Critical Success Factors of Total Quality Management in the Indian Automotive Industry (NCR)

Neha Kalra *, Anoop Pant 

1 Department of Management, Accurate Institute of Management & Technology, Greater Noida, U.P. 203006, India.
2 Director, Accurate Institute of Advanced Management, Greater Noida, U.P. 203006, India.

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ABSTRACT

The article shows a model to conduct an empirical study in Indian automotive industry in order to improve their performance. There are many factors which are effective factors in improving performance of Indian automobile industry namely, leadership, customer focus, training, supplier quality management, product design, process management, and team work. The quality improvement plays a fundamental role in determining the performance in Indian manufacturing industries. In this research, a model has been developed that includes Quality culture, Critical success factors of Total Quality Management and quality improvement to study their influence on the performance of Indian automotive industry. It is hoped that this paper can provide an academic source for both academicians and managers due to investigate the relationship between Quality culture, critical success factors of Total Quality Management, Quality improvement, and Performance in a systematic manner to increase successful rate of Total Quality Management implementation.

Introduction

Global competition has increased during the past few decades. Nkechi Eugenia [1] pointed out that customers are the only factor that can create competition between organizations, and quality of goods is determined by customers. Further, more customers identify the quality of products and make factories focus more on quality. Nowadays, gaining competitive advantage has become a matter of knowing your customers. As a matter of fact, customers have become the starting point rather than the ending point in any successful business. Nkechi Eugenia [1] mentions that organizations for survival need to create new management based on total quality management.

Demirbag et al. [2] agreed that quality management is one of the most influential factors in every organization. Successful enterprises comprehend the dominant influence customer-defined quality could have on trade. Hence, many rivalry companies constantly enhance their quality models. If the firm does not consider quality, customers will be dissatisfied. The outcomes of such an approach are lost clients and chances for rivals to catch benefit of the market require [3]. Therefore, paying serious attention to customers’ needs make quality a priority. As Reid and Sanders [3] stated “It means gathering and surpassing customer anticipations by engaging each person in the firm inward a merged attempt”. This integrated effort is named Total Quality Management (TQM). According to Demirbag et al., TQM is a factor that can improve quality and it is a holistic approach towards continuous improvement in all organizations [2]. TQM is a management competitive environment. TQM is identified as an origin of innovation, competitive advantage, and organizational culture. philosophy necessary for all organizations and this factor exists in a competitive environment. TQM is identified as an origin of innovation, competitive advantage, and organizational culture.

Literature review

Critical success factors are the behavioural aspects of management styles or the human factors which emphasized on organization’s total quality management. Rahman et al.[4], & Lewis et al.[5], pointed out that success factors include Leadership, Customer focus, Quality culture, Teamwork, Training, Communication, Product design and etc. Moreover, the efficient utilize of critical success factors can increase quality improvement in each organization. Kumar et al. referred to many articles and stated that although there are many definitions of TQM; generally TQM is a comprehensive procedure for improving quality, productivity and competitiveness in the international marketplace [6]. In the same manner, Yang gives more details by expressing that total quality management is a general section of management which emphasizes competitive advantage, quality improvement, and customers’ requirements [7]. Total quality management is very effective in decision making, and problem solving. TQM also has a prominent role in the continuous improvement of organizations. TQM is a management integrative system for developing the quality of services and goods by means of the take part of all purposes and...
levels. Every person has a determining role in the production of quality services and goods. In another study, as cited by Wilson et al, TQM as an organization method for creating arrangement wide take part in scheming and creating a continuous improvement action that joins and increases customer requirements [8]. Mahmood et al, indicated that Quality culture is the pattern of arrangement materials or behavior that has been accepted by a society (team, band) as the admitted way of resolving difficulties [9]. An association of a ‘quality culture’ can be defined as one having "clear values and beliefs that foster total quality behaviour". Quality culture is the main component in a successful total quality management plan. Exchanging the culture of a firm is an important condition for successful implementation of TQM. There are many elements that define quality culture namely leadership, training, SQM, team working, process management, and etc. Sardana revealed that performance measurement can be measured as a process that is effective in representing goals and this factor is a symbol in showing the ultimate result of a firm [10]. Kennerley and Neely, pointed out that performance measurement is a factor that can be effective in decision making because without performance measurement we cannot estimate the purpose of the organization [11]. On the other hand, by using this factor, efficiency and effectiveness of every organization can be improved. As a result, performance measurement is effective when this factor leads to good decision making in an organization. As a rule of the thumb, performance measurement is one of the factors that focus on the development and improvement of the organization and this factor is very effective in improving performance. Abdullah, et al studied the connection between TQM, quality improvement, and performance measurement and identified six critical success factors (leadership, supplier quality management, reward & recognition, teamwork, E&T, customer focus) on performance [12]. His findings were also relevant to quality management theory because it shows total quality management to be effective in quality management implementation and organizational performance.

Furthermore, Kanji et al pointed out that critical factors of total quality management are positively related to quality culture [13]. Quality culture was studied as an independent variable. In the same way, Zu et al pointed out that quality culture is an independent variable to critical factors of total quality management [14]. On the other side, as cited by Abdullah et al [12] quality improvement is an intervening variable between TQM success factors and performance. This study has modified the developed framework by Abdullah et al [12] and Zu et al [14]. Then, the combining of two previous studies can bring new contribution for this study. This model has not examined by any study. Therefore, the contribution of this study is combination of quality culture as an independent variable to total quality management factors and also would want to consider quality improvement as a mediating variable between TQM factors and performance for continuous survival of the Indian automobile industry.

Critical success factors (CSFs) are internal or external happenings that can affect the firm for better or worse and so, require special attention. They provide early warning method for management and a way avoids surprise or missed opportunities. TQM initiatives often fail due to lack of essential quality measures to monitor customer satisfaction, supplier satisfaction, management leadership, and product quality and employee morale. Critical success factors model can help in understanding and removing these barriers. It can also help in understanding and analyzing the complex interactions and the dynamics of factors affecting TQM over a longer time horizon. This can equip management to evolve a strategy for growth and success. These critical success factors are listed in table 1.

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Variables</th>
<th>References</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Process Management &amp; Control</td>
<td>Mody, 1995</td>
<td>Systems approach to quality in control of all operations including appropriate use of &quot;quality tools&quot;</td>
</tr>
<tr>
<td>3</td>
<td>Suppliers focus &amp; Satisfaction</td>
<td>IS/ISO 9000, 2000 ISO / TS 16949 2002</td>
<td>Suppliers are treated as partners in the process of improvement</td>
</tr>
<tr>
<td>4</td>
<td>Customer Focus &amp; Satisfaction</td>
<td>Day, 1193 Bossert, 1990</td>
<td>Internal and external customers know that their needs are important - and addressed.</td>
</tr>
<tr>
<td>6</td>
<td>Information Management</td>
<td>Ishikawa, 1985 John, 1995</td>
<td>Effective information and communication systems for continuous improvement of all work</td>
</tr>
<tr>
<td>7</td>
<td>Quality Leadership</td>
<td>Crosby, 1981 Deming 1993</td>
<td>Senior Managers who provide clear vision and values that promote total quality. The most important TQM enables for driving TQM culture.</td>
</tr>
<tr>
<td>8</td>
<td>Organizations Specific Business Results</td>
<td>Mody, 1996</td>
<td>Do the company's results demonstrate effective performance</td>
</tr>
</tbody>
</table>
Research methodology

To obtain an insight on the awareness of TQM practices in the Indian Automobile Industry (NCR), a total of 200 questionnaires were sent to automobile organizations in National Capital Region (NCR) of India on a purposeful sampling basis. However, only 48 (12 automobile manufacturers, 26 suppliers, and 10 sub-contractors) respond were obtained which gives a response rate of 24%. The structured questionnaires were used to elicit TQM practices in the organizations. The study indicated a comparative level of awareness and practice of Total Quality Management in the Automobile Industry. The identified groups of respondents from the selected units were contacted either personally or through telephone taking care that the sample represented different departments and managerial levels. The process of administering the questionnaires was clearly communicated personally. It was emphasized that absolute privacy of an individual’s responses would be maintained. The respondents were also requested to only respond to the statements keeping in view how things actually were in their organizations. The questionnaire basically consisted of questions to infer the employees’ perception on the concept of TQM, using a five point Likert type scale, with a response of 1 indicating that respondents disagree with the item perceived and 5 indicating that respondents agree with the item perceived.

Research questions

The main research questions of this study are as below:

- What are the effect determinants of total quality management on quality culture and performance in Indian Automobile Industry?
- What is the relation between quality culture and performance in Indian Automobile Industry?
- What is the relation between the seven soft factors of TQM and quality culture in Indian Automobile Industry?
- What is the direct and indirect effect of TQM on performance in Indian Automobile Industry?

Results and discussion

The finding of survey revealed that there are eight CSF’s as part of the total quality management in Indian Automobile Industry. The analysis of finding show that the three CSF’s viz; policy & strategic plan, quality leadership and customer focus & satisfaction (means 2.51, 2.51 & 2.48) are the most important among these eight CSF’s. This companies is given below in table 2.

<table>
<thead>
<tr>
<th>Critical success factor</th>
<th>No. of Elements</th>
<th>Manufacturers category</th>
<th>Supplier category</th>
<th>Sub-Contractor</th>
<th>Automobile Category</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
</tr>
<tr>
<td>Policy &amp; Strategic Planning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>08</td>
<td>2.73</td>
<td>0.07</td>
<td>2.57</td>
<td>0.12</td>
</tr>
<tr>
<td>Process management &amp; control</td>
<td>07</td>
<td>2.80</td>
<td>0.23</td>
<td>2.47</td>
<td>0.26</td>
</tr>
<tr>
<td>Customer focus &amp; satisfaction</td>
<td>21</td>
<td>2.73</td>
<td>0.20</td>
<td>2.58</td>
<td>0.24</td>
</tr>
<tr>
<td>Human resource focus &amp; satisfaction</td>
<td>34</td>
<td>2.67</td>
<td>0.23</td>
<td>2.41</td>
<td>0.22</td>
</tr>
<tr>
<td>Information management</td>
<td>14</td>
<td>2.75</td>
<td>0.11</td>
<td>2.43</td>
<td>0.30</td>
</tr>
<tr>
<td>Quality leadership</td>
<td>13</td>
<td>2.66</td>
<td>0.19</td>
<td>2.69</td>
<td>0.25</td>
</tr>
<tr>
<td>Suppliers focus &amp; satisfaction</td>
<td>07</td>
<td>2.57</td>
<td>0.36</td>
<td>2.28</td>
<td>0.46</td>
</tr>
<tr>
<td>Organization specific business result</td>
<td>06</td>
<td>2.67</td>
<td>0.19</td>
<td>0.19</td>
<td>0.25</td>
</tr>
</tbody>
</table>

From the table-2 it is clear that the comparative aspects of all the 8 CSF’s with respect to the three categories its manufacturer, sub-contractors and suppliers is important and useful. Each CSF’s has its own importance and potential to help the organization solve many of the problems.

The response analysis indicates the sub-contractor category is still not responding to the changing needs of the market scenario. Corrective and preventive actions are weak these leading to very high rejections. The strategic planning is generally not done on the basis of organization’s strength, weakness, opportunities and threat. Another weak are is top management involvement in training the members of the core team which is reflected by low morale of the people. Suppliers are generally not treated as business partners in the process of improvement. Though information management system has been developed, however information sharing among employees is very weak. There is generally a lack of communication of goal throughout the organization. The cost of quality has not been understood an important analytical tools to drive continuous improvement in prioritized manner. Lack of using customer listening technique like QFD is a weak area and thus customers and market focus lacks depth thus many objectives of improving quality, lowering cost and delivery lack direction.

The analysis reveals that in spite of above weaknesses the overall quality scenario in the Indian Automobile Industry is improving and more and more organizations are focusing on TQM as competitive strategy to survive and grow.
TQM model, a process of cultural change within the organization has to be initiated. Three critical success factor of TQM namely, quality leadership, policy & strategic planning, customer focus & satisfaction would need reinforcement during the implementation process.

As demonstrated below (the theoretical framework of the study, see Figure 1) there is a positive connection among quality culture, CSF of TQM, Quality Improvement and PM.

**Figure 1. Theoretical Model of the study**

- Critical Success factors of TQM
  - Leadership
  - Customer Focus
  - Education & Training
  - Supplier Quality Management
  - Teamwork
  - Process Management
  - Product Design

- Quality Improvement
  - Performance
    - 1. Customer satisfaction
    - 2. Market share
    - 3. Profit

**Hypotheses Development**

The hypotheses of this study are developed as following:

H1: Quality culture is positively related to leadership
H2: Quality culture is positively related to customer focus
H3: Quality culture is positively related to training
H4: Quality culture is positively related to supplier quality management
H5: Quality culture is positively related to teamwork
H6: Quality culture is positively related to process management
H7: Quality culture is positively related to product design
H8: Management Leadership is positively related to Quality Improvement
H9: Customer Focus is certainly related to Quality Improvement.
H10: Training is certainly related to Quality Improvement.
H11: Supplier Quality Management (SQM) is positively related to Quality Improvement.
H12: Teamwork positively affects Quality Improvement
H13: Process Management (PM) is explicitly connected to QI (Quality Improvement)
H14: Product Design (PD) is positively related to QI (Quality Improvement)
H15: Leadership is positively related to Performance Measurement.
H16: Customer Focus is positively related to Performance.
H17: Training is positively connected to Performance
H18: Supplier Quality Management is directly connected to Performance measurement.
H19: Teamwork is positively and directly connected to Performance.
H20: Process Management is positively related to Performance Measurement.
H21: Product Design is positively related to Performance Measurement
H22: Quality Improvement is positively related to Performance
Conclusion

The aim of this research is to carry out an empirical study on the determinants of TQM in the Indian Automotive Industry. The main contribution of this paper is to persuade managers to take a serious attention on the relationship among TQM determinants, quality improvement, and performance improvement in the Indian Automotive Industry. Investigating the relationship led us to lucrative outcomes. The Indian automobile industry has specifically been chosen for several reasons. First, the automotive industry in India is one of the larger markets in the world and had previously been one of the fastest growing globally, but is now seeing flat or negative growth rates [16, 17]. Second, it contributes more than 10% to the country’s GDP growth [18]. Third, the sector directly employs 1.31 crore people of the country’s workforce [19]. Fourth, in 2009, India emerged as Asia's fourth largest exporter of passenger cars, behind Japan, South Korea, and Thailand [20]. In 2010, India beat Thailand to become Asia's third largest exporter of passenger cars. India's automobile exports have grown consistently and reached $4.5 billion in 2009, with United Kingdom being India's largest export market followed by Italy, Germany, Netherlands and South Africa [21]. India's automobile exports are expected to cross $12 billion by 2014 [22]. While the possibilities are impressive, there are challenges that could thwart future growth of the Indian automobile industry. Since the demand for automobiles in recent years is directly linked to overall economic expansion and rising personal incomes, industry growth will slow if the economy weakens [23]. Due to stiff competition, turbulent business environment, increasing customers’ expectations, and increasing demands of the Indian Automotive Industry, TQM is considered a serious problem faced by the sector. Due to lack of studies on the above addressed problem in the country, attempts are being made to investigate the determinants of TQM in the Indian Automotive Industry. This study, theoretically reviewed prior literatures on the same problem in other countries. The aim was to shed some light on the research problem. A survey is designed in order to conduct an empirical research for examining survey's hypotheses. It is hoped that the important facts addressed in this paper will be a means whereby managers and researchers will be able to investigate the TQM problem in the Indian Automotive Industry with better awareness.

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