

A CONCEPTUAL FRAMEWORK OF THE IMPACT OF TOTAL QUALITY MANAGEMENT ON ORGANIZATIONAL PERFORMANCE

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ABSTRACT

The contemporary world today, along with all its institutions, faces many challenges: these challenges have emerged from the information technology revolution and has turned the world into a global village. In addition to the pressures facing the goods and services industries in terms of quality standards global competition, technological advances, and economic blocs and international agreements. All of this was sufficient reason for leaders in all sectors at the global level to think deeply about the need for a new approach to confront all these challenges; hence the new philosophy of total quality management. This paper aims to highlight the conceptual framework of the impact of total quality management on organizational performance as one of a modern management approach in support of organizations, and the development of organizational performance. From this standpoint, the author will work on the definition of impact of total quality management on organizational performance, the relationship of TQM concepts to other related concepts, Emergence and evolution of the concept of total quality management. The author will also clarify the most important principles and the basic requirements for the implementation of total quality management along with their priorities, and then discuss the stages involved in comprehensive quality. At the end of the paper, the author will lay out the most important tools used in total quality management to improve the quality of organizational performance more effectively and efficiently.

Keywords: total quality management, organizational performance

1.0 INTRODUCTION

The total quality management philosophy and administrative input, and the evolution of the concept of total quality management, principles and the basic requirements for the implementation of total quality management, are aimed at upgrading them both scientifically and administratively. It was inevitable that the comprehensive management systems within Organizations would need upgrading of their capabilities and competitiveness in light of management systems that can achieve total quality management. To achieve quality for organizational performance there must be overall quality control through which an accurate measurement can be made in the light of local and global quality standards. The views of intellectuals and academics have varied in the matter of priority-setting and the importance of this platform's efficiency and quality varies from one author to another, but in terms of intellectual standpoint, there is still a critical juncture in the possibility of activating the

ongoing management of comprehensive quality. This starting point is the conceptual framework of the impact of total quality management on organizational performance focus for principles and tools based on the prevention of errors in the operational performance. There is considerable interest in this subject, particularly in the Western world, however in the developing countries, the framing of these theories and approaches is not yet complete, and this will be reflected in their implementation; although there are some Organizations in multiple sectors that are constantly trying to develop models of organizational performance and the use of administrative methods, and interest in achieving an integrated approach to the quality of performance.

2.0 RELATIONSHIP OF TQM CONCEPTS TO OTHER RELATED CONCEPTS

Updating the picture, the author finds it useful to clarify the relationship of the concept of total quality management to some other concepts associated with this concept which might overlap or be associated with it; namely quality circles, and ISO certificates.

First - a concept of total quality circles

Quality circles are defined as a "small group of workers meet periodically and systematically to analyse the problems specific to their activity and increase the quality and productivity and to try to reach a solution to it (Allender, 1992). This concept appeared before the emergence of the concept of total quality management, but the concept of TQM and more comprehensive public. The quality circles are one of the most important themes of total quality management application, or it may represent one of the methods of training programmes on the concept of total quality in some sections. So, according to conditions, some organizations may start applying the concept of quality seminars as a prelude to the implementation of the concept of total quality management.

Second - a concept of total quality management and ISO certificates

Recently much controversy has surrounded ISO certificates and their connection to total quality, which has created some confusion between the two concepts.

It is worth mentioning that the international standard (ISO 9000) is not related to the attributes of quality or of good service, but a number of conditions and controls that should be available in an organization with consideration to the impact on the efficiency and quality of activities, and thus their impact on final product quality. For example, these conditions include the following, (Asalmi, 1995):

1. The responsibility of the management to include a policy of quality in the company, and the role of management in the creation and implementation of an integrated system of quality.
2. The company's commitment to working to achieve the wishes of clients and provide the means and resources necessary to review and verify the availability of the terms and conditions leading to the quality of the product or service.
3. A system and procedures for the review of design and control of the design process, identifying goals and the way of planning, and access to quality design.

4. A system of control on the quality of materials, the existence of a system of control over procurement and verification of quality.
5. A system of inspection procedures and selection processes, and a system for ensuring the quality of inspection equipment, instrumentation.
6. A system of control over the product-matching specifications.
7. A system that determines necessary records to prove all information quality.
8. A system to provide the necessary training to contribute to the proper implementation of the quality system.
9. A system that determines the internal audit procedures undertaken by the management to verify the applicability of quality requirements and other conditions.

It is clear from the foregoing that the international standard is aimed primarily at raising the overall level of management in organizations which seek a certificate. However, It can be said that any organizations which are eligible to obtain certification (ISO 9000) have adopted a somewhat an appropriate organizational environment for the application of the entrance of Total Quality Management, while the Total Quality Management is a philosophy require an organizational culture in particular, and regulatory requirements in all the Organization's Details to conform with this new philosophy.

3.0 EMERGENCE AND EVOLUTION OF THE CONCEPT OF TOTAL QUALITY MANAGEMENT

In order to obtain a proper understanding of the meaning and philosophy of total quality management, there is an urgent need to retrace the emergence and development of this new approach. There are a number of eminent scientists who have made outstanding contributions to advancing the evolution of the concept of quality management in general and the concept of total quality management in particular. I will highlight in this part the basic inputs from many of the pioneers in this area:

First: Edward Deming:

Deming's principles have been applied in the educational sector, since it is more principles applied in the American educational sector, and based on a number of assumptions that individuals wishing work to the best of their ability; therefore, the function of management is to enable them to do so by improving the organization. Deming was the first American scholar to introduce the principles of quality to Japanese society widely, through his meeting with businessmen, managers and engineers to teach them his method of improvement of their industrial base (Rao Ashok et al. 1996). He succeeded to the extent that Japan awards the "Deming Prize" in his name, an award given for outstanding quality. Deming has outlined his philosophy in fourteen points, as a general framework for senior management that want to achieve quality, (Rao Ashok et al. 1996):

1. Permanent thinking on the goal of improving product and service.
2. The adoption or implementation of the new philosophy.
3. Stop relying on the way to complete the examination quality.

4. Termination of the method of differentiation between suppliers on the basis of price and comparing them on the basis of quality materials and establishing good relations over the long-term with them.
5. The use of statistical methods in the continuous improvement of the system of production and services.
6. The use of modern methods in training posts.
7. The use of modern methods of supervision.
8. The feeling of safety is a drive out fear to make the workers from acting in the best interests of the institution
9. Work on removing barriers between departments.
10. Not relying on digital standards for production because it lead to an workers move away from the quality.
11. Audit standards of work for the completion of quality.
12. Remove barriers that prevent workers from taking pride in their job.
13. The establishment of an active programme for training in new skills.
14. Top management working to move towards the implementation of the above.

Through these fourteen points, we find that Deming has focused on three main points to improve quality and productivity through total quality management, namely:

1. Focus on the continuous improvement of all activities for the goods and services provided with the full support of the management for this idea.
2. Focus on education and continuous training in new skills required for the implementation of this new philosophy, with a focus on the use of statistical methods.
3. Cooperation and integration between the various sections and improvement of all internal relations in the organization, and the removal of any obstacles preventing the achievement of good communication between them.

Second: Juran

Juran is one of the first to contribute to a quality revolution in Japan and in 1951 wrote Juran's Quality Control Handbook, which became one of the most innovative books in the field of quality, (Rao Ashok et al. 1996) Juran states quality is appropriate for use, whether goods or service and his concept of quality has been translated into a form called the Quality Trilogy (Juran, J. M. & Frank M. 1988). Quality Planning, Quality Control and Quality Improvement. The first dimension is "Quality Planning"; the apportionment of the basic steps is:

- Identify customers.
- Identify customer needs.
- Develop characteristics of the product that satisfies the needs of customers.
- Developing processes capable of producing those characteristics.
- Conversion plans to strong operating results.

The second dimension is "Quality Control"; Juran divided the stages of quality control into three steps:

- Assess the current performance of the work.
- Comparing current performance objectives.
- Act in accordance with the differences.

For the third dimension, “Quality Improvement” aims to obtain performance levels which can be expressed as new and creative levels, with the certainty that these levels were better than any previous performance levels. The “dimensions of Quality Trilogy” are connected, composing what Juran called the “Juran Trilogy”. Figure 1 shows the interrelationships between them, where the horizontal axis representing time and the vertical axis represents the cost of poor quality (Juran, J. M. & Frank M. 1988).

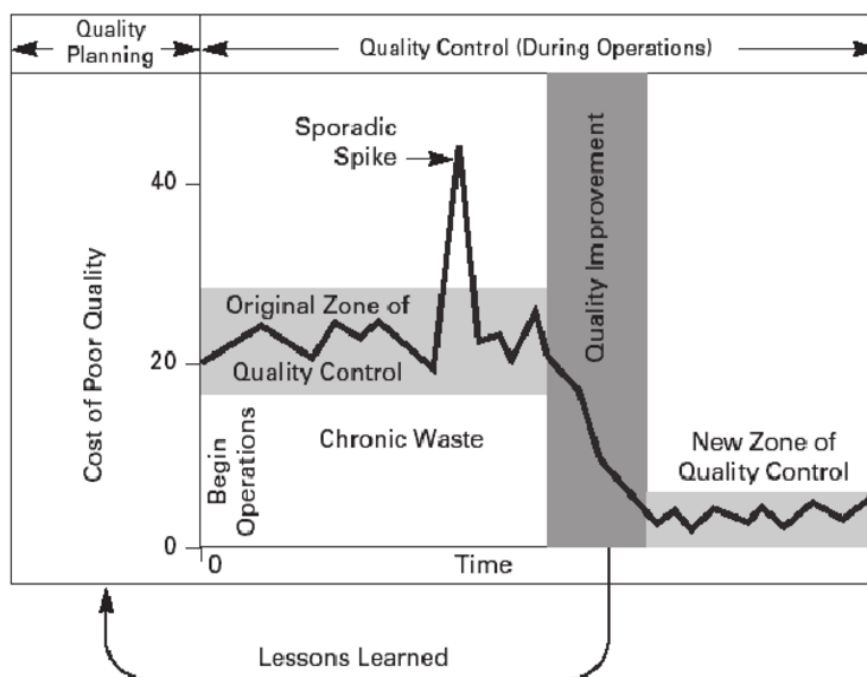


Figure 1: “The Juran Trilogy Diagram (Juran & Godfrey 1998) P. 2.7

Juran Trilogy is beginning with the activity of quality planning. However, at this stage, we have to identify customers and their needs and the development of product design and then begin production processes. At the outset, we note the high proportion of low-quality and consequently the higher cost of quality: often this is the reason the planning process results in chronic losses at this stage, due to the low quality and high proportion of the flawed product. After that comes the second element in a triangular “quality control” to attempt to non-access to any worse off (the highest proportion flawed), and then comes the third component is “improvement of quality”, which leads to a reduction in the proportion of low-quality items, and subsequently lower costs, and the scope of quality control moves to a new position as the best result to the improvement of quality.

Juran divided quality costs into:

1. The cost of the assessment and prevention: a greater increase in performance quality.
2. The cost of internal and external failure: it increases whenever there is a decrease in quality performance.

Figure 2 shows how to access the best level of quality and performance that achieves less, Total cost of them, (Rao Ashok et al. 1996).

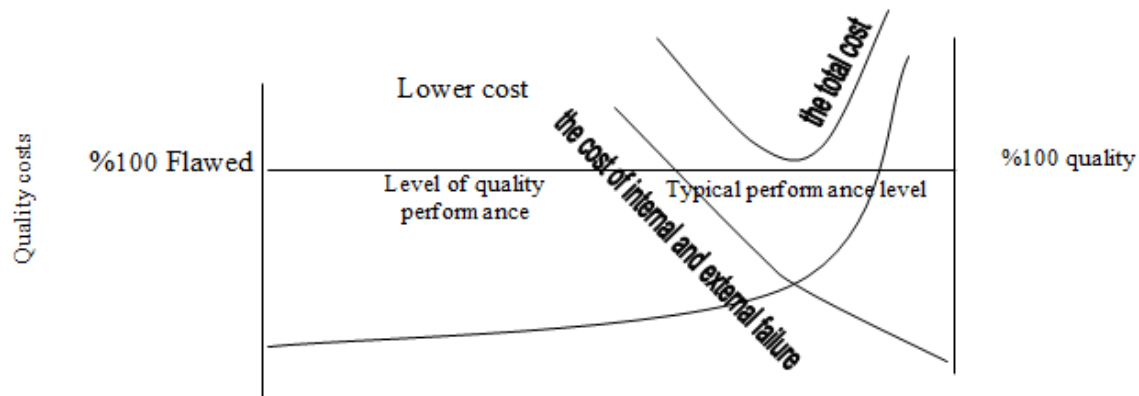


Figure 2: Curves for Quality (Juran) (Rao Ashok et al. 1996).

From Fig. 2 it is clear that there is a reverse fit between the cost of the assessment, prevention and performance level of quality, and there is a direct relationship between the failure cost and the level of performance and quality that is determined by the highest level of performance at the point at which lower total costs of an appraisal, prevention and the costs of failure are achieved.

Third: Philip Crosby

Crosby has summarized his view on Quality Management as follows, (Rao Ashok et al. 1996):

1. Quality means matching specifications.
2. Quality is achieved when errors are prevented.
3. The performance standard is a product without defects.
4. The measure of quality is the cost of not matching.

Crosby has identified fourteen steps to improve quality, as follows:

1. Management's attention to the problem of quality.
2. The formation of a panel to improve quality.
3. Establish quality standards in all activities.
4. Assess the cost of quality.
5. Definition of all workers quality and relevance.
6. The decision to correct any error in the previous steps.
7. Action Plan to emphasize zero defects using teams to improve quality.
8. Training workers to do their part in improving quality.
9. Ensuring that there are no errors on a daily basis.

10. Encouraging people to set goals for themselves and their group.
11. Encouraging employees to communicate power, to put an end to obstacles to achieving their goals.
12. Reward and motivate all of the unusual efforts.
13. Establish a Quality Council, which is the process of coordination.
14. Continuing the process of improving quality.

Crosby has interpreted the relationship between the cost of performance and quality as follows (Rao Ashok et al. 1996):

1. Cost performance, including appraisal costs and the costs of prevention.
2. Crosby opposed Juran's view that the cost of the appraisal is incremented whenever quality is increased but adds that by improving the practices in prevention, automatically the cost will go down automatically when the quality has improved, meaning the prevention cost curve will move downwards.

Crosby explained his point of view in the following figure:

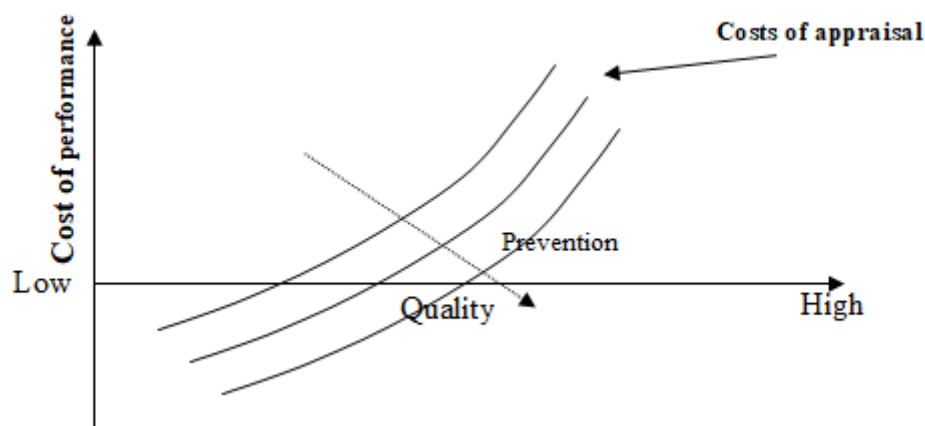


Figure 3: Crosby's interpretation of the relationship between the cost of performance and quality. (Rao Ashok et al. 1996),

4.0 PRINCIPLES AND THE BASIC REQUIREMENTS FOR THE IMPLEMENTATION OF TOTAL QUALITY MANAGEMENT:

There is complete agreement among writers on the set of principles underlying total quality management, as there was no agreement on the elements that represent the requirements of the implementation. This difference may be in number or details, or, rather than differences in the total content of these elements,

The author finds that the following items represent the most important principles and basic requirements for the implementation of total quality management. (Jablunsky 1996) ., (Samuel & Christopher 1994) ., (Fox 1994) ., (Babbar, 1995) ., (GreenbaumJan 1993) ., (Drensek, & Grubb 1995) ., (Ropert, & Daveda, 1996) .,

First - customer orientation:

The focus of performance and total quality management effort is a focus on customer satisfaction: whether internal customer (all workers in an organization) or external customer (providing goods or services) this requires the organization to take all measures that would enable them to assess the level of customer satisfaction. Improving performance about customer procedure should be considered as organizational units within the organization (management, departments and individuals) as a supplier and a customer at the same time, as shown by Figure 4:

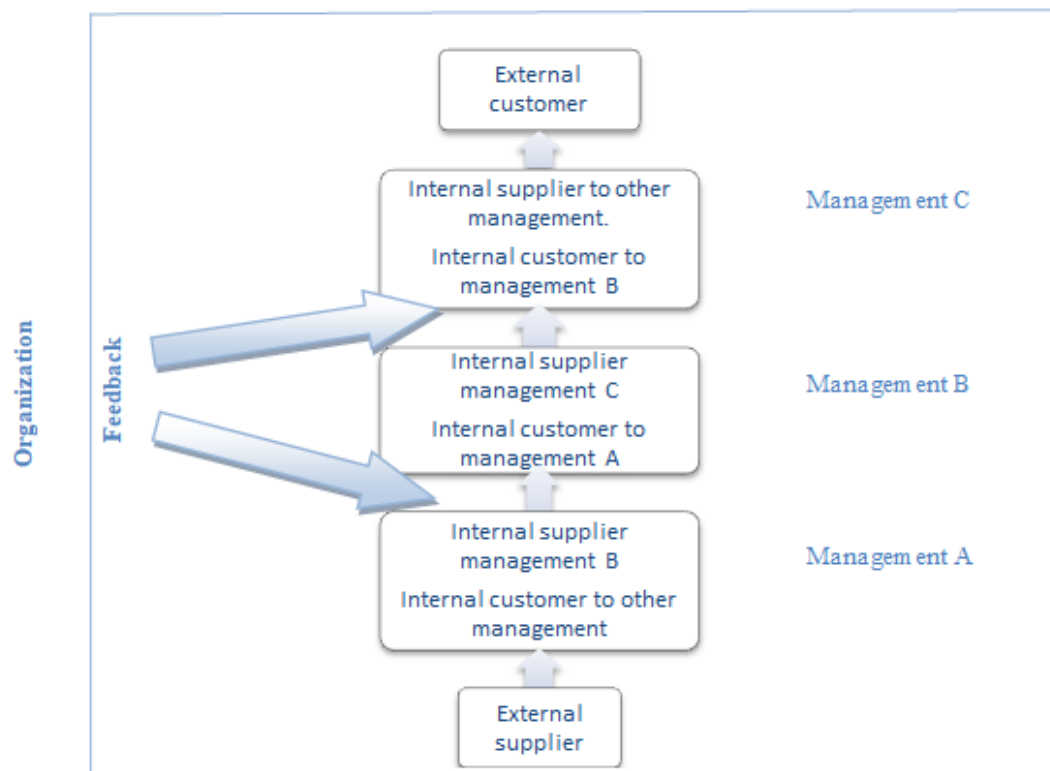


Figure 4: Customer-Supplier Network (Dale & Copper 1992).

Figure 4 shows that any organization or individual in any organizational unit performing a function in it is considered a customer, and likewise, anyone in the organization performing a function to others is considered to be a resource. According to the concept of TQM, each supplier must achieve customer satisfaction, as well as promoting good relations between suppliers and customers.

Second - continuous improvement in all activities and processes:

Achieving customer satisfaction must be a continuous effort for improvement in all activities and processes that eventually leads to the full satisfaction of the customer, and to achieving higher competitive capabilities for the organization.

Third - participation of workers (Quality is the responsibility of everyone in the organization):

All the workers should be dealt with as one team to create a high degree of coordination and should have an active role in efforts towards improvement, through Quality Circles, which contributes to diagnosing problems, identifying their causes and working to resolve them. This, in turn, leads to developing creative skills among the workers.

Fourth - adopting the concept of preventing errors (work right the first time):

This principle is an attempt to draw attention to the prevention of errors and prevent them instead of a screening method which depends on the discovery of errors after they occur. It is a commitment to the slogan "Do the Right Things Right, First Time".

Fifth - depend on work teams in achieving the works of improvement:

Where each team includes a variety of members fulfilling all the activities required for process optimization to be in place. This entrance can be individuals from direct involvement in the daily operations of the company to improve the work environment.

Sixth - focusing on results and operations together:

If the customer did not receive the product or service that meets their needs and expectations, their reaction will be either not to deal with this organization or complain. Therefore, under the concept of TQM, these findings must be taken into account as indicators that there was some mistake in the implementation process and therefore be subject to a plan of action to correct it.

Seventh - effective administrative leadership to support and endorse the TQM:

One of the most important factors to ensure the successful implementation of total quality management is to provide effective administrative leadership that supports and endorses the TQM philosophy and the need for continuous improvement and development. The decision to apply the approach to the total quality is considered a strategic decision, taken by the administrative leadership at the senior management level in the organization.

Eighth - the effective management of human resources in the organization:

Undoubtedly the effectiveness of human resources is the best guarantee for a realistic approach to the continued success of the TQM implementation, which must be done with due care and attention. This is done through the selection and recruitment, staffing, performance evaluation, training programmes and continuous stimulation techniques. Other approaches include building self-management task forces and participation and cooperation in identifying problems and providing solutions to them to achieve continuous improvement.

Ninth - education and ongoing training:

The transfer of the basic concepts and principles of TQM and its administration requires that all workers be rehabilitated through the development of plans for training and education at all levels of management, although the content of the programmes will vary from one level to another according to the type of skills, knowledge and attitudes necessary for each.

Tenth - create a business climate and the culture of the organization:

This refers to the interest of senior management from the outset in the creating and preparing organization workers at various administrative levels to understand, accept and convince others of the concepts and practices of TQM. Moreover, that would contribute to obtaining their cooperation, commitment and reduce their resistance to change .

Eleventh - establishing effective information systems:

This is based on the most important principles of TQM, customer orientation, therefore, the way to it is through the providing of information, its analysis and exchange within the organization and allowing control of operations on an ongoing basis, and the interpretation of such information to become an effective tool for raising standards of quality.

By providing management information systems TQM will contribute significantly to the focus on meeting customer needs and Working towards satisfaction, also contributing to the continuing improvement and coordination between different activities.

Twelfth - Performance measurement of productivity and quality:

One of the requirements of the implementation of TQM is the existence of a system capable of accurate measurement based on appropriate statistical methods. This can determine the negative deviations in performance and implementation of processes and activities and requires training for all staff of the organization to use simple statistical analyses which helps them in good work performance.



Figure 5: Principles and the basic requirements for the implementation of total quality management.

5.0 TOTAL QUALITY MANAGEMENT TOOLS

There are many tools that can be used in total quality management; these tools help in solving the problems of quality, as used in continuous improvement, one of the basic principles of total quality management, and it is important that everyone in the organization is fully aware of and trained to use these methods.

Presented below are the most important tools used in total quality management (Marsh, 1996), (Moore and Moore 1991):

First: Brainstorming

"Brainstorming is a problem-solving technique. It shows the collective creative power of a group of people. It is group productivity. This is used to find out large number of ideas in a shorter time to solve the problem. This is accepted as one of the tool in quality management. It is useful to generate a large number of ideas about a problem. Brainstorming provides an environment free of criticism for creative and free exploration of options and ideas to solve the problem"(Kumbhar 2018).

Objective: This tool is designed to try to get the greatest number of creative ideas in an encouraging and supportive environment, and to include all personnel participating in the working group.

- Rules or principles this method is based on:
- The clearly defined and precise basis for the discussion subject.
- Allowing an individual to express his opinion.
- Comment or criticism of others is not allowed.
- Individuals are encouraged by the 'coordinator' to obtain the largest possible number of ideas.
- All ideas are recorded and the most important ideas that have been reached are extracted, but there must be consensus on these ideas.

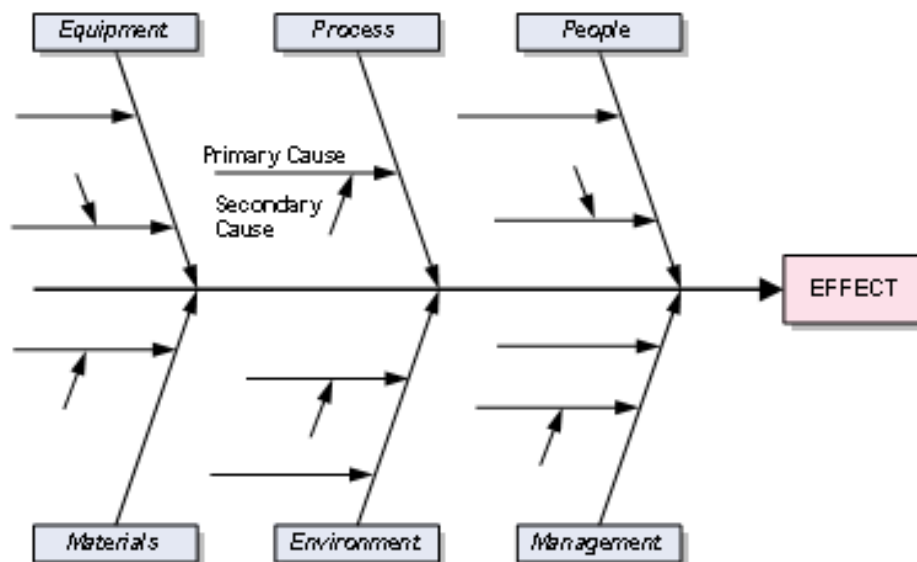
Second: Cause and Effect Diagrams

Objective: to assist in the analysis of problems and their causes for easy solutions to contributes to understanding all factors causing the problem (Marsh, 1996), (Moore and Moore 1991). Steps to be followed for the analysis of cause and effect (result) (Wittwer 2009):

1. Define the Effect: Be specific.
2. Choose Categories: The template is set up with the most common set of categories, but you can add or remove categories based on your specific case. See the example categories below.
3. Brainstorm Possible Causes: Using the diagram while brainstorming can both broaden and focus your thinking as you consider the various categories in turn.
4. Ask Why?: You really want to find the root causes, and one way to help do that is to use the 5 Whys technique: asking "Why?" or "Why else?" over and over until you come up with possible root causes. "Improper handling" is not a root cause, while "Failing to wear Latex gloves" might be closer to a root cause. But, you

could still ask "Why was he/she not wearing gloves?" with the possible response "There were none available." It is a lot easier to take action against the inventory problem than just the generic "improper handling".

5. Investigate: Now that you've come up with possible causes, it is time to go gather data to confirm which causes are real or not.



Third: Pareto Charts

Objective: To identify the priorities of the areas most important or useful to focus resources and efforts, The Pareto principle depends on 20% of the factors or reasons leading to 80% of the problems. We find that the identification of 20% of the few reigning factors leads to substantial savings in the effort.

Pareto charts are used graphically by compiling data relating to one of the problems and then arranging the data in descending order according to value. The data is then shown in the form of graphs (often graphic columns), the map is analysed according to base 80-20%, and thus the factors causing the greatest problems can be determined.

Fourth: Benchmarking

Objective: enabling the organization to compare actual achievement performance with the performance of leading developed organizations in the same area (or perhaps in another similar one), and thus help in the development of internal standards of performance based on the benchmarking model.

The comparison is also aimed at identifying shortcomings compared to others and to work on completing the shortage commensurate with the needs of the market and competitors.

The methods used for comparative measurement are as follows:

First: Identify elements of the ruling success (critical) as a set of objectives or the few areas which are of greater importance in achieving the organization's mission, which might be:

cost; the price; the level of quality; delivery dates; the ability to offer new products; the importance of scientific research and the associated problems of society.

Second: comparison to determine the competitive position of the organization with regard to other organizations on the basis of factors previously identified.

Third: change the current strategies in line with the new performance standards resulting from the comparison process to achieve better competitiveness and continuous improvement.

Fifth: Statistical Process Control

“Statistical process control (SPC) is a set of statistical methods based on the theory of variation that can be used to make sense of any process or outcome measured over time, usually with the intention of detecting improvement or maintaining a high level of performance” (Marsteller, Jill A. et al. 2013)

Objective: To help reduce distortions and prevent defects, through the control of standards and specifications, measurements, and taking corrective action.

“The control chart is a graph used to study how a process changes over time. Data are plotted in time order. A control chart always has a central line for the average, an upper line for the upper control limit, and a lower line for the lower control limit. These lines are determined from historical data. By comparing current data to these lines, you can draw conclusions about whether the process variation is consistent (in control) or is unpredictable (out of control, affected by special causes of variation). This versatile data collection and analysis tool can be used by a variety of industries and is considered one of the seven basic quality tools” (Learn about Quality2020). Figure 7 shows the sample control chart:

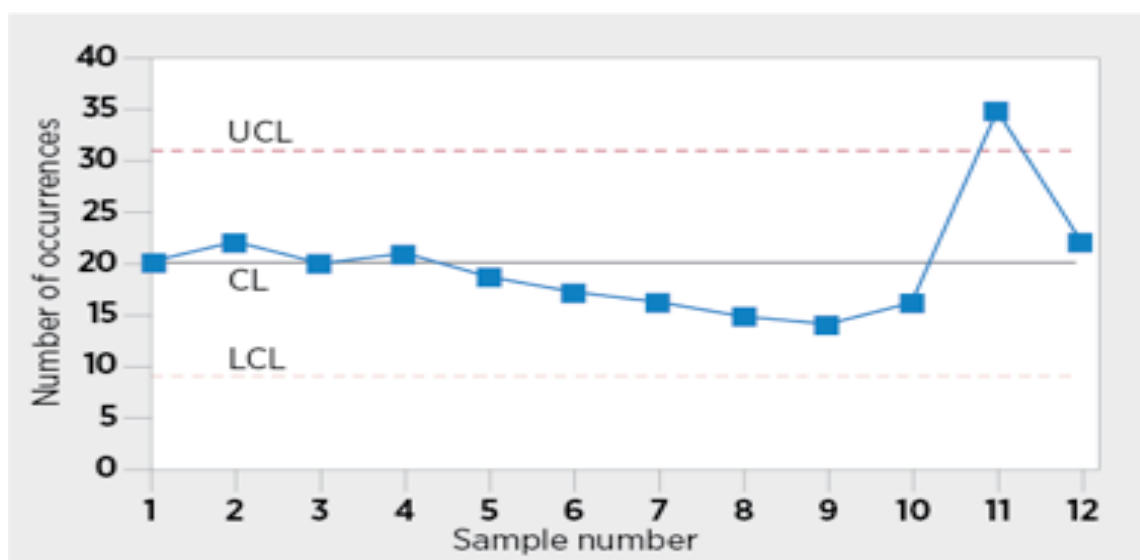


Figure 7: Control Chart Example (Learn about Quality2020)

Sixth: Tree Diagram

“A tree diagram, probability tree, or root cause analysis is geared more towards thinking in terms of causality while using a fishbone diagram tends to make people think in terms of categorization. Using the fishbone diagram loosely may result in a combination of the two approaches as the group oscillates between categorizing different causes and asking "Why?" or "Why else?". Just as the main categories (Equipment, People, etc.) are highlighted by placing a circle or box around them, if you include sub-categories in your cause-and-effect diagram, circle the sub-category so you can distinguish between categorization vs. causality” (Wittwer 2009). The following tree diagram shows the difference between categorization (grouping of causes) and causality (the tree).

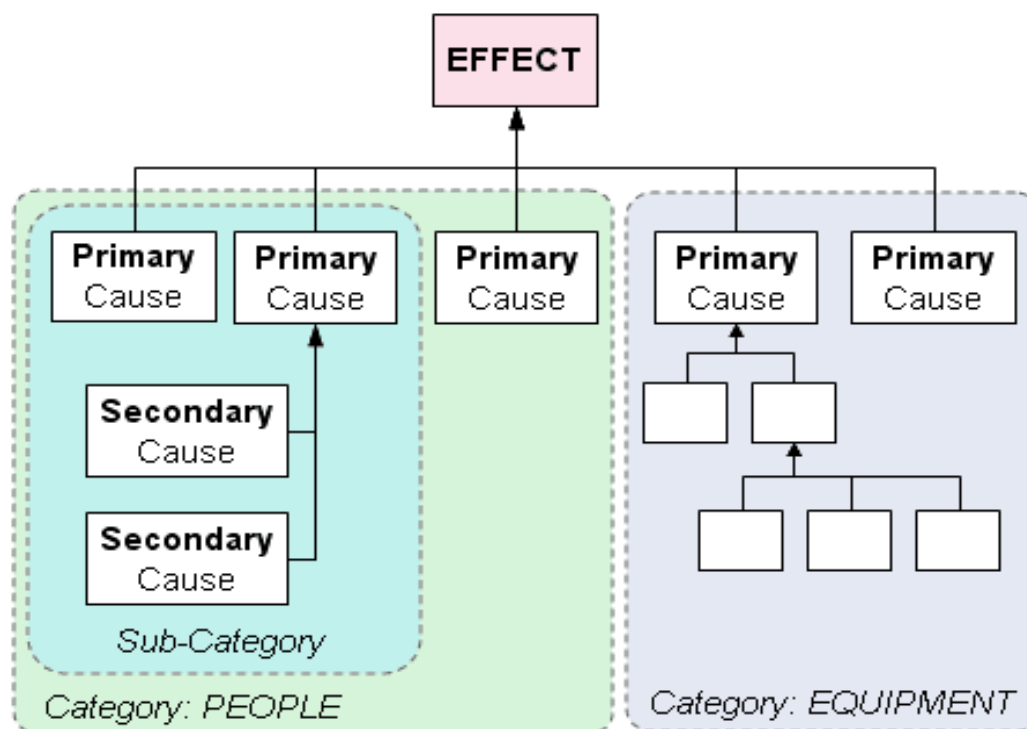


Figure 7 Tree diagram (Wittwer 2009)

Seventh: Flow Charts

Objective: To help shed light on the following operations on the key decision points (Marsh, 1996), (Moore and Moore 1991).

The flow map can be used as follows (Hebb 2020):

- Terminator: An oval flow chart shape indicating the start or end of the process.
- Process: A rectangular flow chart shape indicating a normal process flow step.
- Decision: A diamond flow chart shape indication a branch in the process flow.
- Connector: A small, labelled, circular flow chart shape used to indicate a jump in the process flow. (Shown as the circle with the letter "A", below.)
- Data: A parallelogram that indicates data input or output (I/O) for a process.
- Document: Used to indicate a document or report (Hebb 2020) (see the image in the sample flow chart below).

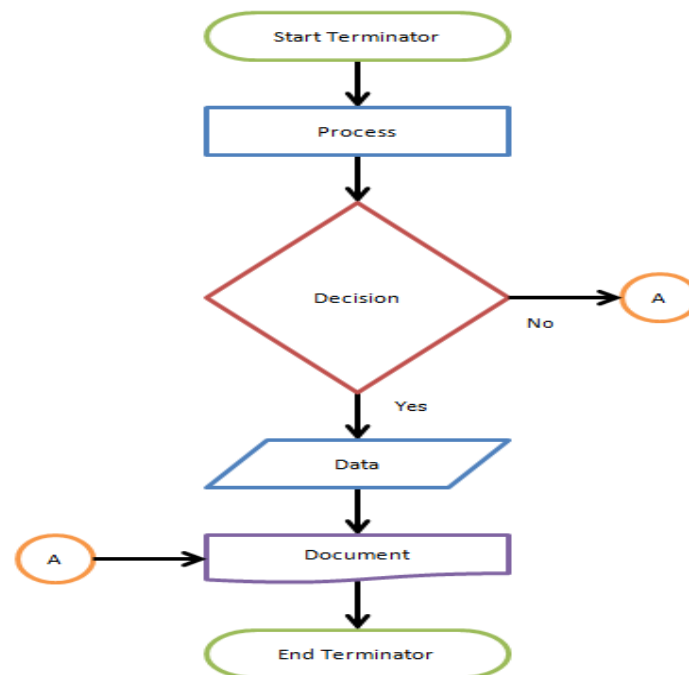


Figure 8: The main symbols of the flow map (Hebb 2020)

6.0 CONCLUSION

To improve the performance of modern organizations is a matter of concern in all countries. Moreover, the ability of any society to manage its organizations not only effectively and efficiently but equally is vital, and a quality management practice is considered one of the most important characteristics that distinguish society from others. The previous studies have highlighted the importance of the concept of total quality management and focused on the need to apply TQM in organizations. They have also highlighted some of the indicators for total quality, and called for some of the actions that achieve quality, in order to alert the administrative systems in organizations to the efficiency and effectiveness of continuous quality improvement. The conceptual framework, described in this paper, reflects the impact of total quality management on organizational performance, through clarifying the relationship of the concept of total quality management to some other concepts associated with this concept which might overlap or be associated with it, as well as the emergence and evolution of the concept of total quality management. The achievement of quality performance in organizations requires the formation of the Conceptual Framework of the Impact of total quality management on organizational performance in line with the principles of quality management as the model and conceptual framework governing the work of the whole Organization and giving the Organization a system and a general formula. It also requires the availability of tools and processes which can bring about Quality Management, But there must be tools, processes and specific techniques to assist in the transition from theory to the practical side of quality; thus, the philosophy is backed by the tools and the means and processes to implement them. The main goal of continuous improvement in TQM must be the goal of management and leadership in the comprehensive quality promotion and

the development of output continuously, rather than maintaining only an acceptable level of achievement. The last component of total quality management are all staff who are all involved at all levels in the administrative process and direct contribution in quality assurance in the results, must also emphasize the importance of customers in contributing to the continuous improvement and achievement of comprehensive quality, and this means that the total quality management has core roles linked to the implementing of the total quality management. As mentioned above, the conceptual framework of total quality management is the product of the interaction of contributions from quality scientists, but actually confirms that those contributions came about as an extension of the evolution of management theories, themselves different implementations as well, making it describable as an input or an administrative focus on the quality of performance in all parts of the organization.

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