iwata, "Evaluating designing principles of Japanese production systems," *International Journal Production Economics*, vol. 46–47, pp. 211–217, 1996.
- [22] U. Ibusuki and P. C. Kaminski, "Product development process with focus on value engineering and target-costing: A case study in an automotive company," *International Journal Production Economics*, vol. 105, no. 2, pp. 459–474, 2007.
- [23] A. Chi, A. Bahjat, and Y. Matsui, "Quality management practices and competitive performance: Empirical evidence from Japanese manufacturing companies," *International Journal Production Economics*, vol. 133, no. 2, pp. 518–529, 2011.
- [24] M. F. B. Ahmad and S. M. Yusof, "Comparative study of TQM practices between Japanese and non-Japanese electrical and electronics companies in Malaysia: Survey results," *Total Quality Management Business Excellence*, vol. 21, no. 1, pp. 11–20, 2010.
- [25] M. Imai, *Kaizen: The Key to Japan's Competitive Success*. New York: McGraw-Hill, 1986.
- [26] M. F. Ahmad, M. S. M. Arif, N. Zakuan, S. Rahman, M. Latif and M. Khalid, "The Mediator Effect of Customer Satisfaction between Quality Management Practices and Communication Behavior amongst Malaysia Hajj Pilgrims: Survey Result," *Applied Mechanics and Materials*, vol. 660, pp. 1005–1009, 2015.
- [27] J. J. Dahlgaard, K. Kristensen, G. K. Kanji, H. J. Juhl and A. S. Sohal, "Quality Management Practices: a comparative study between East and West," *International Journal Quality Reliability Management*, vol. 15, no. 3, pp. 812–826, 1998.
- [28] J. K. Liker, *The Toyota Way, 14 Management Principles from the World's Greatest Manufacturer*. USA: McGraw-Hill, 2005.
- [29] M. Ahmad, N. Zakuan, A. Jusoh, S. Yusof and J. Takala, "Comparative study of TQM practices between Japanese and non-Japanese companies: Proposed conceptual framework," *Advance Material Research*, vol. 903, pp. 371–377, 2014.

- [30] A. Lewins and C. Silver, *Software in qualitative research: A step-by-step guide*. London: Sage Publication, 2007.