Analysis of Total Quality Management Practices in Manufacturing and Service Sectors

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Abstract—Quality gurus such as Juran, Deming and Crosby have advocated various methodologies for business success and single out some quality practices. These practices have a positive impact on business performance in both manufacturing and service sectors.

This paper attempts to identify the TQM practices in two different sectors and examines the difference between them by analyzing their commonalities with respect to their implementation as applicable to both the sectors. The methodology adopted was critically examining the literature on TQM practices followed by manufacturing and service sectors. Altogether, 30 published research studies (15 research studies on TQM practices in the manufacturing industries and 15 on the service industries) were identified that focused on TQM principles and practices used by them. The finding showed no significant difference in the level of most of TQM practices and broadly the same group of identified TQM practices do exist and are applicable to both the sectors except few differences were found and were presented in this study. The results can provide guidance for service managers and quality practitioners aiming to implement TQM. Further, some managerial implications and future scope of this study are also presented at the end.

Keywords—manufacturing industries, service industries, top-management commitment, Total Quality Management, TQM practices,

I. INTRODUCTION

The concept of TQM philosophy and its principles is quite old and was introduced into the USA around 1980, primarily in response to the severe competitive challenge from Japanese companies [1]. Initially, the attention was towards manufacturing industries with little consideration being given to the service industries largely because of the domination of researchers
from the engineering and operations discipline [2]; [3]. The emergence of TQM philosophy in service industries has been a recent development and is being applied from last two decades. The study by Saraph et al. [4] comes out with the concept of applying TQM practices in service industries and was the first study in the service sector where a set of identified TQM factors were considered in both manufacturing and service industries. Further, literature survey of manufacturing on TQM is quite encyclopedic, encompassing an overabundance of research works [4]; [5]; [6]; [7]; [8] while review of the literature on service reveals that it is young and recent emerging area in the field of service quality, human resource management, and customer perception [9]; [10]. These plethora of studies have often appeased to produce mixed results, but in general TQM has been credited in providing benefit for organizations that implement it properly. This has been proven by studies that have involved wide-range of surveys, empirical studies, and case studies [11]; [12]; [8]; [13]; [14]; [15]; [16]. Following the success of TQM in manufacturing, practitioners and academicians have started to study the potential of transferring and applying TQM principles and practices to service industries and suggested its applicability in it. Although there are some characteristics that distinguish service industries with manufacturing industries like intangibility, co-production, inseparability, and heterogeneity of the outputs of services that may affect the transfer of the TQM principles and practices to service environment which is in contrast to there in the manufacturing industries that are more measurable and standardized in their specifications [1]; [17] and thus causes difficulties for service providers in controlling the quality of the service output before delivering them to customers as is normally done with manufacturing products.

It is identified that there are many studies on the implementation of TQM practices in manufacturing and service sectors but no study has been conducted to identify a set of common and identical TQM practices as applicable for both the sectors for successful TQM implementation. Although, this study shares a similar purpose with the previous studies by examining the extent of implementation of TQM and its practices in manufacturing and service industries, but it goes beyond the earlier studies, by examining the difference between TQM practices in the manufacturing and service industries individually and than comparing them for their commonalities with respect to their implementation in both these sectors. While, in the previous TQM studies, no such type of comparisons were conducted. Accordingly, there is a need to focus on this issue and therefore, this study tries to fill this gap by conducting an extensive literature review on TQM practices in manufacturing and service industries by adopting a detailed research methodology.

The objectives of the present study are as follows:

- To identify TQM practices followed by manufacturing industries.
- To identify TQM practices followed by service industries, and
- To examine the difference between the identified TQM practices in manufacturing and service industries by analyzing them for their commonalities with respect to their implementation.

The above objectives are accomplished through review of the literature on TQM practices in manufacturing and service sector. The methodology adopted for this study was literature review of published research studies on the current subject focusing on dimensions/practices influencing TQM in manufacturing and service industries separately. A total of 30 research publications (15 research studies on TQM practices in manufacturing industries and 15 on service industries) were selected from...
advanced search method and were reviewed. All these selected studies have been published in a range of scientific journals such as *International Journal of Service Industry Management*, *Decision Sciences*, *International Journal of Productivity and Quality Management*, *The TQM Magazine*, *Academy of Management Review*, *International Journal of Quality and Reliability Management*, *Production and Operation Management*, *Total Quality Management and Business Excellence*, *International Journal of Production Research*, *Managing Service Quality*, *Management Research News*, and *International Journal of Bank Marketing*. After critically going through these studies concerning to the various TQM practices adopted in manufacturing and service industries, the survey report is presented in the tabular form in the next two sections in Tables 1 and 2.

II. TQM PRACTICES IN MANUFACTURING INDUSTRIES

**TABLE I**

SURVEY OF TQM PRACTICES IN MANUFACTURING INDUSTRIES AS REPORTED BY DIFFERENT RESEARCHERS

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III. TQM PRACTICES IN SERVICE INDUSTRIES

TABLE II
SURVEY OF TQM PRACTICES IN SERVICE INDUSTRIES AS REPORTED BY DIFFERENT RESEARCHERS

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<td></td>
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</table>

IV. RESULTS AND ANALYSIS

A review of the literature reveals that there are nine TQM practices in two different sectors i.e. manufacturing and service, based on their frequency of occurrences in the extent literature that consists of 15 published research papers in each sector, totaling to 30 research papers that focused on practices influencing TQM in both the sectors. From these 15 research studies, this paper performs a comparison of TQM practices between manufacturing and service industries which are presented in Table 3. After critically analyzing Tables 1, 2 and 3, many results of interest emerged out from the present study related to degree of performance and adoptability of TQM practices as well as a common group of TQM practices for manufacturing and service industries.

The present study showed that six out of nine TQM practices identified are similar and common in both manufacturing and service industries. They are: top-management commitment; customer focus and satisfaction; human resource management; training and education; employee involvement; and supplier management. The plausible explanation for this result is the higher score of frequency of occurrences of these practices in the two sectors. This
suggest that the level of TQM practices in both the sectors are not significantly different except for supplier management in which manufacturing industries show a significantly higher frequency of occurrences than service industries (See Table 3). Therefore, this group of common TQM practices could determine the success of a TQM program in manufacturing and service environment and for further research work in this area.

Furthermore, the reason behind the less adoption of supplier management as practice in service industries could be that many companies feels supplier quality and performance is not so crucial for them as they are mainly dealing with intangible services not concerned with the incoming products or raw material as in case of manufacturing industry. Therefore, many service industries do not recognize the role played by supplier performance and management in an organization's quality performance and its contribution to customer satisfaction [39].

In contrast to above results, quality information and performance measurement, process management, and quality systems represent other three major TQM practices in manufacturing industries while continuous improvement and innovation, benchmarking, and quality culture/work culture are more important TQM practices in service industries. This concerns that there exists some inconsistencies in these three practices while implementing a TQM program in the two sectors separately. The possible reason behind this outcome may be the nature of service operations compared to their manufacturing counterpart. Service industries are more focused on customer orientation and customer satisfaction as well as on quality culture and work environment while manufacturing industries are highly tangible in nature where quality products and measurement performance as well as management of process and use of quality tools and techniques plays an important role in deciding the business performance.

Regarding consistencies, four TQM practices stand out in several studies as being more central for manufacturing and service industries. They are: top-management commitment (including leadership), customer focus and satisfaction (including customer orientation and customer feedback), human resource management (including job rotation, internal recruitment, quality circles, and employment security policy) and training and education (including learning). They have stronger relationship in manufacturing as well as in service industries. This predicts that TQM concept mainly lies on these four principles and practices and may be treated as the pillars of TQM philosophy.

**TABLE III**

<table>
<thead>
<tr>
<th>S.No.</th>
<th>TQM practices</th>
<th>Manufacturing Frequency of occurrence</th>
<th>Service Frequency of occurrence</th>
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<tr>
<td>1.</td>
<td>Top-management commitment</td>
<td>13</td>
<td>Top-management commitment</td>
</tr>
<tr>
<td>2.</td>
<td>Customer focus and satisfaction</td>
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<td>Customer focus and satisfaction</td>
</tr>
<tr>
<td>3.</td>
<td>Human resource management</td>
<td>9</td>
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<tr>
<td>4.</td>
<td>Training and education</td>
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<tr>
<td>5.</td>
<td>Employee involvement</td>
<td>7</td>
<td>Employee involvement</td>
</tr>
<tr>
<td>6.</td>
<td>Supplier management</td>
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<tr>
<td>7.</td>
<td>Quality information and performance measurement</td>
<td>6</td>
<td>Continuous improvement and innovation</td>
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<tr>
<td>8.</td>
<td>Process management</td>
<td>8</td>
<td>Benchmarking</td>
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<td>9.</td>
<td>Quality systems</td>
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<td>Quality culture/work culture</td>
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</table>
V. CONCLUSIONS

This paper has successfully presented the groups of TQM practices for manufacturing and service industries as well as a group of common TQM practices applicable to both the sectors. Although most of the practices identified in the two sets are similar but few inconsistencies were also found to be present by comparing them. Such differences often in research results to frustration, both for researchers designing new studies and practitioners who seek advice on how to implement TQM concept in their organizations. These inconsistencies may be due to nature of operations, characteristic of firms, service design, products and services offered by manufacturing and service industries. Also, this study is limited to review only 15 research studies on TQM practices in each sector, if more studies in the same area are taken than these inconsistencies may be minimized. This may be another reason for the presence of few inconsistencies in the present study.

Furthermore, the findings also suggest that the level of TQM practices in manufacturing and service industries are not significantly different except for quality information and performance measurement, process management, and quality systems practices in which manufacturing industries shows a significantly higher frequency of occurrences while for service industries, continuous improvement and innovation, benchmarking, and quality culture/work culture shows a higher frequency of occurrences. By examining 15 research studies in each sector, the present study provides some guidelines for managers of both sectors who want to implement TQM concept. Three most important TQM practice stands out as being centre for manufacturing and service organizations: top-management commitment; customer focus and satisfaction; and training and education. Also, managers should introduce and develop employee involvement practices in their organization by delegating authority and empowering employees. Hence, by focusing on these principles and practices, an organization can build a quality improvement program that will have a positive influence on business performance.

Despite the overall findings produced in this study, there are still open opportunities for further studies. Further studies on comparing the degree of performance on quality practices and relationship of these identified practices to quality and business performance can be taken by the academicians and practitioners.

REFERENCES


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