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IMPACT OF TOTAL QUALITY MANAGEMENT ON PROCESSES AND PRODUCTS IN GENERAL TYRES & RUBBERS CO. LTD

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ABSTRACT

In the world of business, the current dynamic and turbulent manufacturing environment has forced companies that compete globally to implement Total Quality Management (TQM) which is presently one of the global theories adopted by the companies to derive competitive advantage from the potential market. This paper reflects on the Pakistani Organization concentrating particularly on General Tyres and Rubbers Company (GTR) that how this organization is operating in Pakistani environment. Implementation of TQM has produced extra ordinary results and GTR is expected to receive its benefits gradually, after all its processes will be improved and wastage factor will be reduced, which will result in overall products improvement.

KEYWORDS: Total Quality Management, Business, Processes, Products, (GTR) General Tyres and Rubbers

INTRODUCTION

During World War II the American industry sought assistance from TQM pioneers Sheward, Deming and others and won the war. With the passage of time they forgot the teachings of these pioneers. Despite lack of resources after the post war situation, Japanese used to import more than 90% of raw material at that time and were totally out of business. During that period they sought help from Deming, Juran and other quality gurus and these scholars gave the same lesson to Japanese. They embraced this approach and again came-up with the industrial base and became business leader.

The America, which was leading the business world with its products, was not able to retain its own markets. The Japanese with new methodologies snatched each and every market not gradually but rapidly specially in the field of electronics and automobile industry.

The TQM philosophy is a guiding force in other industrialized nations notably Japan, although its recent travel to Europe, central Asia, and the Middle East shows TQM has indeed become a worldwide concept [1].

TQM encompasses the entire organization, from supplier to customer. TQM stresses a commitment by management to have a continuing company-wide drive toward excellence in all aspects of products and services that are important to the customer.
TQM is an approach for improving the competitiveness, effectiveness and flexibility of a whole organization. It is a way of planning, organizing and understanding each activity and depends on each individual at each level. TQM is a way of bringing everyone into the processes of improvement [2].

TQM is anchored to organizational culture because successful TQM is deeply embedded in virtually every aspect of organizational life. Personal commitment to continuous improvement needs to become an everyday matter [3].

Total Quality Management is a philosophy, an attitude of the mind, and a journey not a destination. It is supposed to help in winning customer confidence and in securing long-term profitability [4]. TQM means building quality into everything in every area namely design, production, purchasing, vendor relations, inspection, service after sales, market research, development, financial controls, personnel rewards, training, and education [5].

The emergence of total quality management philosophy makes a sense to understand some of the underlying concepts that have guided our industrial development [6]. Figure 1 gives the clear picture of the evolution of TQM. The concept of quality control as a distinct discipline emerged in the United States in the 1920s. At that time, quality control was intended simply to control or limit the creation of defective items in industrial processes. Before quality control concept the earliest quality control idea was to inspect the output of a manufacturing process and then sort defective products from good ones. The quality control concept emerged in the first half of this century and after that numerous refinements occurred. The work of Shewhart, Deming, Juran, Feigenbaum, Crosby and others indicate that there was existence of better ways to approach the quality control concept. Simply sorting out good products from bad was not the most efficient way to assure quality output, a better way must be developed [8]. They also recognized that the concept of quality control need not be restricted only to manufacturing processes but the idea of a more effective management philosophy must focus on assuring quality in administrative processes and service industries as well.
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Several leading management scholars emphasized upon this idea. Shewhart applied statistics to industrial processes in the era of World War 1. The main purpose of using this mathematical tool was to monitor processes. The portion of work presented by Deming and Juran based on Shewhart’s concept of using statistics to control processes, limit variation, and thereby improve quality [9]. The TQM philosophy continued to emerge under Deming’s guidance, to which many regard as the father of TQM. Deming believed quality management should be pervasive, and should not focus on merely sorting out good products from bad. Deming believed the responsibility for quality should be shared by everyone in an organization. Deming significantly recognized that most quality problems were system-induced and were therefore not related to workmanship.
Deming's work only saw limited application in the United States prior to World War II but a curious set of circumstances developed immediately after World War II. General Douglas MacArthur, who had been appointed military governor of post-war Japan, brought Deming to Japan to serve as a management consultant to the Japanese as they rebuilt their industrial base. Deming's message had essentially fallen on deaf ears in the United States but not in Japan.

Deming praised the virtues of using statistical quality control in manufacturing methods. Japan, a formerly industrialized nation, had to rebuild its industrial base from essentially nothing. They were willing to learn new ways to rebuild their position in the world markets.

The Japanese dominated almost every market which they chose to enter particularly in the field of electronics, cameras, automobiles, steel, shipbuilding, motorcycles, and several others. Superior quality became a common theme of Japanese market dominance. The Japanese quality superiority occurred as a result of statistical manufacturing methods and other management philosophies.

Japan continued its quality revolution in the years following World War II, but the statistical process-control methods were not widely pursued in the United States. During the 80's a number of North American manufacturers realized about these methods. The United States also recognized that other management philosophies should be applied to the quality improvement challenge. Crosby later promoted the “zero defects” concept in his series of excellent books, emphasizing adherence to requirements and employee motivation. All these men contributed to what has become known as TQM. From then on, TQM has continued to emerge as a predominant management philosophy in the United States and abroad.

Perhaps a better way of understanding TQM philosophy is to compare a “TQM organization with a “traditional organizations” and is depicted in table 1. There are probably a number of other comparisons to be made, but the following points will give us some common ground for discussion.

<table>
<thead>
<tr>
<th>TQM Organization</th>
<th>Traditional Organization</th>
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<tbody>
<tr>
<td>1. Customer driven</td>
<td>Company driven</td>
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<tr>
<td>2. Long-term oriented</td>
<td>Short-term oriented</td>
</tr>
<tr>
<td>3. Data driven</td>
<td>Opinion driven</td>
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<tr>
<td>4. Elimination of waste</td>
<td>Tolerance of waste</td>
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<td>5. Continuous improvement</td>
<td>Optimization</td>
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<tr>
<td>6. Prevention</td>
<td>Inspection</td>
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<tr>
<td>7. Employee participation</td>
<td>Top-down hierarchy</td>
</tr>
<tr>
<td>8. Problem solving</td>
<td>Blame imposing</td>
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<tr>
<td>9. Leadership</td>
<td>Management</td>
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Table 1. Comparison between TQM and traditional organization [10]

TQM can be compared with more narrowly focused, regulative, systematic, documented quality assurance systems as represented by ISO/EN/BS9000. Whereas QA is oriented towards the assurance of product and service quality, the scope of TQM extends throughout the organization. These differences are clearly shown in figure 2. Generally ISO standards focus on:

- Rules, roles, procedures i.e. regulation,
- Specification of products, ingredients, processes and tests/inspections
- Recording of data and analysis of problems
- Operational action
Figure 2: Difference b/w QA and TQM [11]

<table>
<thead>
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<th>Quality Assurance</th>
<th>Quality Management</th>
<th>QM Drivers</th>
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<tbody>
<tr>
<td>Basic focus</td>
<td>Customer assurance</td>
<td>Satisfaction of owners, customers, employees, suppliers and society</td>
<td>Social responsibility</td>
</tr>
<tr>
<td>Motivation</td>
<td>Externally imposed</td>
<td>Internally generated</td>
<td>Management leadership</td>
</tr>
<tr>
<td>Application areas</td>
<td>Line functions that are product-related</td>
<td>Entire organization</td>
<td>Company-wide scope</td>
</tr>
<tr>
<td>Key participants</td>
<td>Quality professionals, line management and staff</td>
<td>All management and employee</td>
<td>Involvement at all levels</td>
</tr>
<tr>
<td>Principal drivers</td>
<td>Proof of conformance of product and QA system</td>
<td>Continuous product and process improvements</td>
<td>Company culture to do the right things right</td>
</tr>
<tr>
<td>Desired end goal</td>
<td>Market eligibility and/or marketing advantage</td>
<td>Overall business results and competitiveness</td>
<td>Quality cost approach</td>
</tr>
</tbody>
</table>

Table 2: Based on the Canada Awards for Excellence 1997 Examiner’ Training.

Compare this to TQM’s employee-oriented commitments; ISO can be implemented without the human relations toppings and humanistic gloss of culture change. Being accredited for ISO/EN/BS9000 does not necessarily mean products and services are improved. These may remain of a low or modest standard (conformance to specification) but as specified in the ISO paperwork. The table 2 mentioned above will show the clear picture.
SUPPLIER TEAMING

Many companies forget that even if a quality improvement program could make everything in a manufacturing facility perfect, more than half the work would still be ignored. The missing key ingredients that many of us fail to initially consider is the supplier base, those companies that sell goods and services to us.

This is very important to an organization that wants to implement the TQM process. The typically high supplier content of all goods and services won't allow an organization to ignore suppliers if an effective TQM process is to be implemented. Suppliers simply form too big a piece of the pie, which is depicted in figure 3. Organizations have to recognize that in order to implement the TQM process successfully they also have to help their suppliers to be successful.

Typical Supplier Content

![Figure 3](image-url) Pie diagram showing that most companies spend more than half on Supplier’s goods and services.

SUPPLIER TEAMING IN GTR

The GTR is very good at supplier teaming as the selection of supplier is concerned. The GTR does not make any compromise on supplier selection where the quality is concerned. The GTR purchases raw materials from the selected suppliers prescribed by the GTI America. The GTI America refers the list of prescribed suppliers from all over the world to GTR and then GTR purchases raw materials from those suppliers. The GTI America also provides alternative suppliers supplying the same raw materials to provide the affiliated company a choice within the supplier list. To benefit from this opportunity, the GTR inspects each and every raw material on the sampling basis and keeps record of the performance of all the suppliers. The GTR inspects these raw materials and analyze on X BAR, R CHART. On the basis of that they choose their suppliers within the limits of prescribed list of suppliers.

GTR can even improve its evaluation process to the extent mentioned above. It is worth to mention here that the GTR spends a huge amount of its sales revenue on supplier’s raw materials and therefore cannot think of even a minute leakage in this process. Nowadays the companies are concentrating more on suppliers purchased material. Moreover the GTR conveys to its customers that the purpose of focusing on its suppliers is because the importance of quality. The GTR customers also realize that GTR is serious about supplier quality as well as their final product quality.

TQM FACTOR AND ITS SUCCESS

Reading all the discussions throughout this paper, one could easily conclude that TQM philosophy is important for all organizations if they have to improve their products and services. We believe that quality is an important strategic aspect of managing organizations as we are moving to the next century. We have firm conviction that our managers must believe that quality is one of the most important ways, which can lead to provide edge and competitive advantage over others. As the customer awareness and competitiveness is increasing, the importance of quality is being augmented as well. The 20th century has been the
century of productivity; the 21\textsuperscript{st} century will be the century of quality.

From the above phrase, one would misunderstand that quality and productivity are two different things. Actually they were at that time when there was no enhanced competition and increased customer awareness but today it is not the case, if you have to improve your productivity you need improved quality. In Japan we are keeping very strong interest to improve quality by use of methods, which you started. When we improve quality we also improve productivity.

There are many individual organizations against the TQM philosophy, in their opinion it is cultural restricted. It is just for Japanese culture and they refer many organizations based in USA failed to implement the TQM. We don’t think so. Of course, culture influences TQM implementation but by adapting or making slight change in its implementation we can adopt TQM. After the success of TQM in Japan, many companies in USA also implemented TQM and got success. If TQM were cultural restricted, it would have success in just Japan only. This is the reason that now many companies around the world are going for TQM.

![Figure 4: Various causes control in GTR to improve quality.](image)

The figure 4 depicts the various causes control philosophy adopted by GTR to improve the quality. It is visible from the figure that these causes are very much within limit. It is based on the work of Shewhart and Deming. By mathematically constructing control limits at 3 standard deviations above and below the average, one can determine what variation is due to normal ongoing causes (common causes) and what variation is produced by unique events (special causes). Eliminating the special causes first and then reducing common causes, quality can be improved. This tool monitors, control, and improves the process performance over time by studying variation and its source. GTR is progressing well on TQM but still there is
much room for improvement that can be accrued when GTR will implement TQM in true spirits.

CONCLUSIONS

On the basis of above facts, we are presenting here the conclusions, which we feel, if adopted in GTR, would be profitable to organization.

1. Quality assurance ensures certain level of quality products and does not continuously improve the quality as TQM does. The GTR must adopt TQM philosophy as GTR doing the business on quality assurance philosophy. Also GTR must adopt all concepts of TQM, as single concept will not yield the desired results.

2. GTR consider not only their immediate customers like Indus Motor, Suzuki etc but also take care of end-users. Because Indus Motor is also doing business for end-users and any dissatisfaction on the part of end-users because of poor quality of tire, the GTR will lose the confidence of its customers.

3. In management philosophy the GTR emphasis on optimum machine utilization rather than on material utilization. Today after JIT it has been well-accepted truth that optimum material utilization leads to more productivity as well as better product quality. GTR must change its old philosophy to JIT philosophy.

4. From the activities of quality assurance department in GTR, it is obvious that GTR is spending much amount on appraisal i.e. on detection, inspection, testing, and other measures used to separate good quality products from poor quality. We think GTR should spend more on preventive cost. Such costs include participation in the design process to eliminate potential failure modes, process improvements designed to prevent production of nonconforming hardware, generation of quality function deployment data, Taguchi analysis cost and others.

5. There must be maximum use of graphical tools rather than tabular representation of data. We saw in GTR the Pareto chart by quantity but they don't prepare Pareto chart by cost. Reports must be prepared to show the non conformances both by cost and by quantity.

6. GTR should make full use of TQM tools such as quality function deployment, Taguchi analysis and statistical process control to penetrate the quality in products at design stage rather than inspecting and detecting the poor quality products and making change after the product are in the hands of customers.

7. GTR must embraced focus-team approach rather than quality circle approach as the blue-collar workers are not educated and motivated.

8. It is well-accepted truth that the blue-collar workers who actually operate the machines and processes know the problems as well as the solutions so they must also be included as members in focus team approach.

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