

CASE STUDY

An Overview on Implementing TQM in Developing Countries



PAKISTAN INSTITUTE OF QUALITY CONTROL

304, 3rd Floor, Eden Centre, 43 Jail Road

Lahore – Pakistan

Ph: (+92 42) 7563645-7562260 Fax: 7552656

E-mail: piqc@brain.net.pk; Web Site: <http://www.piqc.com.pk>

AN OVERVIEW ON IMPLEMENTING TQM IN DEVELOPING COUNTRIES

by

Kamran Moosa

Head

Pakistan Institute of Quality Control

BACKGROUND

Business organizations in Pakistan, and many other developing countries, are facing deep crises. Performance of organizations is affected by four important factors: market forces, governmental responses, technology, and management.

MARKET FORCES: Many manufacturing companies are competing with their own brands, products produced by imitators, and companies who evade taxes. A few global giants are playing positive roles in the economic development of developing countries. However, others are driving out of business local manufacturers and traders, by acquiring, mergers, capturing local markets, and changing market trends in their favor, with the help of their large infrastructures.

GOVERNMENT: Inflation, interest, corruption, and waste-spending are very high. The roles being played by many international monetary agencies are unfair, and negative. Those Business Ethics are usually enforced by governments that are defined by global business giants, which are also found biased in protecting their vested interests.

TECHNOLOGY: The definition of “fairness” differs among suppliers, donors, buyers, users, and beneficiaries; each looking after its own benefits. The supplier thinks that all rights are his, because he uses his brains and resources to produce his goods and services. The buyer thinks that he acquires all rights on ownership. The end user feels that the suppliers deprive him from his rights. Others have their own claims. The buying of their services and goods enable companies and countries to exist. For example, millions of Japanese vehicles that people of other countries buy, enables Japan and its companies to exist. The price of such products sold does not only include just the product cost but also the technology and management costs. Countries selling products in other countries should recognize that their customers (who are the sources of their existence) are people of other countries. In this way, the buying countries and people do not get their due share of technology. In the hide and seek game of technology, companies and countries have to put in persistent efforts and resources,

including product and process designs, special types and levels of competencies, new material development, and special know-how.

MANAGEMENT: Unlike technology, this is a relatively easier component to understand and practice. Dependence is on management sciences rather than on engineering (technological) sciences. Therefore, it has spread much faster than technological sciences. In the last 50 years, business has grown from single markets (villages, cities, and countries) to multiple markets across the globe. This has changed the manageability of organizations from a few variable of competitiveness to a large set of complex variables. In this way, today's management strategies and practices are persistently replacing old styles of management. High technology like IT has recently made a big shift in business and management styles. Management sciences have themselves developed a subject to manage such changes. Total Quality Management (TQM) is a subject that is now being practiced by many organizations to effectively manage such changes to stay competitive.

INTRODUCTION

TQM is a customer-driven company-wide approach, to continually improve and upgrade processes, products, and services, using management tools and techniques. Many call it Total Quality Control (TQC) or Company-Wide Quality Control (CWQC). It has evolved from Quality Control and Quality Assurance. This change is due to the change in the concept of Quality itself. Shiba (1992) describes the Quality evolution in Japan in four steps:

- (1) Fitness to Standards – i.e. to build products that meet the specifications set by the designer
- (2) Fitness to Use – i.e. to build a product that meets the needs of the customer
- (3) Fitness to Cost – i.e. obtaining high quality and low cost by effective designing of both the product and processes
- (4) Fitness to Latent Requirements – i.e. determining the customers' needs before the customer becomes aware of them.

This paper is an attempt to provide an outline of the issues associated with the practical implementation of TQM. It includes:

- (1) Setting the Right Foundation for Quality Control, Quality Assurance, and TQM
- (2) Seven TQM Implementation Approaches
- (3) Requirement of Basic Shifts in the Company Strategies
- (4) Starting TQM as a Project
- (5) Integrating TQM with Company Systems
- (6) Essential Toolbox for TQM
- (7) Conclusions.

SETTING THE RIGHT FOUNDATION

1. QUALITY CONTROL

Quality Control is a common word used in the industrial sector. It means different things to different people. Many use this word to represent a department carrying out

inspection and testing. This is one part of the QC, but not the whole. The second most important activity in QC is a feedback loop of Corrective Action to be initiated as a result of defective products. This requires teams regularly working on the root-cause analysis, to then turn out recurrence prevention programs. Fig. 1 illustrates the QC concept.

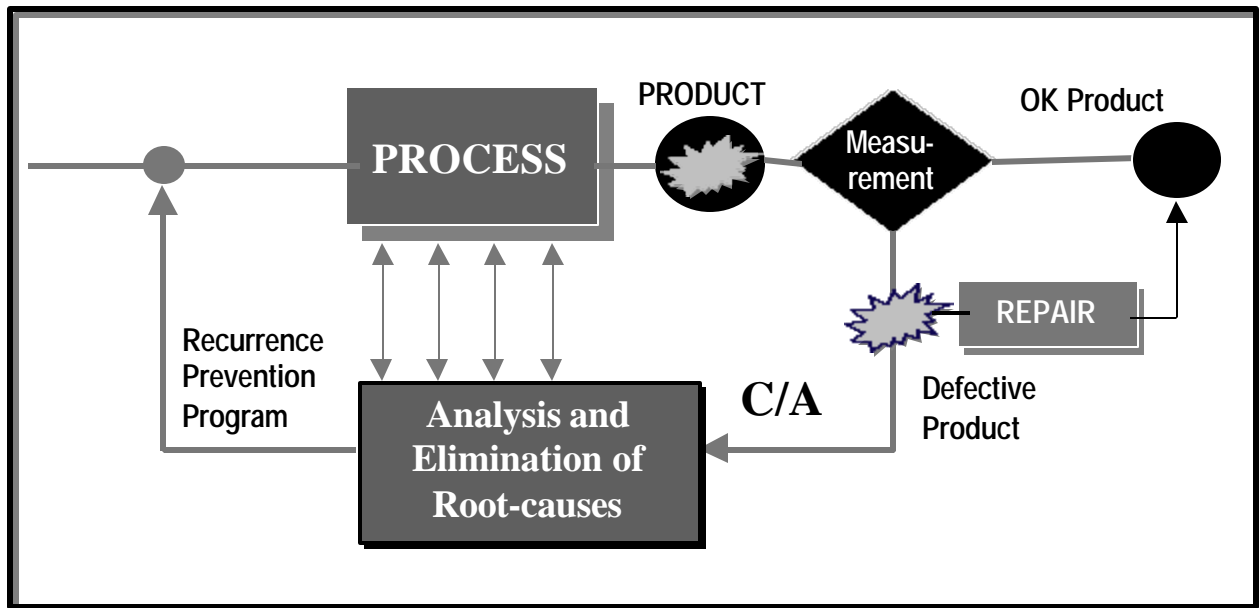


Fig 1: Quality Control Model

Every process produces both conforming and non-conforming products/services. A measurement/monitoring system is installed to segregate defective from OK products. In case of defectives, there are two paths: (1) Feed-forward Path, which comprises of repairing/correcting the product and then providing it to the customer, and (2) Feedback Path, which is an investigative path to provide a Recurrence Prevention Program to the production process.

The Feed-forward path is generally the commonly understood concept of QC. The practical application of the feedback loop is known and practiced formally in only a few companies. An effective QC requires the following:

1. **MEASUREMENT SYSTEM:** a measurement lab in manufacturing, and a monitoring system in services. It is dependent on the quality of technology and management of its processes. The larger the defective generation/errors in production, the larger would be the size of the measurement systems. Accuracy and precision are the key attributes (ISO 10012 provides Guidelines for Metrological Confirmation Systems). Just having a lab is not sufficient; a good quality lab is crucial.

The measurement of Service Quality needs special attention, as it is mostly ignored. It is usually dependent on converting the intangibles to tangibles and then establishing routine measurement systems, e.g. cycle times- the time taken to cash a check in banks, waiting time in ticket buying or check-in counters, machine failure times, and process times; customer satisfaction indexes, number of errors/mistakes/complaints, financial ratios, and opportunity losses.

2. *REPAIR (FEED-FORWARD LOOP)*: corrects defectives by feeding them back to production or repairing them separately. The quality of repaired products is usually inferior to those produced right the first time. Therefore, it should be ensured that the repaired items are repaired in the best possible manner to minimize the degradation in repair.
3. *RECURRENCE PREVENTION PROGRAMS (FEEDBACK LOOP)*: This requires addressing a number of practical issues. The foremost is the identification of routine activities on a daily, weekly, monthly, quarterly and yearly basis; and at random. People at every level, in every department must be trained in problem solving tools (e.g. Seven basic Quality Control Tools) and then effectively manage to design and implement Recurrence Prevention Programs as a routine, including daily production meetings, Quality Teams/Circles, and Corrective Action Program as in ISO 9000.

Quality Control is a reactive approach, i.e. to react on identification of defects/errors. It creates reactive personalities. People are warned, apprehended, or addressed strongly when defect is reported. It is generally assumed that if no defect is reported then every operation is running smoothly.

The QC system is particularly weak in government and service organizations, because they have traditionally been operating in a monopolistic and non-competitive state. Quality indicators, measurement systems, and feedback loops are either very weak or missing, as in universities, colleges, schools, ministries, civil services, utility suppliers, and courts. On the other hand, this concept is traditionally applied in the manufacturing industries. Its application in the service part of the manufacturing companies is also weak. Most manufacturing firms measure the product quality, but not the service quality.

2. QUALITY ASSURANCE

This is an additional component to Quality Control. Its aim is to ensure accuracy as well as precision (consistency) in operations so that an accurate and consistent product can be delivered. Since the introduction of ISO 9000, QA is being largely understood and practiced. It includes all those processes that affect Quality directly, including production planning and control, post production operations, maintenance, stores, purchasing, contracts, corporate quality planning, design and development, document control, quality control, internal quality auditing, training, and after sales service.

ISO 9000 provides a standard of quality assurance requirements, but there are no standard methods (sub-systems) to implement the quality assurance requirements. The methods arrived at by companies to implement the requirements of ISO 9000 are dependent on their commitment, awareness, competence of their management and/or consultants, and the way they are audited by the certification agencies. Therefore, a wide variety of quality assurance programs exist in ISO 9000 certified companies. Their management procedures and infrastructures have large variations in terms of excellence. A survey carried out by the author in 1999 revealed the following results:

1. Satisfactory implementation of QA was found in 40% of surveyed firms; poor implementation was found in 60%.
2. Weak areas of Quality Assurance processes in ISO 9000 certified firms were found as follows (even though they were certified):

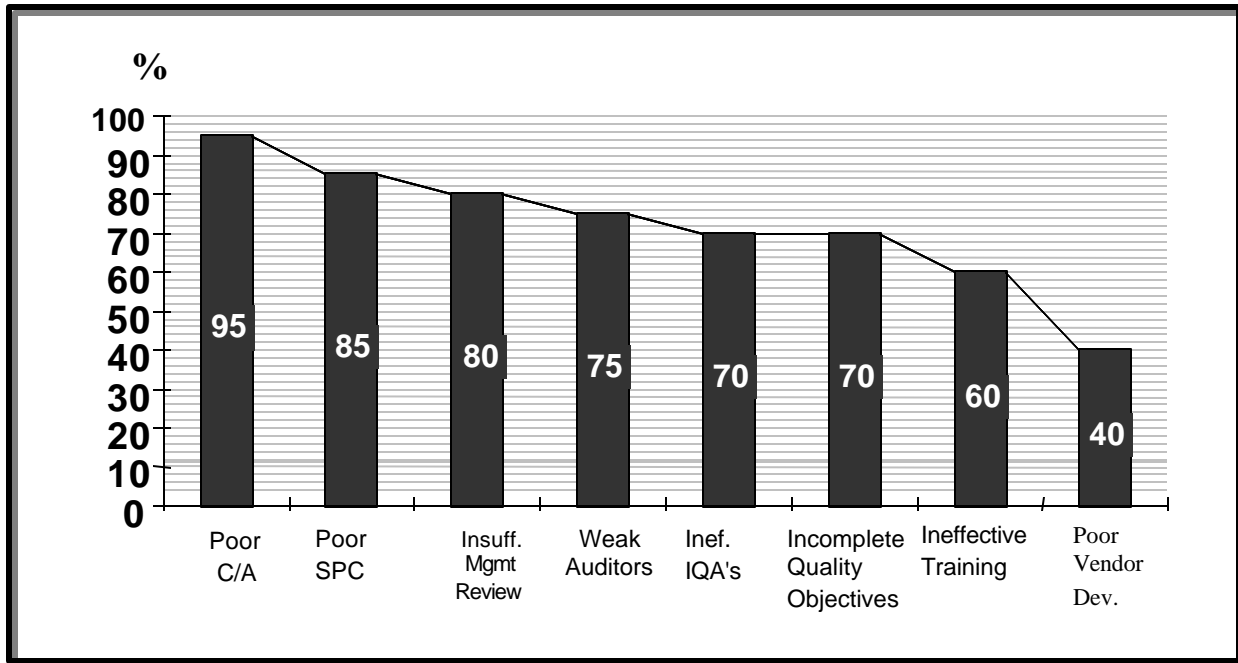


Fig 2: Unsatisfactory functions found in ISO 9000 Certified firms (survey results)

It is important to understand the requirements of each Clause of the standard and its interpretation in different departments, followed by effective and efficient ways and methods to fulfil the requirements. An important thing to understand is the concept of Quality Assurance itself, which is generally found unclear. A model of QA is shown in the following diagram:

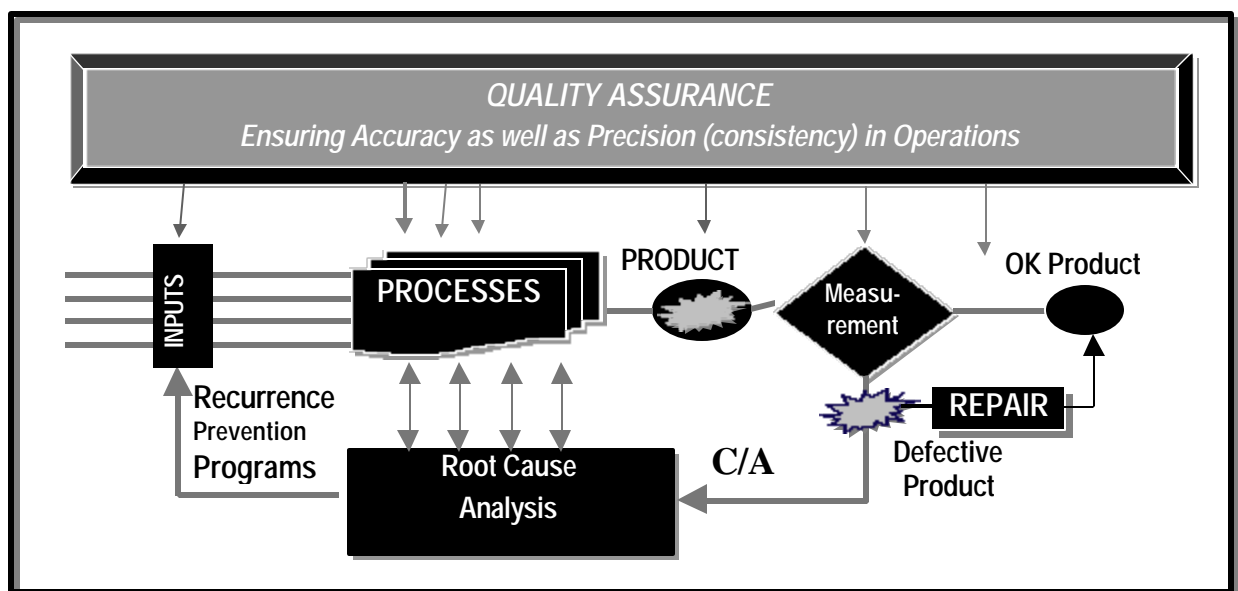


Fig 3: Quality Assurance Model

Quality Assurance addresses Accuracy in QC and Precision in all those processes that affect product quality. However it is weak in companies that standardize ineffective, bureaucratic, and/or non-accurate processes. This is shown in the following diagram:

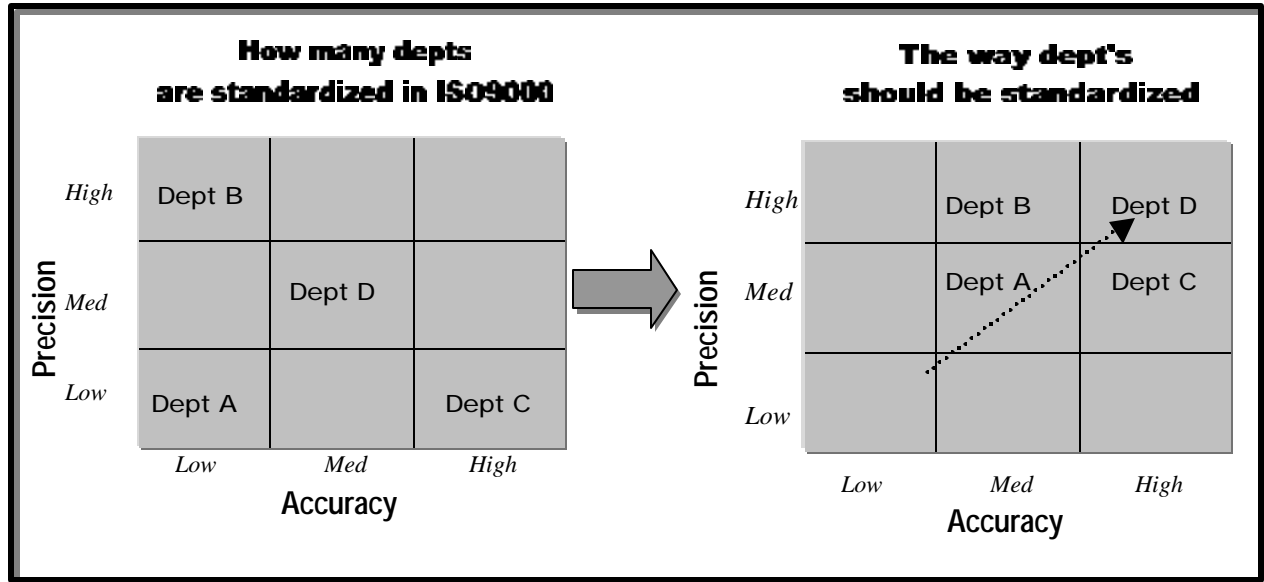


Fig 4: Sometimes companies standardize processes with low levels of accuracy and precision

3. TOTAL QUALITY MANAGEMENT

This is the third important Quality program with the widest scope in Quality. The scope of Quality is up-graded from Quality Control and Quality Assurance, as shown in the following diagram.

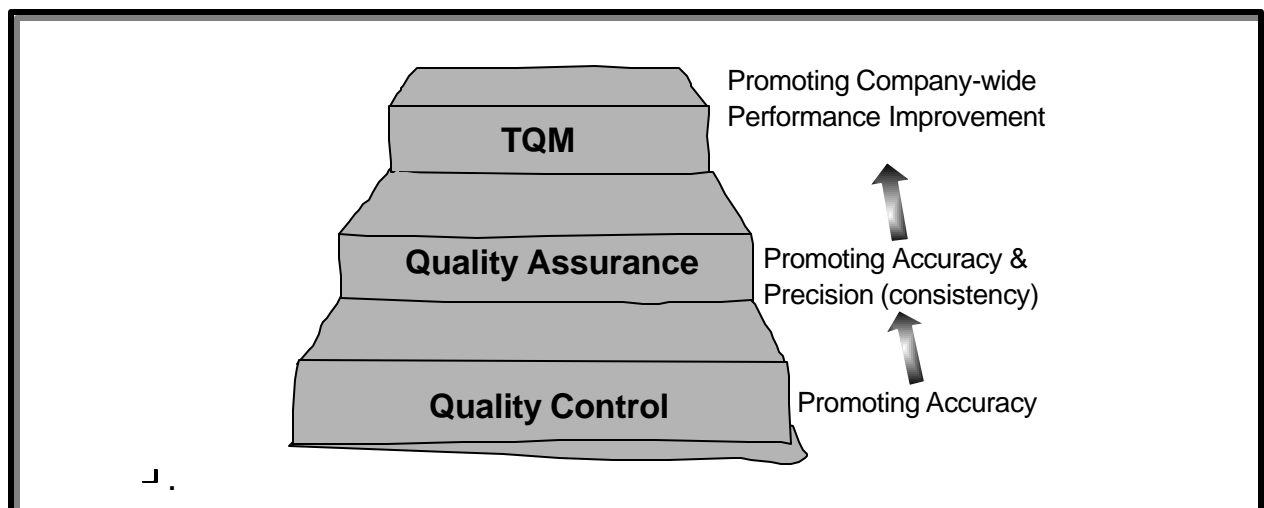


Fig 5: The scope of Quality in QC, QA, and TQM

Quality Control operates around the objective of delivering the right product (accuracy); whereas Quality Assurance operates around consistency (precision). The Total Quality Management operates around improving and promoting overall organizational performance. Quality Assurance is directly proportional to “fitness to use” definition of Quality and is dependent on two dimensions, i.e. Accuracy and Precision. Performance, on the other hand, is directly proportional to competitiveness, and is dependent on an additional dimension of Efficiency. ISO 9001 as a QA standard does not include organized development in the third dimension, i.e. Performance (ISO 9004:2000 does include guidelines for performance improvement as an added dimension to ISO 9001 Quality Management System). This is shown in the following diagram:

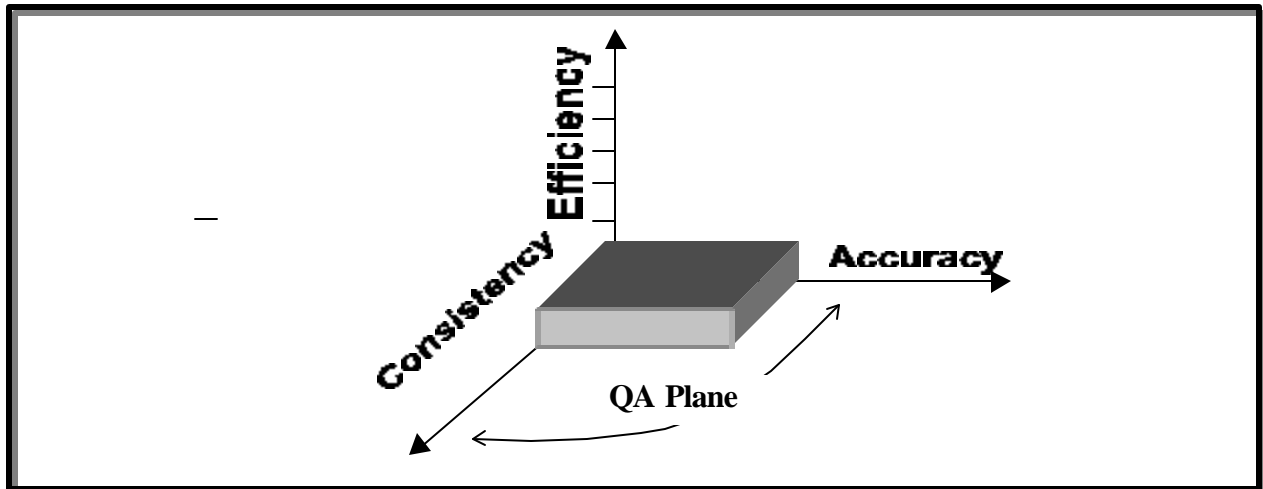


Fig 6: Three dimensions of TQM

Performance improvement can be explained easily in words. However, its practical solutions are difficult to recognize and visualize by experts in different management areas. In a survey by the author (Ref 1) in Pakistani organizations, the quality of the output of different departments were rated as follows:

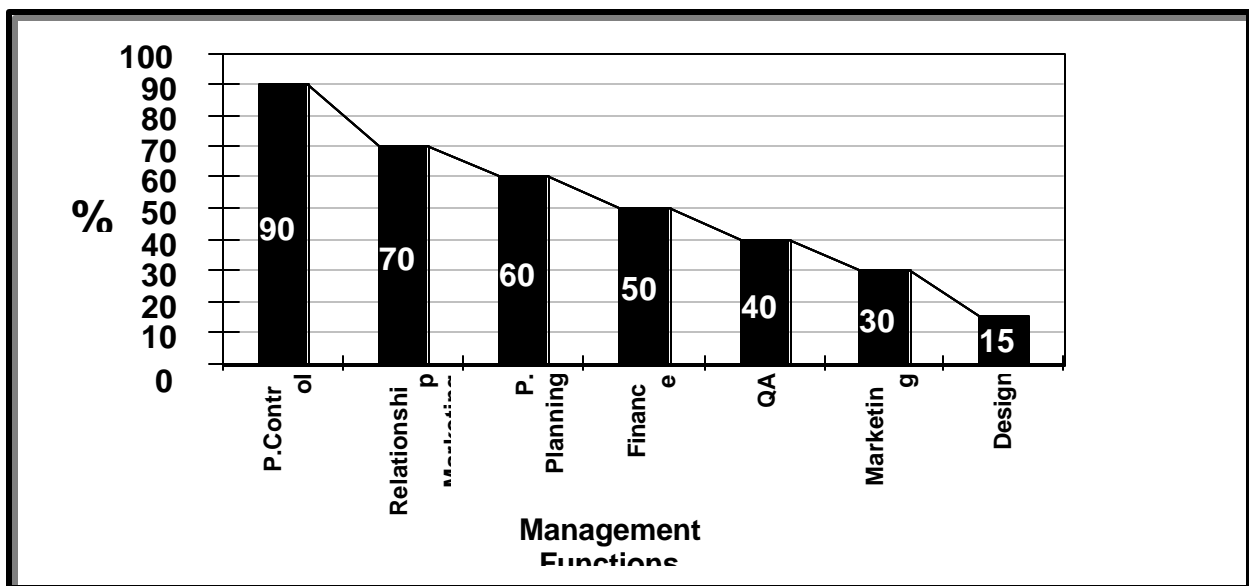


Fig 7: % of Satisfactory Management Functions found in a Survey in Pakistan (1999)

Design, Marketing and QA were found to be the weakest in quality. This shows that each department requires a quality program or campaigns in order to up-grade its performance level.

SEVEN TQM IMPLEMENTATION APPROACHES

Improving performance is a common concern of management in every organization. However, it is addressed differently by different people in different companies. For some, it is a science, while for others it is just a common sense. Some utilize organized methods whereas others do not. Integrated organized methods are prescribed in TQM. However, most managers are not familiar with TQM tools and strategies. Thus, they end up with unorganized and un-integrated strategies and actions.

Every organization embarking on TQM starts with the vision, competence, initiatives, experience of its managers, and available resources. Although the final objectives are usually the same, the approach and methodologies differ, resulting in both successes and failures. It is usually not the approach by itself which results in a failure, but the half-cooked understanding, implementation, and integration of TQM functions with the existing management systems. The following are some common approaches used by companies to start the implementation of TQM:

1. **BUREAUCRATIC**: is driving the organization by authority of the top management for performance improvement. In an authoritarian culture, the managers only act when the top person tells them to do so. Yet a managerial decree, a memo, an SRO, or order from a senior, can be doomed to failure if the policy is unacceptable to those concerned with its implementation. In such process, if the senior manager leaves or is promoted elsewhere, the whole process may fall flat. Even if improvements are made, they are usually not sustainable. Middle managers become barriers to change. This is also the usual course adopted every time a new government comes and semi-government organizations in Pakistan. Managers who adopt this strategy are usually groomed in a dictatorial style of managing people, and they themselves may not be strong in management sciences.
2. **PREACHING CAMPAIGNS**: is selling policies to employees through extensive preaching and criticizing quality issues, but not focusing on solutions and their resources and implementations. Apparently they look like soft cornered people, but in many incidences they are found to be theoretical people in management sciences without the necessary management skills.
3. **EDUCATION CAMPAIGNS**: A very popular strategy based on rationality, that if people are educated enough, they will automatically recognize the issues and will adopt the change. As education is merely building a knowledge base and not the skill base, people gain theoretical knowledge but not skills. In other words, they become good commentators, and not good players. Education can facilitate, but not change the process.

4. QC CIRCLE ONLY CAMPAIGNS: is started by many companies impressed by Japanese quality management techniques and extensive marketing of Japanese Quality Circles. Most do not succeed, unless this program is part of a TQM culture, integrated with other policies and programs. Unless it is linked with the Strategic Quality and HRD programs, the scope of Quality Circles becomes quite narrow.
5. GURU/QUALITY AWARD MODEL: This approach involves implementing TQM by adopting principle of well known advocates of TQM, e.g. Deming, Juran, Crosby, etc.; or any popular Quality Award model, e.g. Deming, EQA, or Baldrige. It really doesn't matter which system to follow; the important point is to follow it correctly and rigorously. Many such quality programs that fail are usually for one of two reasons: starting without practical models or experiential guidance, and/or lack of support from the middle management. It requires a strong commitment, involvement, and understanding of middle managers.
6. ISO 9000 AS A PARTIAL TQM PROGRAM: This has gained popularity in recent years. Many ISO 9000 certified firms are convinced that either the standard or any of its extended scope is in fact a TQM model by itself. With the release of the new ISO 9000:2000 model, this notion is even strengthened. It is important to note that the ISO 9001 is a set of requirement for a Quality Management System, whereas ISO 9004 is a guideline for Performance Improvement. This guideline is developed from the extension of ISO 9001, but a number of careful attempts are required to find out its successful output. The 1994 version of ISO 9004, though claiming a similar output, was not utilized by companies and thus never became popular from the TQM implementation point of view. The new ISO 9004 provides some good guidelines on the principles and to some degrees on the requirements of TQM. However, the biggest difficulty will remain on the issue of an implementation model. This aspect is not clearly identified and companies will have to still look else where for implementation models.
7. TAILOR MADE: These companies start TQM programs by first trying to identify their own shortcomings (self assessment) and then designing an implementation program utilizing various TQM tools. They start with the notion that every organization is different (characteristics, cultures, development stage, human resources, technologies, and need and capacity for change); and that what works in one organization, may take different shapes in other organizations. These companies study others or consult professionals, but then adapt systems to their own circumstances. They mainly look at three areas: deficiencies in customers satisfaction (requirements and expectations), deficiencies in the quality of processes, and deficiencies in employees' satisfaction. With rigorous attempt to measure and improve key performance indicators, they then look at TQM tools to find solutions to their particular areas where their performance is weak.

REQUIREMENTS OF BASIC SHIFTS IN THE COMPANY STRATEGIES

The improvement in performance can be a result of external factors such as change in government policies, shortages and abundance of raw material, etc., or can be a result of internal measures in improving the technology and/or the management.

Leaving aside the external measures, and the technological changes, let us look at the management part.

Organizations establish their management framework on some fundamental principles. These principles drive their organizations. TQM requires some modifications in these principles and strategies in order to establish a framework for company-wide improvements. No matter which approach is applied, the following fundamental shifts are essential:

1. REDEFINE MANAGEMENT STRUCTURE, ROLES AND ACCOUNTABILITY:

The traditional organizations are formed vertically, i.e. highly departmental with centralized controls. People have generally worked within one functional area (department/section) of organizations. In this way their skill base is formed in an extreme narrow bandwidth (low number of people, systems, and performance outputs). As they are promoted, their functional bandwidth demands a wider knowledge and skill base. Most organizations' HRD programs fail to provide the necessary support. The Survey Results (Ref 1) shows that 80% companies are unorganized in HRD. As a result, their management capabilities decrease with promotions. Sub-consciously, as people are promoted, they demand more professionals working under them to cope with the wider functional areas. In this way, they become less competent for the new posts than they were in the junior post they were working in. Each senior manager must possess a very large number of management capabilities. These can not be acquired by a mere increase in the number of technical/functional areas that they head. Some capabilities they will have to acquire are: TQM tools (Quality and Productivity Improvement tools), HRD techniques, Project Management Tools, Communication skills (professional writing, speaking), Computer literacy (using relevant professional software in their areas), Cost Controls and Management. Organizations and managers must recognize this, and take steps to acquire the necessary skills required to do their jobs effectively and efficiently. In order to establish TQM, managers will have to work in two distinct roles, i.e. functional and cross-functional. In other words, each manager will have to manage functional responsibilities (marketing, R&D, Production, QC, etc) and cross functional responsibilities (members, coordinators and facilitators of improvement teams working in the areas of Quality Circles, Quality Costing, SQC, HRD, Company newsletter, Rewards and Recognition, etc.). In this role, they normally address quality and performance issues, in addition to their normal routine jobs.

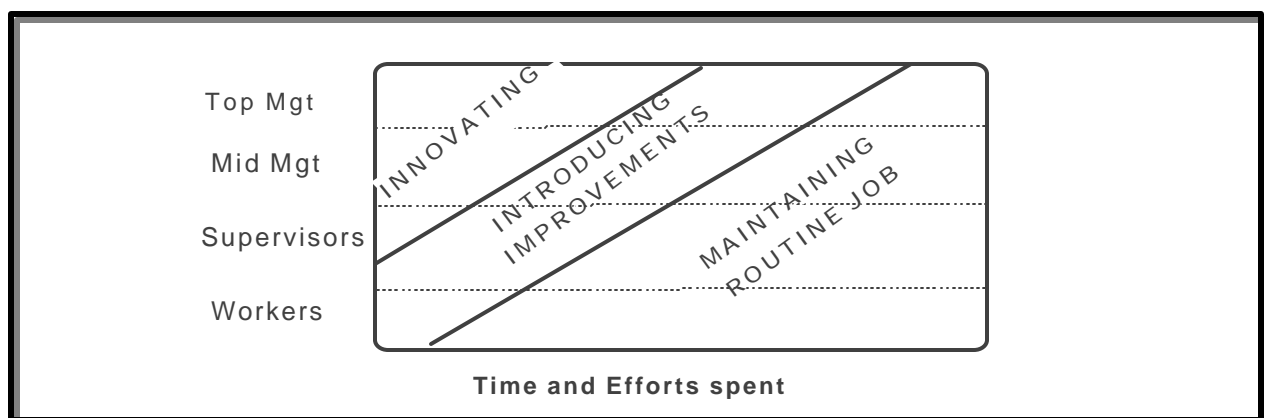


Fig 8: Identification of management roles in Quality (Imai)

There is crisis in business in every company, in every country. Its shape differs from one situation to another. Financial, social, labor, technological, raw material availability, manpower, etc. are all different objects in different crises in different times. Many people say that running a business is fighting crises effectively. Obsessed with the threat of current or future crises, many organizations and people have entered into a mode where they fight problems on a routine daily basis. Their whole job becomes to reduce crisis within their department or section. This is a worker's routine and not a manager's routine. Fig 8 explains the routines of different levels of people in an organization. The amount of the daily routine job should be reduced (through effective delegation and not by reducing the job itself) as people are promoted. The top management, especially, should be the most involved in the innovative and improvement grids, rather than in routine activities. As TQM generally works in the improvement and innovative areas, management's roles need to be redefined to tackle TQM. This is explained above by Imai in Fig 8.

2. **REDEFINE THE DEFINITION OF QUALITY:** Performance of the whole organization will be dependent on the performances of each department and

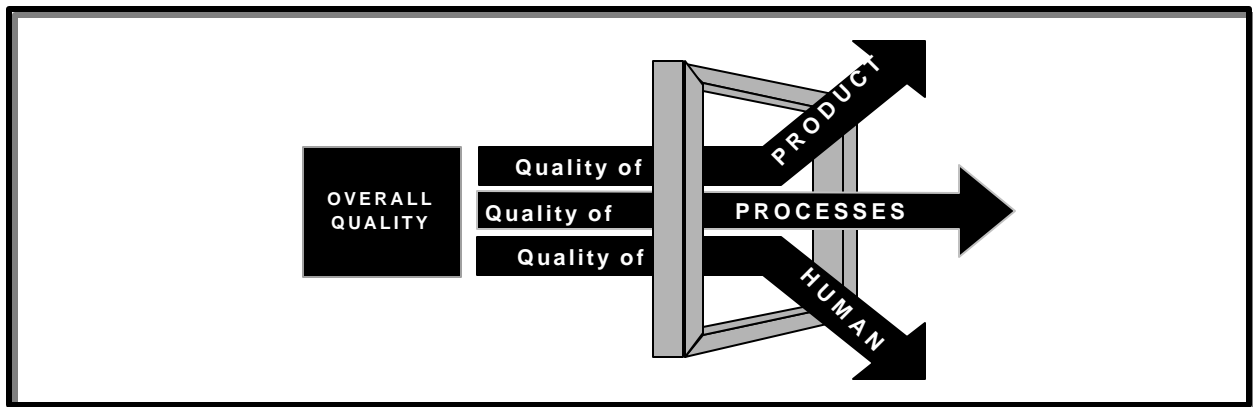
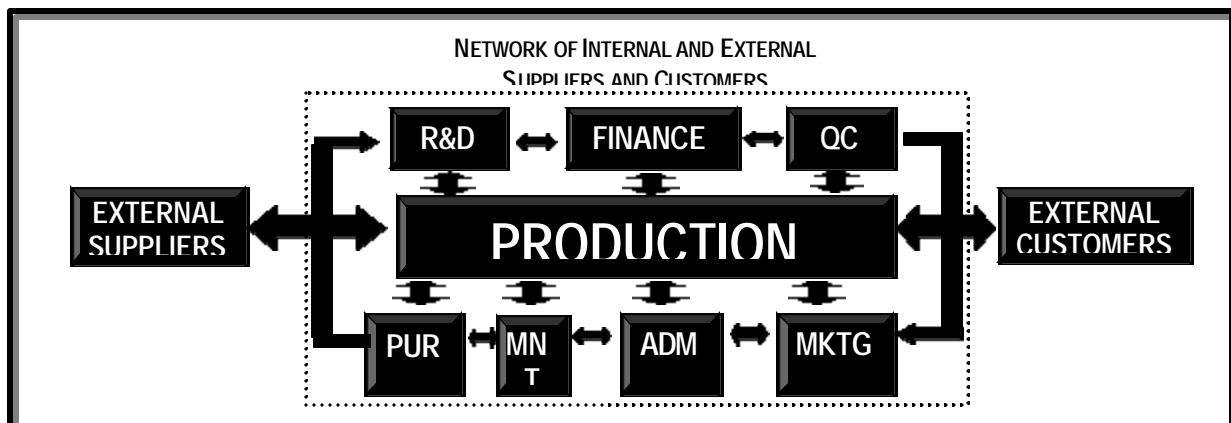


Fig 9: Sub-components of Overall Quality

section. Therefore, quality will no longer be the word used for products alone. It will also be used simultaneously for measuring and controlling the quality of processes and people of every department

3. **REDEFINE THE SUPPLY CHAIN:** As the products/services of each department change, so will the Quality of each department. Similarly, the customer of every department will have to be defined. The external Customer is the buyer, user, or distributor, who is external to the organization. However, internal performance



© Fig 10: Quality needs to be defined among all Internal and External Customers

is dependent on the performance of each function and cross-functional activity. When it comes to Quality Control and Assurance, only the Production department is usually involved. Thus the meaning of Quality revolves around Production and Laboratory. Each department has to enter into a supplier/customer relationship with all the other departments. Only then does quality become a meaningful entity. Performance indicators of each department are then established, monitored and reviewed.

4. REDEFINE MANAGEMENT ETHICS: Behavior is an output of actual, and not professed, personal beliefs and ethics. Every person has his/her own set of beliefs (religious, social, as well as professional). These beliefs drive the person to behave in a particular manner. They are built over a lifetime; while their shapes are formed and changed with that information, knowledge, observation, or experience that is accepted by the individual. The religious, social, and personal aspects of life are usually considered as independent variables; which they are probably not. This is like wearing three different hats (changing personalities) when in office, home, and mosque. The individual is a whole, and cannot be divided into parts like this. Therefore, a good person is not the one who is good in a particular situation but is always good. Good managers are good people. Ethical values must be identified, established and followed right across the organization (to talk nicely, to deal nicely, to behave nicely, to respect and take care of people nicely, to follow stated and unstated laws and regulations, not to create distances with juniors and so on). TQM addresses the organizational culture and involves teamwork irrespective of seniority. Many managers do not accept this, unless the management ethics are clearly defined, established and promoted.
5. REDEFINE CONTROLS AND FINANCIAL FREEDOMS: Availability of the right information at the right time, and the control of Finance, are two important management strengths. When managers are deprived of either, they become impotent, and cannot manage work effectively and efficiently. As TQM will involve decentralization and taking self-initiatives, managers need to be strengthened with these two resources. Although empowerment will be in different stages, at different levels, it must be effective. It may take the shape of reports and meetings to be shared in different issues at different levels. Information provides confidence and finance provides power. Most managers complain about being poorly informed, but at the same time, they are themselves poor communicators. In other words, there is generally a tendency of one way communication in organizations, people like to be informed but do not inform others timely. Many TQM programs fail because of poor information sharing (intentionally for confidentiality, or unintentionally because of negligence or a feeling of no need to), or too many restriction for the sanctioning of expenditures for improvement initiatives. These two aspects must be carefully addressed in any TQM process.
6. REDEFINE THE LEARNING PROCESSES AND RESOURCES: Strong learning processes in each department and section are crucial to facilitate the

development process of the whole organization. Learning is accelerated by a higher literacy rate, but a higher literacy by itself does not guarantee learning. The learning processes must be institutionalized, through professional examinations, in-house training programs, benchmarking visits, and professional discussion forums. Managers will have to go back to books and courses to understand many management techniques and cases. TQM requires a large amount of reading and learning of skills/tools, so does their own functional areas. Organizations must design effective training processes for each employee. A non-learning attitude retards the whole organization. Professional learning is a habit, not just an assignment or a process. Efforts must be made to motivate and push managers to involve themselves in real learning that results in improvements in processes, products, and services. Imitation/theoretical learning through seminars and conferences is not enough. There must be practical involvement in implementation.

7. REDEFINE INVOLVEMENT OF EMPLOYEES: The real wealth producers are the production workers, who produce quality products by using both their hands and brain. Systems and management facilitate this by their support functions. Workers involvement is the key to the success of TQM. They must take initiatives in quality improvement programs like quality circles, suggestion schemes, and time and motion studies. Without this, TQM can never succeed. Involving workers is no easy task. It requires a high degree of the proper management behavioral and social skills. Workers are far more sensitive to behavioral responses than managers. Their confidence can be won through motivation, that must be created. The biggest cause for the lack of involvement is a de-motivated culture. The class-structure found in most developing countries is a legacy of colonial rule. It must be eliminated, and replaced by pride in workmanship.

STARTING TQM AS A PROJECT

Although TQM is a process to be added as a routine function, it is best introduced as a project, in three steps as follows:

1. ESTABLISHING THE VISION AND QUALITY POLICY: Top leaders are always involved through their visions. Vision and day dreaming are similar, yet different, like chess players, who visualize many future probabilities of what the opponent may do, and what he/she will do in each case; till the winning solution is finally identified. It is not necessary that he/she always wins, but a reasonable, logical, practical, and optimum path must be found to succeed, starting from the present conditions. Plans and strategies are amended after each step is taken by the opponent. World-Class companies are being run by Quality visionaries who are obsessed to delight their customer, eliminate every waste, raise employees' satisfaction, and implement continuous improvements, while abiding with regulatory requirements. It is not just the words or written slogans but the deeds and actions which define quality in any organization. A long-term vision with key quality policies and objectives, followed by their effective deployment is essential.
2. PLANNING: Most TQM programs fail because of poor, incomplete, or superficial planning. Planning is a crucial step. Its key components in TQM implementation are:

- 2.1 Establish a TQM **Steering Committee** comprising of departmental heads, to promote, oversee and coordinate the planning and implementation of TQM in all areas of operation. Designate a Secretary and a Facilitator, and document its procedure. Develop a Master Implementation Plan. Start with experiential training for a better vision, including practical perspectives, TQM Tools, and Quality Policy Deployment. Many top class companies carry out 100-200 hours of Quality Management training for their top management in 10-20 days.
- 2.2 Identify all the **quality gaps**, especially in four key areas: Customers (through careful and professional customer surveys), *Employees* (through employees surveys, to identify the positive and negative attributes of the organizational culture), *Processes* (through specialist audits, Cost of Quality study, and Benchmarking, ie learning from the best processes, products, and services).
- 2.3 After identifying the quality gaps, classify and **prioritize** issues.
- 2.4 Establish a **TQM shadow organization** to address the key quality issues. This may be a TQM Steering Committee at a corporate level, Quality Improvement Teams to address quality issues, and Quality Circles at the workers and supervisors levels.
- 2.5 **Assign** specific TQM documented **roles** to each member of the Steering Committee. Some possible roles are: Committee Chairman (the CEO), Quality Cost (Head of Finance Dept.), HRD (GM/HRD Mgr.), ISO 9000 (Quality Assurance Manager), Recognition and Rewards (a designated manager), Customer Care (marketing), Communication and Awareness (a designated manager), Vendor Development (Purchasing Manager), and Quality Circles & Suggestion Scheme (Production manager). TQM at the corporate level should be managed and run by the Steering Committee.
- 2.6 Each member can form a **Team** by selecting appropriate team members from other departments, depending upon the circumstances.
- 2.7 Each departmental head should also carry out the departmental purpose analysis (departmental gap analysis) to **identify performance indicators** and Quality Objectives for his department (e.g. maintenance department's performance indicators may be: machine failure rate, MTBF, Availability, Maintenance Costs, Spares Costs and Inventory); and establish a departmental customer/supplier chain.
- 2.8 Create an **environment for participation**. Management must change from "do as I say" to "do what is best for the organization" through encouragement, coaching, challenging constraints, and developing people. An error-friendly environment must be established, with open and uncompromising listening.

- 2.9 **Training:** Each member should learn, gather experiences, and get guidance in *practical* aspects of their roles. The Chairman of the Steering Committee must ensure the development process of each member.
- 2.10 After brainstorming, develop a practical documented **procedure** for each role, including any formats required.
- 2.11 Each member should draft his/her procedure and present it to the Steering Committee. It should then be **reviewed and finalized**.
- 2.12 Each member should develop a **training and awareness plan** for all the people involved in the execution of his role. The problem solving capability of each person must be improved. For example, those who will form the Quality Circles need to be trained, including Circle Leaders on Quality Circles, Problem Solving Skills like Seven Basic QC Tools, Presentation Skills, etc.
3. **CONTROLS:** ensure the smooth running and execution of the project. The CEO and the Facilitator are the two most important persons to run the Steering Committee. Each member of the team is responsible for the success of his/her TQM function. In order to do that, he/she will have to carry out a number of trials in his role, e.g. in Quality Costing, Quality Circles, and Suggestion Schemes. Involvement should be progressive. Any failure at this stage is NOT a failure in the project. Adaptation requires experimentation. Very few systems work smoothly on the first trials. Some of the key steps are:
- 3.1 a monthly meeting of the TQM Steering Committee with documented presentations on the progress reports by each member.
- 3.2 Two types of Plans and Activity Charts are needed; one is the overall TQM Plan maintained by the Secretary/CEO and the other by each member of the Steering Committee covering his function.
- 3.3 CEO should visit each member at least once a month to share experiences, and to reinforce commitment.
- 3.4 Targets must be met on time. Slow persons should be pushed.
- 3.5 Involvement is progressive. Some of the successful cases in Pakistan took 2-3 years for some of the TQM functions to mature, e.g. Quality Circles. Normally a few Circles succeed in the first year and then another few in the next year. Therefore, develop patience and encourage continuously.
- 3.6 Be careful about negative comments/behavior of some managers. If they are allowed to continue with their negative responses, TQM will never gain respect. Many failures are reported just because of such people.
- 3.7 Good Quality of guidance must be available through facilitators to the members of the TQM Steering Committee. Otherwise, they will lose their interest and motivation.

- 3.8 Time delays should not become the reason to stop implementation. Continuity is required.
- 3.9 Regular encouragement to the Steering Committee is required.
- 3.10 The Plan must be modified in line with the actual performance in implementation.

INTEGRATING TQM WITH COMPANY SYSTEMS

A common problem is that organizations can not integrate TQM functions with their prevalent systems. This problem can be overcome if the integration of TQM functions are properly addressed soon after trials with other systems and are standardized promptly. Some of the examples of the required integration are as follow:

1. Cost of Quality with Financial Management
2. HRD with Functional Management
3. Customer Relationship Management with Marketing
4. Quality Policy Deployment with Corporate Management
5. Cycle Time Reduction and Process Management with Operations Management
6. Time and motion studies with Production Planning
7. Vendor Development with Purchasing
8. Quality Circles with Corrective and Prevention Action Systems
9. Reward and Recognition with HRD

Integration is a process where the TQM function is not adopted but *adapted*. This requires the TQM activity to be made to fit in the current system, rather than fitting the current system into TQM functions. For example, instead of putting the ISO9000 clauses in the Maintenance Dept., one should identify the quality management gaps in the maintenance department's procedure by virtue of which the current procedure is not showing good results.

ESSENTIAL TOOLBOX FOR TQM IMPLEMENTATION

The following are some of the key TQM Tools that will facilitate TQM Implementation. They should be included in the internal training programs:

1. QUALITY POLICY DEPLOYMENT (QPD): is used at the upper management level to develop quality policies, derive objectives, carry out departmental planning of processes and resources to achieve the objectives, cascade the objectives to lower sections, monitor the implementation plans of these objectives, take corrective actions if objectives are not met, and report performance on meeting objectives. All departmental heads must be involved in quality planning using this technique.
2. SEVEN BASIC QC TOOLS: These are now considered as indispensable elementary tools for problem solving. They are applied by everyone from the MD down to line workers and are not just for the Quality Dept. However, the minimum requirement is up to the supervisors' level. These tools are: Check

sheets, Cause and Effect Diagram, Pareto Diagram, Stratification, Scatter Diagram, Histogram, and Control Charts.

3. QUALITY FUNCTION DEPLOYMENT (QFD): is a powerful planning tool to align the company products and processes to the market needs. Customer's needs are first understood in the customer's own terms; then deployed into design requirements and subsequently through the manufacturing chain of critical part characteristics and key process requirements; and finally deployed to operational specifications. Key Marketing, Design, Production, and Quality departments staff must be familiar with this tool and need to use it in their quality planning.
4. KANO MODEL: is a special method to identify the attributes of product and service quality with respect to customer satisfaction, dis-satisfaction and delight.
5. ISO 9000 QUALITY MANAGEMENT SYSTEM: is a Quality Assurance standard with a scheme of third party certification.
6. TOTAL PRODUCTIVE MAINTENANCE (TPM): introduced in Japan, a methodology of company-wide delegating preventive maintenance and progressively involving people in taking initiatives and actions for the optimum life of equipment being used by them. The purpose is to optimize resources and increase productivity. Japanese PM Excellence Award is also given to companies on best models in TPM.
7. 5S: Basic house-keeping principles and methods for every person in the organization.
8. QUALITY AUDITING: A tool to assess the capability and state of readiness. A recent trend is to carry out regular quality audits from internal and external sources (cross-functional and third party auditor/specialists). Quality Audits are now established in four domains:
 - a. Quality System Audit (e.g. ISO 9000, QS 9000, TickIT, ISO Guide 62, etc.) to evaluate Quality Assurance programs
 - b. Product Audit to evaluate the conformance and accuracy of products
 - c. Process Audit to validate processes
 - d. Self-Audit (Self-Assessment) to review self-performance of individuals/depts.
9. QUALITY CIRCLES: Originally Japanese, but now a universally popular project oriented quality improvement program carried out as a routine side activity by supervisors and workers on volunteer basis, and facilitated by the management of the organization. This is mobilizing workers and supervisors in quality improvement initiatives.
10. QUALITY TEAMS: Somewhat different from Quality Circles; these are management and supervisors assigned teams to bring about changes and improvements in line with meeting the annual or quarterly quality targets and goals. Teams may be departmental or cross-functional, as an additional role to their functional responsibilities.

CONCLUSIONS

1. As Business is getting more complex every day, so is Management. Companies and organizations in developing countries have not been taking professional management seriously. It is not just the technology that is a contributing factor to losing businesses, but equally important is management. In the new world-order, survival of the fittest has changed its shape from the one with big muscles in military to big muscles in business and industrial development. Therefore, the future for the survival of developing countries, including Pakistan, lies in performance in business and industrialization.
2. Overall performance is hampered in these countries by issues relating to Market Forces, governmental responses to business environment, Technology, and Management. Difficulties in these areas can be removed only with professional planning, and implementation, both at the company and the country levels. TQM is a structured process for improving the overall business or the output of organizations, whether private or government institutions and ministries. However, it is not as easy and simple as it sounds. It is not like an ISO 9000 program with a narrow agenda. It is a program to motivate, develop and involve every person of the organization to act more responsibly and professionally in order to find better ways for the success of that organization.
3. The focus of TQM programs are in: (1) regularly and thoroughly measuring customer satisfaction, and developing products and processes that meet their needs and latent desires, (2) identifying, recognizing, and eliminating every type of non-valuable process and waste within every little corner of the organization, (3) conforming to, and respecting all those national product regulations of the country where the company is operating, (4) changing employees into a community where mutual progresses, benefits, and losses are equally shared, and (5) creating methods and structures where every day adds further value in the organization, i.e. making continuous improvement.
4. In order to establish TQM, the foundations of Quality Control and Quality Assurance must be set right on the correct principles. Traditionally they are misunderstood and have been set-up wrongly in many organizations. Accuracy and Precision (consistency) must be guaranteed.
5. TQM programs extend Quality Control and Quality Assurance to every department, section, and individual. In addition to accuracy and precision, it also addresses efficiency.
6. TQM programs are generally introduced through some of its tools. This is not wrong, but the best results can not be achieved through incomplete approaches. A fully organized approach and integration of all functions with other systems are required. The following different approaches are used by companies: Bureaucratic, Preaching campaigns, Education campaigns, QC Circle, Quality Guru's/Quality Award Models, ISO 9000, and Tailor Made approaches.

7. Some basic shifts are required in company policies and strategies so that TQM may function effectively. The following must be redefined: (1) Management Structure, Roles, and Accountability, (2) the Definition of Quality, (3) the Supply Chain, (4) the Management Ethics, (5) the Controls and Financial Freedoms, (6) Learning Processes and Resources, and (7) Involvement of Employees.
8. In order to start TQM, careful planning and controls are required. These can be established through the basic principles of Project Management.
9. Whatever is designed in TQM, or as a result of TQM, it should be fully integrated with the prevalent organization's systems and processes, otherwise TQM will die.
10. TQM Implementation requires the following key management tools: Quality Policy Deployment, Seven Basic QC Tools, Quality Function Deployment, Kano Model, ISO 9000, Total Productive Maintenance, 5S, Quality Auditing, Quality Circles, Kaizen Activities, and Quality Teams.

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ABOUT THE AUTHOR

Kamran Moosa is presently the Head and Senior Consultant of the Pakistan Institute of Quality Control. He did MSc in Total Quality Management from Sheffield Hallam University (UK), BSc Engineering from Wright State University (USA), and Professional Certificate in Factory Management AOTS Japan. He is a Certified Quality Management Consultant (CQMC) and Fellow of the Quality Society of Australasia, Member of American Society for Quality, and an Observer to the US Technical Advisory Group TAG/TC 176. He has many years of quality management experience in manufacturing, consulting and teaching. He was selected by the Asian Productivity Organization as a national expert in TQM for Research in Pakistan. He is an author of four books: (1) Quality Management Practices – Lessons for Improving Performance of Organizations in Developing Countries, (2) Practical Guide to ISO 9000, (3) Quality Control, (4) A Chapter in "Implementing Quality Management in Asian and Pacific Countries" by APO Japan. He is providing technical assistance in Quality Management to a large number of companies. He has contributed in many national and professional quality forums on the development of Quality.