The Differences of TQM Practice and Organization Performance Between TQM Firms and Non TQM Firms

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Abstract—Global competition has put on the Total Quality Management as a philosophy and strategy in winning the competition. Numerous studies have shown this. But there are also evidence indicating the failure of Total Quality Management practice. The general objective of this study was to examine and analyze the differences of TQM practice between TQM firms - non TQM firms. Additionally, it will also be analyzed whether the organizational performance with the level of TQM practices above the average have better organizational performance than companies with TQM practices below average. To reach the objective, this study was carried out by using survey research. Only 31 responses returned from 162 company engage in the four or more wheel automotive that was carried out by using survey research. Only 31 responses returned from 162 company engaged in the four or more wheel automotive that producing part and equipment in Indonesia and were analyzed with independent t-test. The findings of this study indicate that: 1) The level of TQM practices in the TQM firms is higher than non TQM firms; 2) The organizational performance with the level of TQM practices above the average have better organizational performance than companies with TQM practices below average. Based on the findings of the study, it can be concluded that TQM practice was proven as a powerful approach for the organization which desired to accomplish excellent performance.

Keywords—TQM firms, non TQM firms, TQM practice, organizations performance.

I. INTRODUCTION

Institutional theory, is a theory that studies how organizations can improve their ability to grow and survive in a competitive environment, with ways to satisfy their stakeholders [1]. Customers, employees, or any group that controls the supply of limited resources, is a stakeholder organization. According to this theory, the notion of an institution or institutions are not in the physical sense, but in terms of values, regulations, norms, customs or culture, all of which are reflected in economic activity. Organization may be forced to change its organizational structure due to the pressure of government regulation, politics, norms, and culture; or mimic the structure and strategies of other organizations as a result of competitive pressures [2]. Reference [3] states that the adoption of TQM is one form of action to mimic strategy of the organization's structure or the other as a result of competitive pressures. Development of TQM has had a long journey. A survey of 500 U.S companies surveyed indicated that two thirds had stopped TQM activity [4]. In the UK, 80 of the 100 companies surveyed experienced disappointment and failure [5]. Although there is the fact that the successful implementation of TQM is not applied, but a study by [6] states that after applying the TQM, 83% of the 550 companies surveyed have a positive or very positive results. In addition 79% of companies were able to achieve improved results over the next 3 years in accordance with established plans. This phenomenon triggered various studies associated with the implementation of TQM. TQM debate whether the practice should be done on the company formally adopted the TQM program (TQM firms) or the company did not formally adopt the TQM program (non TQM firm), has lasted long enough, even occurs in two "gurus" in the field of quality management, W. Edward Deming (TQM program was formally rejected) and Philips B. Crosby (support program in formal TQM) [7]. Thus, several questions arise. How does the level of TQM practice on TQM firms and non TQM firms? Is TQM firms are able to produce quality products and higher organizational performance than non TQM firms? In this study, an analysis of quality management practices conducted in the manufacturing industry that specializes in automotive wheel four or more (especially industrial equipment and components). This industry was chosen for several reasons. Strong competitive pressures have forced many manufacturing companies to achieve TQM actively in order to survive and succeed in business. For this, TQM should be built well in the manufacturing sector. Another reason is that the theories of quality management, such as TQM, just in time, kanban system, six sigma, and TPM (total productive maintenance), many of which arise through the study of manufacturing industries, especially automotive or automotive parts such as Toyota, Nippondenso, or other manufacturing industries, such as Motorola, Xerox, etc. In addition, the Indonesian Chamber of Commerce and Industry has set the automotive industry and automotive components as one of the leading industrial cluster booster of economic growth.
A. TQM Evolution

The evolution of quality management practices developed starting in 1931 in the United States, when the statistical quality control was developed by W.A. Shewhart, and then the application of statistical sampling and Deming Cycle by W. Edward Deming in 1940, quality assurance (quality assurance) with quality cost concepts developed by Joseph M. Juran in 1951, reliability engineering (reliability engineering) developed by the U.S. Army in 1950, total quality control (integrated quality control) developed by Armand Feigenbaum in 1956, and zero defects was first introduced by Philip B. Crosby in 1970. Total quality control (TQC) itself later developed by experts from Japan such as Taiichi Ohno (the pioneer of Just In Time) and Kaoru Ishikawa (initiators of quality control circles and cause effect diagram or fishbone diagram). The term of total quality management (TQM) and then gradually replace the term of total quality control [8], and began to grow very rapidly both in the United States and Japan began in the 1980s.

B. TQM Construct

Reference [9] has been established and tested the construct validation of the integrated quality management and its influence on product quality. This study raises a number of research opportunities that could be carried further, among others: 1. A causal model of the effectiveness of an integrated quality management to improve the quality of the product can be hypothesized and tested, 2. A comparative study of how these strategies are implemented in a different manufacturing environments, 3. Because of this strategy relates to the philosophy of TQM, further studies can be performed to measure the level of implementation of this strategy against companies that claim to have implemented TQM philosophy, and then gradually replace the term of total quality control, and began to grow very rapidly both in the United States and Japan began in the 1980s.

II. LITERATURE REVIEW

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firms are also performed by [14]. The results showed that companies that have successfully implemented the concept of standardization of the work or process-approach through quality management system certification as TQM tends to pursue the next stage in the course of their quality. In addition, the study found that seven TQM practices, namely: leadership, strategy and planning, customer focus, information and analysis, members of management, process management, and supplier involvement, were significantly higher in TQM firms than non-TQM firms.

III. METHODOLOGY

From the literature review, it appears that TQM is a powerful device and has a positive impact on product quality and organizational performance. But what if the difference in terms of TQM firms and non TQM firms? Therefore, this study intends to analyze and compare whether the practice of TQM and organizational performance, has the distinction between TQM firms and non TQM firms. Based on these objectives, the research hypotheses will be formulated as follows:

H1: *The level of TQM practices in the TQM firms is higher than non TQM firms;*

H2: *Companies with the level of TQM practices on average have better organizational performance than companies with TQM practices below average.*

The population in this study is a company engaged in the manufacturing industry in the fields of automotive, industrial equipment and components especially the four-wheeled motor vehicles or more (based on the Industrial Classification of Indonesia), which consists of 162 companies listed on the official Ministry of Industry. However, only 31 respondents who responded with complete data. This study was a questionnaire survey that measures TQM practices and organizational performance. TQM practices is the implementation of TQM philosophy, is measured by forming the critical factors of total quality management practices. The level of TQM practices was developed from the 5 items measuring adopted from [9], and 2 items from [15]. Forming the critical factors of TQM implementation practices as indicator variables are:

1. Top Management Commitment (TMC)
2. Customer Focus (CF)
3. Supplier Quality Management (SQM)
4. Employee Empowerment (EMPW)
5. Employee Training (TRAIN)
6. Process Management (PM)
7. Award for Quality Improvement (REWARD)

To measure each of these dimensions, using seven semantic differential scale factor scale ranging from 1 to 7 scale. The higher the number, indicates the higher the levels of each dimension of TQM practices.

Organizational performance is the result of the achieved level of an organization in order to achieve its objectives. In this study, the performance of organizations including the financial and non financial performance. Performance is measured through items following indicators, which compared to major competitors:

1. Production cost (production unit costs) (OP1).
2. Fast delivery (OP2).
3. Ease in adjusting to changes in volume of production and inventory (flexibility) (OP3).
4. Decrease in cycle time (OP4).
5. Quality of design (OP5).
6. The quality of the production process (manufacturing quality) (OP6).
8. Employee satisfaction (OP8).

Measurement items for organizational performance indicators adopted from Costa and Lorente (2004) with a scale of 1 to 7, where the higher the number, indicates the higher performance of the organization.

IV. FINDINGS OF THE STUDY

Comparative test was conducted to answer the first hypothesis, which states that "TQM practices in TQM firms, higher than non-TQM firms". There are seven variables to be compared in this test are: top management commitment, customer focus, supplier quality management, employee empowerment, employees training, process management, and awards will increase in quality. From the results of studies with one-sided t test, the obtained results as shown in Table I below:

<table>
<thead>
<tr>
<th>Variable</th>
<th>T-value</th>
<th>DF</th>
<th>P Value one tail</th>
<th>Decision of Hypothesis</th>
</tr>
</thead>
<tbody>
<tr>
<td>TMC</td>
<td>2.823</td>
<td>29</td>
<td>0.004254</td>
<td>Accept</td>
</tr>
<tr>
<td>CF</td>
<td>2.925</td>
<td>29</td>
<td>0.003312</td>
<td>Accept</td>
</tr>
<tr>
<td>SQM</td>
<td>4.538</td>
<td>29</td>
<td>0.000046</td>
<td>Accept</td>
</tr>
<tr>
<td>EMPW</td>
<td>3.717</td>
<td>29</td>
<td>0.000429</td>
<td>Accept</td>
</tr>
<tr>
<td>TRAIN</td>
<td>3.507</td>
<td>29</td>
<td>0.000748</td>
<td>Accept</td>
</tr>
<tr>
<td>PM</td>
<td>3.279</td>
<td>29</td>
<td>0.001355</td>
<td>Accept</td>
</tr>
<tr>
<td>REWARD</td>
<td>1.388</td>
<td>29</td>
<td>0.087855</td>
<td>Reject</td>
</tr>
<tr>
<td>TQM</td>
<td>3.627</td>
<td>29</td>
<td>0.000545</td>
<td>Accept</td>
</tr>
</tbody>
</table>

From the estimation results based on Table I and Table II, it can be concluded that:

1. Overall, the TQM Practice on TQM firm was significantly different from non-TQM firms, and there is only one dimension of TQM practice does not significantly different, that is reward.
2. Companies with the level of TQM practices on average have better organizational performance significantly than companies with TQM practices below average.

V. DISCUSSION

To support associative test results, the analysis of comparative test results will be elaborated further to answer the sixth hypothesis. On this comparative test, testing whether differences in TQM firms that adopt TQM practices are better than non-TQM firms. As shown in Table I, it produces the finding that in general, the practice of TQM Firms have high levels of TQM proven higher than non-TQM Firms. Only the reward will increase the quality indicators are not showing significant results. It can be concluded that TQM firms are adopting the TQM practice is better than non-TQM firms. These findings are consistent and well supported research conducted [7]. If further analysis, an indicator of top management commitment, customer focus, supplier quality management, employee empowerment, employee training, and management processes, it is significantly different between TQM Firms and non TQM Firms. This indicates that managers in the industry of automotive parts and supplies four or more wheels on TQM firms in Indonesia, not only to focus on matters relating to the human side (top management commitment, employee empowerment, and employee training), but also on the things that are technical (customer focus, supplier quality management, and process management). Associated with human and technical side of TQM practices, [16] stated that soft aspects (aspects related to the human side) is better as a predictor of organizational performance than hard aspects (aspects related to equipment or technical), although the soft aspect more difficult because the associated changes in organizational culture. Thus, it can be concluded that TQM Firms are more successful than non-TQM Firms not only in things that are technical, but also more successful in making changes to organizational culture.

Based on the different test results in Table I, the indicator will increase the quality of reward did not differ significantly between TQM Firms and non TQM Firms. This indicates that managers in the industry of automotive parts and supplies four or more wheels in Indonesia, both TQM and non TQM Firms have the same view in the award will increase the quality, not quantity, with a moderate level. There are two allegations regarding the lack of significant difference between the reward system for TQM firms and non-TQM firms. The first allegation: industrial equipment and components of four or more wheels in Indonesia have the same characteristics of corporate culture. Decision makers are faced to choose what organization reward system is preferred, since it is associated with payoffs (attraction between personnel). These systems tend to be industry rewards risk aversion, where the manager would prefer to take a conservative policy, which provides promotions and bonuses to managers (employees) who are trying to create a low profile employees, to avoid controversy/conflict, and a "team player" who fine. The second conjecture: the level of difficulty in determining or assessing the reward system, especially if associated with Equity Theory. Every organization has an unwritten culture that defines the default behavior of employees who may or may not be accepted. After a few months, most employees can find out what kind of company culture. Further staff will also know how to evaluate company performance and how that behavior will be rewarded. Equity theory stated that the individual will compare the input and the results of their work with other individuals, and it responds to eliminate if there is injustice [17]. Furthermore, this theory concludes that the motivation is influenced by the reward that is relative. Difficulty level of relative reward is quite high, because there is no clear reference as to how the signals indicate the presence of inequality between the one with the other departments that have specialized and different difficulty levels, assess how things have changed, how to assess inputs and outcomes job and combine them in total, or when and how the factors of production have changed over time. These difficulties are confirmed that the theory of justice require the support of other important insights in motivating employees through reward.

There are 10 non TQM firms and 21 TQM firms. Of the overall TQM firms, 17 of them have turned out to have quality certifications include: ISO 9001:2000; TS 16949, ISO 9002:1994, ISO 14001:2004, OHSAS 18001, the placement varies between 1996 to 2007, and all have certificates ISO 9001. On the other hand, from the ten non-TQM firms, there is only one company that gained quality certification, which is ISO 9001:2000. This indicates that the successful implementation of TQM is strongly associated with obtaining quality certification, which requires the companies concerned to fulfill all necessary requirements, particularly requirements documentation, management responsibilities, and capabilities in continuous quality improvement. Can be concluded that the company has obtained quality certifications (eg. ISO 9001:2000), is also a TQM firms.

Supports the results of this comparative test, revealed that the industry was having on the level of TQM practices above the average, have the overall organizational performance better than the industry has a level of TQM practices below average. It is as shown in Table II, where t value of 4.035, which means greater than the critical value of 1.6991 (with a value of p-value = 0.000182 <0.05). This means that the industry has a high TQM practices, the majority of the TQM firms, has a particular quality certification ISO 9001:2000, and the relative performance of the organization is able to achieve a higher rate than non-TQM firms. Therefore with a certificate of ISO 9001:2000, a company already has an international standard for quality systems, which specifies a number of design requirements to ensure that the company will deliver the goods or services in accordance with the requirements set. This will cause the company is better able to build customer confidence and better able to compete in the global marketplace. Can be concluded that the certificate of ISO 9001:2000 can be considered as institutional factors and is a very appropriate strategy to support the implementation of integrated quality.
VI. CONCLUSION

Based on the results of research and discussion of analyzes that have been described, some conclusions can be drawn as follows. Empirical findings reveal that the level of TQM practices on TQM firms is higher than non-TQM firms. This means that the adoption of TQM practices in companies that are formally implemented TQM, more successful than companies that were not formally implemented TQM. The findings also revealed that of 21 companies that are formally implemented TQM, 17 of whom already have a quality certificate ISO 9001:2000, while of the 10 non-TQM firms, there is only one company that obtained the quality certificate ISO 9001:2000. It can be concluded that to achieve a high performance, the company should have a high TQM practices as well. This can be achieved if the company is TQM Firms.

REFERENCES


Andre Dwijanto Wijaksono, was born in Surabaya, Indonesia, 23 Agustus 1972. Educational background: industrial management & engineering, 17 Agustus 1945 University, Surabaya, Indonesia, 1996; Magister in management field, Airlangga University, Surabaya, Indonesia, 2000; Doctoral programme in economics, management field, Airlangga University, Surabaya, Indonesia, 2008.

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