

# 4

## DR DEMING ON LEADERSHIP

### **INTRODUCTION**

In the past century, social scientists have been searching for an 'organization excellence' equation, based on human relations. Different approaches and theories have been developed.

However, none of these approaches have proved to be universally successful in creating a new and better organization, where employees continually improve their ability to provide, on demand, products and services that customers will find of greater value. Total Quality Management is the latest, most comprehensive and most complete approach to organizational

excellence. It is a way to achieve better and longer lasting results than the other approaches that have preceded it.

Dr W Edwards Deming's theory of quality management has laid down the foundation for Total Quality Management.

Total Quality Management, like all other approaches to management has one overriding element — change — resulting in a considerable impact, not only on the organization, but also on the individual members, irrespective of their position in the organization. Change requires leadership, and much of the change is at the top of the organization.

Leadership is one of the most researched and studied topics in organizational behavior. Among social scientists who emphasize the concept of leadership, there is no close agreement on a conceptual definition or even on the theoretical significance of leadership processes. However, the recent popular trend has been to abandon the hero image of leadership.

In his book *Out of the Crisis*, Deming discusses in detail the leadership issues for transforming management style in order to alter the organization's culture. His leadership theories can be regarded as the foundation of 'Quality Leadership'.

## **CLASSICAL ORGANIZATIONAL THOUGHT**

Frederick Taylor, the father of the scientific management movement, sought ways to use people effectively in industrial organizations. Taylor focused on physical production, and the time and motion studies he is best known for tested worker's physical limits and described the fastest method for performing a given task.

Taylor held that the way to get more production from workers was to control them tightly and to break down each job into small, discrete steps, install ways to measure those elements, and micro-manage time and activities relentlessly. One basis for Taylor's approach was a belief that workers could

not be trusted to make decisions; hence they needed strict rules. Taylor's approach has been criticized for mechanizing employees and ignoring human relations; an oversimplified solution for all problems.

The experiments of Elton Mayo and his followers (1933), originally designed to investigate problems of scientific management, ended up by dramatizing the importance of the small, informal group. Even under poor working conditions, female employees in a group enjoying special status and special privileges improved their productivity, whereas male employees with their own established norms about productivity were relatively unaffected by such treatment. The increased productivity, known as the Hawthorn Effect, has been ascribed merely to giving more attention to workers.

It is generally agreed that Elton Mayo's theory of social needs is considered to be the foundation of human relations in organization theory. Most of the researchers of 'motivation theory', who followed Mayo, used his research as their basis. These researchers and their works include:

McGregor ⇒ Managerial style

Fiedler ⇒ Leadership

Mintzberg ⇒ Managerial role

Deming ⇒ Profound knowledge/ leadership

## **HUMAN ASPECTS OF ORGANIZATION THEORY**

McGregor's X-type workers are considered unmotivated and unmotivatable, in contrast to the Y-type. In very general terms, the Taylor concept assumes an X-type, while quality circles assume a Y-type. William Ouchi's Z-type worker or company develops a family-like work environment that positively motivates team members and, thus, improves the quality and productivity of products, as well as quality of work life.

A consideration of the nature of organizational functioning clearly shows the sources of demand for leadership practices and the degrees of freedom for their exercise. In his theoretical analysis and programmatic research, FE Fiedler provides the most comprehensive account of the determinants of leadership effectiveness by three contingent conditions:

- (1) Structure of the task to be performed
- (2) The power position of the leader, and
- (3) The relationship between the leader and group members

However, no single pattern of leadership is appropriate for all phases of organization's life. There is evidence, however, that the broad sharing of leadership functions contributes to organizational effectiveness under almost all circumstances.

Good leadership is essential to the long-term success of any organization. When we think of leadership, in contrast to routine-role performance, we become particularly interested in the kind of manager's behavior that go beyond the required performance, and recognize a given position's potential for organizational influence. Such influence derives from the fact that human beings, rather than computers, are in positions of authority and power.

The essence of organizational control is authority and power. Henry Mintzberg (1983) proposes a most comprehensive view of power: authority, ideology, expertise and politics. Power in organizations stems from control over resources, technical skills, or a body of knowledge.

Managers, in order to become successful leaders must be able to influence the behavior of other individuals or groups, based on the resources, skills or knowledge.

However, Mintzberg found that managerial behavior is often 'feverish', and that managers spend most of their time moving quickly from one meeting with one set of problems to another meeting with a completely different

agenda. In contrast to popular thought, general managers rarely make 'big' decisions or give orders to subordinates at meetings. Decisions made by studious managers are not based on rational consideration of the existing data, but evolve from a fluid and often confusing series of short, disjointed conversations, meetings, and memos. They often react to immediate conditions rather than plan their behavior in advance.

## **HUMAN ASPECTS OF TOTAL QUALITY**

The US Department of Defense uses the following definition of Total Quality Management: "TQM is both a philosophy and a set of guiding principles that represent the foundation of a continuously improving organization. TQM is the application of quantitative methods and human resources to improve the material and services applied to an organization, all the processes within the organization, and the degree to which the needs of the customer are met, now and in the future. TQM integrates fundamental management techniques, existing improvement efforts, and technical tools under a disciplined approach focused on continuous improvement."

Some of the basic principles of TQM are:

1. Fundamental cultural shift from quality assurance, quality control.
2. A theme of continuous improvement.
3. Customer oriented (internal and external customers).
4. Led by top management.
5. Everybody is involved for a social change.
6. Prevention, not detection of quality problems.
7. Measure the price of non-conformance.

8. Standard may be right the first time, zero-defect, zero-errors, zero-delays or zero variation.

There are three vital components of Total Quality — the technical part, the human-relations part and the strategic part. These three components together provide an approach to managing total quality, effectiveness and competitiveness. It demands commitment, discipline and an ongoing effort.

The human aspect of Total Quality points to a Total transformation of the existing management culture. The quality revolution can take root only with a brand new culture.

Inherent in this culture is a total commitment to quality and an attitude expressed by everybody's involvement in the process of continuous improvement of products and services through the use of quality tools and methods. In a TQM culture, the top managers themselves are the advocates of change. Clearly, the process of change is not an easy one to manage. It is not only the commitment and the technical change that are needed, but more importantly, there is also the need for a social change. Abandoning old habits and attitudes in favor of new ones can be an awesome task requiring a large amount of faith and commitment.

The human component of Total Quality is a direct descendant of Organizational Development (OD). Organization Development relied on the ability to diagnose the climate in which people worked and to gain insight into the organization's culture. A number of elements from OD are useful for Total Quality, including measuring the work climate, minimizing political and communication barriers to teamwork, developing management skills, introducing new changes in the design of the organization's structure, and increasing employee involvement in decision-making. The main objective is to enhance productivity of the organization and the quality of both the work performed and the end product or service.

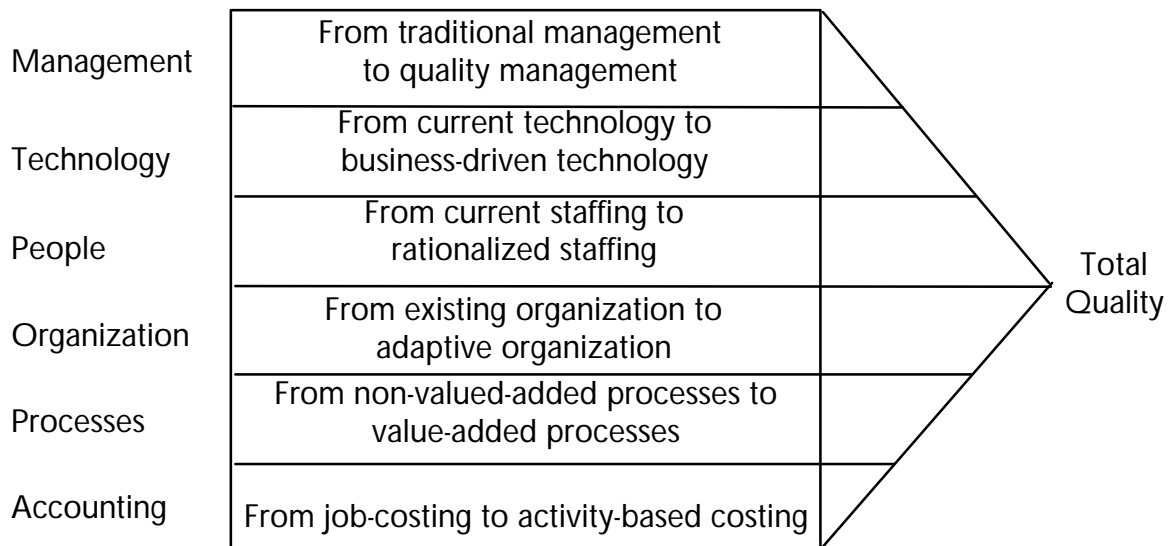
Total Quality Management, like all other approaches to management, have one main thing in common — change. What will be the changes? It will be

the 'total' changes in technology, people, organization, processes and accounting. These changes are shown in **Figure 4.1**.

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**Figure 4.1 Managing change for total quality**

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To build a Total Quality organization, at least two stages of changes are necessary.

### **Stage One**

1. decentralization
2. downsizing
3. employee teams
4. participative management
5. process management

## **Stage Two**

- Step 1 : network organizations
- intra company
  - inter company
- Step 2 : integrated logistics functions
- Step 3 : integrated management information
- customer/market
  - production
  - service
  - resources

Leadership plays an important role in empowering the whole organization towards change. It requires two levels of leadership:

1. Management Leadership
  - Culture
  - Planning
  - Communications
  - Accountability
2. Product/Process Leadership
  - Products/services
  - Processes/procedures
  - Information

- Suppliers

Management leadership is especially vital. The CEO and senior managers must challenge the status quo, break down the barriers between departments, and do long-term quality planning for the organization. Management participation and demonstration by example are the best ways of convincing the workforce that managers are serious about quality and that the same should be expected of everybody.

Product/Process participation is needed from middle managers and supervisors. They are the ones who know exactly what will be good for the company and employees. With the vision provided by top management, they should seek ways to improve the product, process system and procedure etc. They will be the ones to ensure that TQM principles are being communicated and spread adequately throughout the company in order to maintain a TQM culture and eventually achieve results.

## **THE DEMING WAY**

Dr W Edwards Deming is the first quality guru who offered direction for the transformation of the static American style of management in his <<Out of the Crisis>>, published in 1986 by the Massachusetts Institute of Technology center for Advanced Engineering Study.

He has outlined what he calls the 'Seven Deadly Diseases' and the 'Obstacles' which he says were found in most companies. These 'Seven Deadly Diseases' are, in some ways, consistent with research findings of Mintzberg: Managerial behavior is feverish and consuming. Deming's message to managers is to stop focusing on the judgment of results from processes and to start focusing on the improvement of the process that created the results. To do this, Deming suggests that the development of 'Profound Knowledge' will lead to leadership and empowerment.

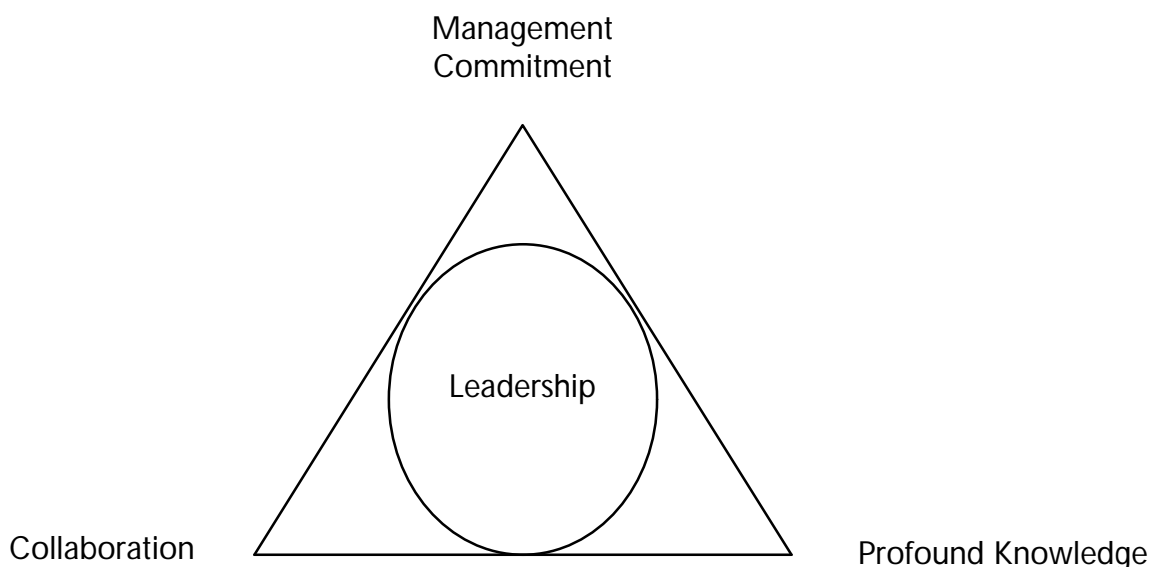
Power and responsibility are lodged at the top. Top management must institute leadership and create an environment in which everybody is a winner. Top management must give up the narcotic of ‘the illusion of being realistic’ as the guiding force behind its actions and start managing on the basis of a new theory of management; that is according to Deming, a theory based on his Fourteen Points. The importance Deming attaches to controlling and reducing variation has led him to a holistic view of leadership that casts management in a very different role from the one prevailing in American companies since the end of World War II.

Deming views the organization as a system that includes the goal of improvement of quality in every stage — from the receipt of incoming materials to the end-consumer. Improvement of quality begins with identifying the future needs of the consumer. Deming illustrates production as a system by means of a flow diagram (**Figure 4.2**).

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**Figure 4.2 Deming’s view of production as a system**

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The consumer is the most important part of the production line. Improvement of quality begins with identifying the future needs of the customer through consumer research. At the design and redesign phase, products or services are designed to better meet those needs. Processes are designed to produce the product or service and these designs and processes are constantly improved. The activities for matching products and services to a need are ongoing. All functions and activities are directed at a common purpose.

According to Deming, management's obsession with outcomes must be abandoned and replaced by process improvement activities. In order to change output, you must identify and then change the relevant input and/or events of the relevant micro-processes that influence the output. Only management can change the new work rules. Deming says that in the process of 'adjusting' a stable process try to compensate for a result that is undesirable, or for a result that is extraordinarily good, the output that follows will be worse than if [the tamperer] had left the process alone'. Deming has labeled this meddling 'tampering'. He defines 'tampering' as taking action without 'profound knowledge'. If you have profound knowledge of a process, you understand the inputs, events, and outputs and how they influence one another. Therefore, according to Deming, an understanding of variation is vital to managing change.

Deming's quality management philosophy emanates from a simple statistical observation about how processes work. All processes, he says, are subject to some level of variation that is likely to diminish quality. There are two kinds of variation, 'common' and 'special' causes. Special causes are the product of special circumstances, a temporary glitch in a system. These special causes (e.g. the malfunctioning of a single piece of machinery) can often be identified and eliminated by workers who have been properly trained to analyze the process.

Common causes, on the other hand, are causes that are inherent in the process, affecting both the process and the outcome. Because common causes

are part and parcel of the system that management has created, only management can reduce the variation and thus improve the system. It represents the greatest opportunity for long-term improvement.

The theory of variation is the basis of Deming's view of quality management. Learning to understand and manage variation, process optimization, and continuous improvement are the crucial requirements for achieving the long-term health and survival of an organization.

Historically, manufacturing and service industries have always relied on final inspection of the product or service based on a set of requirements (specifications). After the inspection, the good product is sorted out from the bad, and the latter is either reworked or scrapped. However, there are several inadequacies in this approach to improvement of quality, such as:

- Fundamental issues related to quality are not addressed until it is too late to do so; the product is already completed.
- Quality is obtained at high cost and with loss of productivity.
- A 'fire fighting' approach to problem-solving is adopted, which results in short-term solution to problems.

Improvement of quality cannot be achieved through inspection of the outcome of processes. Instead, attention must be directed toward the processes that lead to the end product or service. This change of focus from inspection of product to improvement of processes is necessary if a higher-quality product at a lower cost is to be achieved. Lower cost is achieved by reducing the amount of rework, errors and delays. In *Out of the Crisis* (1986, p3), Deming summarizes this theory with the following figure, which is known as 'quality and productivity chain reaction' (**Figure 4.3**).

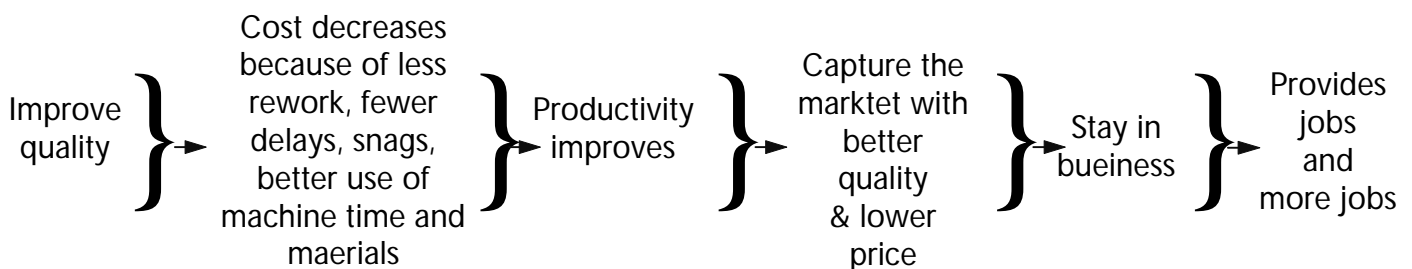
Deming has developed a philosophy of quality management that is rooted in an understanding of the power and persuasiveness of variation and how it affects the processes; and in an understanding of the interaction of people, machines and materials, as well as the environment. Deming's system,

known as the Fourteen Points (see p. 71), ties together disparate process-oriented management ideas into a single, holistic vision of how companies can anticipate and meet the desires of the customer by fostering a better understanding of the 'processes', and by involving every employee, function and supplier in the improvement effort.

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**Figure 4.3 The Deming Chain Reaction**

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The essential elements of Dr Deming's process-oriented approach can be represented by three main principles:

The Deming Triangle provides the implementation method of quality improvement. Preoccupation with quality should be top management's first priority. Knowledge of the system and the theory of optimization, knowledge of the theory of variation, and knowledge of psychology provide the basis of a system of Profound Knowledge that is necessary to learn and practice. Top management should empower cooperation and trust to establish a constancy of purpose.

"The central problem of management in all its aspects, including planning, procurement, manufacturing, research, sales, personnel, accounting, and law, is to understand better the meaning of variation," says Deming. This planned approach replaced the old philosophy of (finding something that works) and maximizes learning relative to resources expended.

Top management's leadership role is to adopt this new philosophy and empower all employees in an organization to create and sustain a distinctive competitive edge in quality performance so as to reduce cycle time and costs internally, and meet customer needs externally.

## **THE SEVEN DEADLY DISEASES**

Referring to a remark by Carolyn A Ernigh, an economist, that "deadly diseases affect most companies in the western world," Deming says that "the cure of the deadly diseases will require total reconstruction of Western Management." Deming makes a distinction between serious and not-so-serious diseases. The former he enumerates as Seven Deadly Diseases, while the latter are merely Obstacles.

The Seven Deadly Diseases are:

1. Lack of constancy of purpose to plan products and services that will have a market keep the company in business and provide jobs.

A company that is without constancy of purpose has no vision, no long-term plans for staying in business. Its management is insecure, and so are its employees.

2. Emphasis on short-term profits and short-term thinking (just the opposite from constancy of purpose), due to fear of unfriendly takeover and push from bankers and owners for dividends.

Deming rejects the model of the modern American manager, who can 'manage anything' based on a company's balance sheet. In a finance-minded company, the shareholders replace the customer as the principal focus of management, which undermines quality and productivity.

3. Evaluation of performance, merit rating or annual review.

The popular management by objective (MBO) programs and management by budget programs fall into this category. 'Such evaluations leave people bitter, despondent, dejected, some even depressed, all unfit for work for weeks after receipt of rating, unable to comprehend why they are inferior', says Deming. "It is unfair, as it ascribes to the people in a group differences that may be caused totally by the system that they work in."

4. Mobility of management; job-hopping.

Job-hopping managers never understand the companies they work for, and are never committed to long-term changes that are necessary for quality and productivity. "Mobility from one company to another creates prima donnas for quick results," says Deming. "People require time to learn to work together." Mobility of labor in America, he adds, is almost an equally serious problem. The major reason is dissatisfaction with the job.

5. Management by using only visible figures, with little or no consideration for figures that are unknown or unknowable.

Visible figures are important, of course. The most important figures are unknown and unknowable — the 'multiplier effect' of a happy customer, for example. Only in time will these results become apparent.

6. Excess medical costs.

For many companies, medical costs are their largest single expenditure. Excess medical costs may be due to various reasons. For example, workers are squeezed for more quantities of output. Besides, there is no occupational safety system in the working environment.

According to a recent survey, one of the factors that can cause mental illness is 'stress'. The reason for this is the intense

dissatisfaction in working in the contemporary corporate workplace; a corollary to this is the entrepreneurial boom. Simply put, people who enjoy their work stay healthy. Health plans, which cover preventive measures, must be selected over those that merely react to problems.

7. Excessive liability costs

The United States is the most litigious country in the world with a vast number of lawyers per capita. Short-term financial objectives dominate the business world. These activities are controlled by accountants and lawyers, and are fueled by lawyers and accountants that work on contingency fees, in a society that highly values a profession that provides little or no added value.

## **THE OBSTACLES**

1. Neglect of long-range planning and transformation.
2. The idea that problems are solved with automation, gadgets, and other 'things'.
3. Partaking of a smorgasbord approach to implementing quality improvements without basic principles.
4. The attitude that 'Our problems are different' leads to ignoring basic principles.
5. Obsolescence in schools (grade school through graduate school).
6. Reliance on quality control departments to 'take care of all our problems of quality'.
7. Blaming the work force for problems, instead of improving the system.

8. Quality by inspection.
9. False starts can result from mass teaching with little guidance in implementation. Other false starts happen when the idea to be implemented will require years of cultural change. Deming points to the example of Quality Control circles being poorly implemented in the United States due to a lack of understanding and action on the part of management.
10. The unstaffed computer. Computers can take tedium out of calculations, but not the need for interpretation.
11. Inadequate testing.
12. “Anyone that comes to try to help us must understand all about our business” is an arrogant attitude that leads to failure. Answers can be found within the organization and from outside consultants and other sources.

## **PROFOUND KNOWLEDGE**

According to Deming, a leader’s source of power is (1) formal, (2) knowledge, and (3) personality. A successful leader develops (2) and (3) and does not rely on 1.

The formal role system (e.g. president, vice-president, manager, supervisor) defines the hierarchy of authority. Authority is legitimate power, power vested in particular positions to ensure that individuals in subordinate positions meet the requirements of their respective organizational role. However, Deming objects to the role-position approach to leadership. First, the person does not have to be perfect to be a leader. Second, it does not explain how the leader can engage in non-leadership behavior and the subordinates can engage in leadership actions. Not all of the appointed leader’s actions are leadership behaviors.

Fiedler (1984) used his earlier work as a foundation and developed Cognitive Resource Theory to explain the specific processes that produce leadership effectiveness.

Cognitive resources refer to the intellectual abilities, technical competence, and job-relevant knowledge acquired through formal training or experience in the organization. Cognitive Resources Theory maintains that a leader's intellectual abilities or cognitive resources are the major source of the plans, decisions, and strategies that guide the group's actions. These plans, decisions, strategies are communicated to the group in the form of directive behavior, and acted upon if the group supports the leader's and the organization's goals.

In other words, the cognitive resources of the leader determine the quality of the plans, decisions and strategies that guide the group. While the leader's role in the key organizational processes must be qualified, his or her ability to contribute to the final outcome of the group is potentially greater than that of the other members.

Deming's point of view on the leader's source of power and Fiedler's cognitive Resources Theory, are basically identical. According to Deming, a successful leader develops 'knowledge' and 'personality', and does not rely on the power of his position.

Henry Mintzberg (1983) argues that the leader's source of power comes from (1) a resource, (2) a technical skill, (3) a body of knowledge. Resource power is usually related to formal role-system. In this aspect, both Mintzberg and Deming agree that 'knowledge' is a source of power. What kind of knowledge does a leader need to have in a total quality organization? A requirement for understanding Fourteen Points is possessing 'profound knowledge', as Deming has defined it:

Step 1 : Knowledge for study of variation. Variation there will always be, between people, output in service, and of product. What is the variation trying to tell us?

- Step 2 : Knowledge of variation helps us to understand the losses of tampering. There are two mistakes:
- Treating a fault, complaint, mistake, or accident, as if it came from a special cause when actually it came from a common cause.
  - The converse.
- Step 3 : Knowledge of procedures aimed at minimum economic loss from these two mistakes (see Shewhart control charts).
- Step 4 : Knowledge about the interaction of forces: effects of the system on the performance of people; dependence, interdependence between people, groups, division, companies, countries.
- Step 5 : Knowledge about losses from decisions of management made in the absence of knowledge of variation. Losses from demands that lie beyond the capability of the system (e.g. MBO); Losses from quotas; Losses from sub-optimization.
- Step 6 : Knowledge about the production of chaos and loss that results from successive application of random forces that may be individually unimportant. Examples are:
- Worker training worker.
  - Executives working together on policy without guidance of profound knowledge.
  - Committees and government agencies working without guidance of profound knowledge.
- Step 7 : Knowledge about losses from competition or share of market losses from barriers to trade.

Step 8 : Knowledge about the theory of extreme values.

Step 9 : Knowledge about the statistical theory of failure.

Step 10 : Theory of knowledge

- a) Any plan, however simple, requires prediction.
- b) There is no knowledge without theory.
- c) There is no knowledge without prediction.
- d) Experience teaches nothing unless studied with the aid of theory.
- e) An example teaches nothing unless studied with the aid of theory.
- f) Operational definition: communication.
- g) No number of examples establishes a theory.
- h) There is no true value of anything.
- i) There is no such thing as a fact. Any two people have different ideas about what to record about what happened.

Step 11 : Knowledge of psychology

- Intrinsic motivation (for innovation, for improvement, for joy in work, for joy in learning).
- Extrinsic motivation (humiliation, a day's pay for a day's work).
- Over-justification: reward for an act or achievement that brought happiness to the doer, for the sheer pleasure of doing it. The result of a reward is to

throttle repetition. He will never do it again.

Step 12 : People learn in different ways and at different speeds.

Step 13 : Necessity for transformation to (government, industry, education) leadership within the company; elimination of competition, ranking people, grades in school, and prizes for athletics in school.

Step 14 : Knowledge about the psychology of change.

The development of 'profound knowledge' in an organization will lead to leadership and empowerment. Therefore, we have to examine Deming's Theory of Profound Knowledge in detail. There are Seven major elements that we must consider:

- Knowledge of variation
- Ability to distinguish between special and common causes
- Knowledge of the system and the theory of optimization
- Knowledge of human psychology
- Use of theory
- 'Customer sense'
- Respect for people

## **KNOWLEDGE OF VARIATION**

Deming himself has summarized his entire philosophy in just two words: Reduce Variation. These two words are fundamental to the principle of

continuous improvement and to the achievement of consistency, reliability and uniformity. Failure to understand the fundamental concepts of variation leads to rigid specifications and quality by inspection.

## **ABILITY TO DISTINGUISH BETWEEN SPECIAL AND COMMON CAUSES**

Common causes are the many sources of variation within a process that is under statistical control. These could be uncontrollable environmental conditions, inflexibility of aged machines, variability in purchased materials, component tolerances and other non-obvious causes of variation. The resolution of common causes of variation requires action on the system; this is usually the responsibility of the management because it requires change to the process itself.

Specific causes are not present in the process all the time or do not affect everyone, but arise because of specific circumstances, such as the misreading of scales, or occasional wrong setting of the machines. These causes can be removed by someone who is directly connected with the operation.

## **KNOWLEDGE OF THE SYSTEM AND THE THEORY OF OPTIMIZATION**

Deming views the organization as a system whose goal is to improve the process at every stage. According to him, the whole company system is a series of interdependent functions that work together to achieve the aim of the organization. All efforts should be directed towards completely satisfying the final external customer — the most important part of the whole process.

According to Deming, any system that results in an 'I win-you lose' structure is less than optimal. The aim should be for everybody to gain (a 'win-win' situation) in the long run — the company, employees, customers, suppliers, shareholders, the community and the environment. Emphasis should be on

the optimization of the system rather than the sub-optimization of the subsystems.

## **KNOWLEDGE OF HUMAN PSYCHOLOGY**

When it comes to managing people, one needs some knowledge of human psychology, in order to understand people and the interactions between one person and another, and between people and the system. Work organizations that ignore the human element are bound to be less successful than those that consider it as an essential factors for dealing with employees.

## **USE OF THEORY**

There is no knowledge without theory. Deming said, “Experience without theory teaches nothing about quality and competitive position.” “Learn the theory, then improve on it”, he said. Transformation can be effected with the aid of theory, which can also teach management about the psychology of change and the difficulties associated with it.

## **SENSE OF CUSTOMER**

The final goal of quality improvement is to meet the external customer’s requirements. However, an organization as a system can be viewed as a linkage of processes run by a series of internal suppliers. The output of this network is the product or service to an external customer.

The internal customer may be the next person ‘down the line’, and not the next person ‘up the line’. In the traditional organization, the sense of customer follows the chain of command in reverse. Every employee works for his boss, resulting in work that satisfies the boss in achieving his targets, goals, specifications and quotas, but does not necessarily satisfy the customer or end-user. In a quality organization, the sense of customer must be inverted. Each employee will try to satisfy her/his internal customer without

respect to departments or organizational hierarchies. Processes and output will be optimized and waste and rework are reduced, breaking down barriers between departments and employees.

## **RESPECT FOR PEOPLE**

Two of Deming's 14 Points deal directly with this issue. 'Drive out fear' (Point 8) and 'remove barriers that rob employees of their pride of work' (Point 12) are principles of fundamental respect for people. In fact, Deming rightly points out that workers do not need motivation, because they are naturally motivated and want to do a good job. When employees do not do their jobs, it is usually because of built-in barriers or demotivators in the system. Employees must be given the power and authority to do it right for themselves. However, the fundamental principle is respect for people.

## **THE DEMING FOURTEEN POINTS**

Deming's philosophy is prone to put quality in human terms. Quality of products and services is created by the people for the people. Quality is a human bond and a contract that can make a harmonious and mutually beneficial business relationship. Effective motivation of individuals is needed to keep this human bond strong and vibrant.

'Organization for quality' means two things: First, the consideration of quality goals and responsibilities for the entire company, and secondly, setting up of sub units of the organization to be in charge of process improvement. Deming's message to managers, if internalized, will enable them to pursue the never-ending improvement of a process through the acquisition of process knowledge in an environment created by living his Fourteen Points. Following is Deming's fourteen-point program of quality management:

1. Create constancy of purpose for improvement of product and

- service.
2. Adopt a new philosophy.
  3. Cease dependence on mass inspection.
  4. End the practice of awarding business on price tag alone.
  5. Improve constantly and forever the system of production and service.
  6. Institute training on the job.
  7. Institute leadership.
  8. Drive out fear.
  9. Break down barriers between departments.
  10. Eliminate slogans, exhortations and targets for the work force.
  11. Eliminate numerical quotas.
  12. Remove barriers that deny workers the right to pride of workmanship.
  13. Institute a vigorous program of education and self-improvement.
  14. Put everybody in the company to work to accomplish the transformation.

According to Deming's Fourteen Points, top management has to provide leadership and acknowledgment, stop focusing on the judgment of results from processes, and start focusing on the improvement of the processes that created the results. It was Deming's belief that people can be taught the diagnostic skills and behavior that help a group accomplish its task and maintain effective relationships among its members.

The Distributed Actions Theory of Leadership is one of the most concrete and direct approaches to Deming's philosophy. A skilled member or leader, therefore, has to have diagnostic skills in order to be aware that a given function is needed in the group, and he or she must be sufficiently adaptable to provide the diverse types of behavior needed for different conditions.

## **A. VISION**

Management has two sets of problems: those of today and those of tomorrow. Deming said that no company without a plan for the future will stay in business.

Establishing constancy of purpose means (1) innovation, (2) research and education, (3) continuous improvement of product and service, (4) maintenance of equipment, furniture and fixtures, and new aids to production.

Innovation does not merely mean the introduction of a new product or service; it also implies an unshakable commitment to quality and productivity. To bring about innovation, there must also be faith in the future. A company that prepares for the future, must invest in research and education today.

Great gains can be made through a continuous process of improvement in the design and performance of existing products and services. Deming said, "It is a mistake to suppose that efficient production of product and service can, with certainty, keep an organization solvent and ahead of competition. It is possible and, in fact, fairly easy for an organization to go downhill and out of business making the wrong product or offering the wrong type of service, even though everyone in the organization performs with devotion, employing statistical methods and every other aid and that can boost efficiency."

The Deming Fourteen Points and management focus are classified below.

Title	Start focusing on improvement of the process	Stop focusing on judgment of results
Vision	1. Create constancy of purpose.  14. Put everybody to work to accomplish the transformation.	
Style	7. Institute leadership.	11. Eliminate numerical goals or quotas.  12. Remove barriers to pride of workmanship.
Practice	2. Adopt a new philosophy.	9. Break down barriers between departments.  4. End the practice of awarding business on the basis of price alone.
Staff	6. Institute training on the job.  13. Institute a vigorous program of education and self-improvement.	
System	5. Improve constantly and forever the system of production and service.	3. Cease dependence on inspection to achieve quality.  10. Eliminate slogans and exhortations.

Improvement can be made of the system of a company, as well as of the equipment and fixtures. Clearly, a company cannot improve a product with equipment that malfunctions, or introduce a new one using outdated machinery.

Management has to empower employees to improve quality continuously. Deming stressed that “it is not just constancy of purpose, but consistency as well.” Top management must explain to a critical mass of people in the company why change is necessary and that changes will involve everybody.

“Every activity is a process and can be improved. Everyone belongs to a team, to work in the Shewhart Cycle, to address one or more specific issues, for example: constancy of purpose; constant improvement of product and service; design for future product and service; purchase of materials; marketing; removal of annual ratings; removal of barriers to pride of workmanship on the factory floor,” said Deming. Use of the Shewhart Cycle, he said, will lead to ‘continual improvement of methods and procedures’.

The Shewhart Cycle is the improvement cycle recommended by Deming, and is also called the Deming Cycle. Some refer to it as the ‘PDCA Cycle’, for ‘Plan, Do, Check, Act’.

Step 1 :     **Plan.** The first step is to study a process, to decide what change might improve it. A set of specific questions to be answered by the data will be necessary input to the plan. The team should predict the answer to these questions using the current knowledge. For example, what data is necessary? Does the data already exist, or is it necessary to carry out a change and observe it? Are tests necessary? Is training needed?

Some objectives of a cycle are to:

- Conduct a survey to understand customer needs.
- Do a Pareto analysis to set priorities.
- Development control charts to study the stability of the process.
- Develop standards or standardized procedures for

the process.

- Conduct an experiment to study the cause-and-effect relationships in the process.
- Conduct a test to evaluate changes to a product or process.

Step 2 : **Do.** The second step begins by carrying out the plan developed in the first step. Observations made in carrying out the plan should be documented. Evaluate the data for changes over time.

Step 3 : **Check.** Observe the effects. Compare the results of the analysis of the data with predictions made from current knowledge. Summarize the new knowledge gained from this cycle.

Step 4 : **Act.** Based on the results of step 3, the team decides whether or not to make a change to the process. Questions to consider include:

- Is the cause system sufficiently understood?
- Has the appropriate action or change been developed or selected?
- Have the changes been tested on a small scale?
- Will the actions or change improve performance?

## **B. STYLE**

A good leadership style is a natural corollary of management without fear. Leadership, by Deming's definition, involves transforming the roles of both the manager and the production supervisor — from the role of a cop to that of

a coach. It is the responsibility of management to discover the barriers that prevent workers from taking pride in what they do.

Through quality leadership, the workers know exactly what these barriers are: an emphasis on numbers, not quality; turning out the product quickly rather than properly; a deaf ear to their suggestions; too much time and efforts spent on rework; poor tools; problems with incoming materials.

The job of the leader is to lead, to help people do their jobs better. "The aim of leadership should be to help people, machines and gadgets to do a better job," said Deming.

Many employees are afraid to ask questions or to take a position, even when they do not understand what their job is or what is right or wrong. They continue to do things the wrong way, or not do them at all. The job of a supervisor is not to tell the people what to do, nor to punish them, but to lead. Leading consists of helping people do a better job.

People are eager to do a good job and distressed when they cannot. Too often, misguided supervisors, faulty equipment and defective materials stand in the way of good performance. These barriers must be removed.

Quotas take into account only numbers, not quality or methods. They are usually a guarantee of inefficiency and high cost. Top management has to change this kind of management practice and impose quality objectives, instead of quantity objectives.

### **C. PRACTICE**

Quality management must become the new philosophy. We can no longer afford to live with mistakes, defects, poor workmanship, bad materials, handling damage, fearful and untrained workers. We need a new religion in which mistakes and negativism are unacceptable. Defects are costly, and quality is free.

Often, a company's departments or units are competing with each other or have conflicting goals. They do not work as a team so that they can solve or foresee problems. Deming says:

“Is it management's job to help staff areas work together? To promote teamwork? Sounds great, but it can't be done under the present system. In spite of the system, you will find teamwork. But when it comes to a show down under the present system and someone has to make a decision — his own rating or the company's — he will decide for himself. Can you blame him? People work in the system. Management creates the system.”

Purchasing departments often operate on orders to seek the lowest-price vendor. Frequently, this leads to supplies of low quality. Dr Deming said, “Two or more suppliers for the same item will multiply the evils that are necessary inherent and bad enough with any one supplier”. Price has no meaning without a measure of quality being purchased. A buyer will serve the company best by developing a long-term relationship of loyalty and trust with a single supplier.

To “*adopt the new philosophy*,” Deming said:

“Point two really means in my mind a transformation of management. Structures have been put in place in management that will have to be dismantled. They have not been suitable for two decades. They never were right, but in an expanding market you couldn't lose. The weaknesses showed up when competition came in. We will have to undergo total demolition of the American style of management, which unfortunately has spread to just about the whole western world. In fact, one problem is that American companies have forced it onto their Canadian subsidiaries and subsidiaries in other countries, thus injecting the disease the world over. This is a pity.”

“Competition introduced a squeeze. Management offered all kinds of excuses. There was every kind of thing in this world, except the awful truth that Americans were beaten. Where they have been beaten is in the management. It has been focusing on results.”

## **D. STAFF**

Too often, workers have learned their job from other workers who have never been trained properly. They are forced to follow unintelligent instructions. They cannot do their jobs well because no one tells them how to do so.

Education and training must fit people into their jobs and responsibilities. Both management and the workforce will have to be educated in the new methods, including teamwork and process improvement. When new equipment or processes are introduced, there must be retraining as well.

Controlling a process requires a detailed understanding of the system in question and how variation can affect it. Therefore, it is necessary to train the staff to recognize when a system is in control or drifting out of control.

In addition, workers and managers need to be trained to identify problems and improvement opportunities. Learning is also enhanced by the method of planned experimentation to increase knowledge for improvement of quality.

### **Deming asks:**

*“How do you help people to improve? What do you mean by improve? If you ask me, I would say that I find a general fear of education.”*

*“People are afraid to take a course. It might not be the right one. My advice is take it. Find the right one later. And how do you know it is the wrong one? Study, learn, improve. Many companies spend a lot for helping their people in this and that way. In arithmetic, geology, geography, learning about gears. You never know what could be used, what could be needed. He that thinks he has to be practical is not going to be here over long. Who knows what is practical?”*

*“Help people to improve. I mean everybody.”*

## **E. SYSTEM**

Deming viewed the organization as a system that includes the goal of improvement of quality in every stage. Everyone and every department in the company must subscribe to constant improvement. Management is obligated to continually look for ways to reduce waste and improve quality. Production workers on their own can achieve very little.

Having been perfected in Japan, 'Just-in-Time' production is enjoying a surge of popularity in the US. In this system, supplies arrive as they are needed, so that money and storage are not tied up in inventory. With regard to Just-in-Time, Deming made two points. In the first place, he said, this practice is "sheer nonsense unless the process is stable. Unless it is stable, nobody knows who is going to need what or when he'll need it." What Deming means is stability in statistical control.

Next, he observes, "Many American manufacturers are trying to start just-in-time, unaware that this process is years off. Just-in-time is forced downstream. It's a natural occurrence. It is the end result of getting things right in the first place."

The system of production and service must be built on an approach to process analysis and improvement, and ultimately to the establishment and execution of strategic plans. The system of production and service should not be built upon final inspection. "Inspection with the aim of finding the bad ones and throwing them out is too late, ineffective, costly," said Deming.

Deming called attention to the absurdity of 'meeting specifications', the common American practice for establishing production criteria. This practice implies that anything inside the specifications may be all right, while something just outside is all wrong. It was, he said, "Dr G Taguchi, who won the Deming Prize in 1960 who saw the absurdity of such suppositions and proposed an important improvement of principle." The Japanese have learned that ever decreasing variation decreases the total cost. Two products

may meet the same specifications, but be so different that one will work and another will not.

Slogans such as 'Zero defects', 'Do it right the first time' have a lofty ring. Deming said, "But how could a man make it right the first-time when the incoming material is off-gauge, off-color, or otherwise defective, or if his machine is not in good order?" In short, management fails to provide the means to the ends it requires.

Deming placed numerical goals in the same category. A goal without a method for reaching it is useless. Like slogans, numerical goals can never help anybody to do a good job, unless there is a system of prevention and continuous improvement.

Moreover, Deming added, "it is totally impossible for anybody or for any group to perform outside a stable system, below or above it. If a system is unstable, anything can happen. Management's job, as we have seen, is to try to stabilize systems. An unstable system is a bad mark against management."

## **DR DEMING ON LEADERSHIP**

### **A. Leaders versus Leadership**

The traditional concepts of leaders and leadership are intertwined with the existence of patriarchy. The belief that where there is leadership, there must be a leader has led to fruitless searching for leadership qualities, characteristics, behaviors, traits, etc. It was hoped that there would be a formula or solution for developing leaders. However, dozens of studies have pointed out that such a formula never existed.

Rather than continue the search for leaders, it might make more sense to address how leadership differs from management. Leadership is a necessary component of an effective organization, leaders may not be. In fact, employees often seem to accomplish more in the absence of assigned leaders.

Deming would attribute the latter to the fact that the leaders frequently 'tamper' with the system, thus increasing variation.

Perhaps more than anything else, leadership is about the creation of a new way of life within organizations. Leadership is inextricably connected with the process of innovation, of bringing new ideas, methods, or solution into use. Change requires leadership.

The traditional role of a manager is synonymous with what a leader does. It is assumed that a manager is also a leader. The traditional list of the responsibilities of a manager/leader usually includes:

- Planning
- Directing
- Organizing
- Controlling
- Coordinating

However, these assumptions and practices shape the processes and methods that lead to policies and practices which often defeat the purpose of increased quality and productivity.

Managers/leaders have the power to reward, to punish, and to create socially sanctioned forms of behavior according to rules and regulations. However, power is not the best means to accomplish a task. Power may be a demotivator or barrier in the organizational system. It was Deming who insisted that actions be taken to remove all barriers, which will have the effect of 'empowering' workers.

Deming said, "the role of manager should be to help people do a better job." It should change from a 'management role' to a 'leadership role'. The leadership role should include:

- Transformation
- Visiting
- Helping
- Coaching
- Facilitating
- Counseling
- Risk-taking
- Involvement

## **B. The Development of Quality Leadership**

Deming insisted on 'profound knowledge' as a necessary condition for developing leadership. His Fourteen Points lay down a system which helps managers to develop quality leadership in a total quality organization. It helps people to shed their traditional attitudes, beliefs, habits, and assumptions which 'tamper' with the system for improving quality and productivity.

The question of how to develop quality leadership in an organization is complicated by the fact that people, systems and work processes are all interrelated. People shape the systems, the systems shape the processes and the processes shape the people. Developing quality leadership in an organization will, therefore, require the CEO and senior managers to adopt transformational leadership to change the policies, procedures, system, rewards, and recognition systems, in line with Deming's Fourteen Points.

Firstly, the CEO and senior managers must institute leadership training and education that is based on Deming's theory of knowledge. This should be an ongoing training program that is open to everybody within the organization. Secondly, the CEO and senior managers must implement a system for

identifying, characterizing and improving all processes in the organization. Thirdly, different kinds of action plans should be set up through teams to improve the product and process. Finally, the CEO and senior managers must create a system that will continually empower more and more employees. This means finding new ways to give each person more authority and control over his/her own work. Respect for people is a key service factor.

### **C. Leadership and 14 Points**

Leadership is the key role for top managers. Top management can expand its organizational vision to include all members of the extended process: customers, suppliers, employees, investors, and the community at large. Top management is responsible for providing constancy of purpose. (Point 1) Constancy of purpose is generally articulated by management through a broad statement of corporate purpose.

The leadership responsibility is to create a joint vision of what the team or organization should and could be, a clear mission that all members are committed to achieving, and a set of goals that guide members' effort. Concern for improvement and innovation of products and process gives management the foresight to allocate resources to become competitive, stay in business, and provide jobs (Point 1).

Organizations are sites for an inevitable internal conflict. On one side are the forces of maintenance and continuity. On the other side are the forces of innovation and discontinuity, which seek to alter the established practices. Leaders challenge the status quo and inspire the team and organization members to recognize that they have to work to increase their expertise.

Leaders have to adopt a new philosophy (Point 2) to alter the corporate culture from a competitive environment to a co-operative environment. They must lead members toward enhanced expertise, not management for bureaucratic control. Mass inspection, essentially, is checking goods with no consideration for improving the process, or achieving higher quality. In

reality, inspection neither improves nor guarantees quality. Quality is not improved by after-the-fact inspection, after the defective items have already been produced. Deming said, “Cease dependence on inspection to achieve quality. Eliminate the need for inspection on a mass basis by building quality into the product in the first place” (Point 3).

The most important of all leadership practices is empowering employees by organizing them into co-operative teams. To be effective, a leader’s style and the organization climate are very important. Barriers exist in organizations. Team spirit, unity, and co-operation must be carefully structured to break down the barriers. Deming said, “Break down the barriers between departments. People in research, design, sales, and production must work as a team to foresee problems of production and in use that may be encountered with the product or service” (Point 9).

Having members work as part of co-operative teams fosters committed and caring relationships. Co-operative efforts result in trust, open communication, and interpersonal support, all of which are crucial ingredients for quality and productivity.

Improvement of quality and productivity is at the heart of total quality management. Deming’s suggestion to provide “Leadership On Improvement” includes:

1. Removal of barriers to right to pride of workmanship for hourly workers.
2. Reduction in number of suppliers (same as Point 4).
3. Number of parts made today by one supplier compared with the number a year ago.
4. Accomplishment of teamwork with chosen suppliers.
5. Tightening distribution of a selected number of parts or assemblies made by this division during the past year.

6. Other evidence of improvement of processes.
7. Better training of people that come into the company.
8. Educating employees.

The leadership style plays a crucial role in the organizational climate. The organizational climate is highly related to the quality and productivity. Leaders must inspire members to continue the journey by encouraging them to perform a better job.

Many organizations do not use all the potential of the workers, robbing them of their right to pride of workmanship and treating them as commodities. This loss of pride is an obstacle to achieving quality and productivity. Deming said, “Remove barriers that rob the hourly worker of his right to pride of workmanship. The responsibility of supervisors must be changed from sheer numbers to quality” (Point 12).

The alternative to using management by objectives, and management by numbers to direct subordinates is to institute leadership, as Deming said, “Eliminate management by objectives. Eliminate management by numbers, numerical goals. Substitute leadership” (Point 11).

The annual merit rating system denies people in management of their right to workmanship. Management has to change the reward-and-recognition system. Deming was strongly opposed to this kind of management style:

“Eliminate work standard (quota) on the factory floor. Substitute leadership” (Point 11).

“Remove barriers that rob people in management and in engineering of their right to pride of workmanship. This means ‘inter alia’ abolishment of annual or merit ratings and of management by objective, management by numbers” (Point 12).

“Eliminate slogans, exhortations, and targets for the workforce asking for zero defects and new levels of productivity” (Point 10).

“Drive out fear, so that everyone may work effectively for the company”  
(Point 8).

People need training in how to perform their jobs. Employees must understand operational definitions, specifications, interactions between process and product quality characteristics, and the extended process. Further, benefits of proper training are security, pride, decrease in stress, and higher morale. These improve the organizational climate and promote better working relationships.

In order to lead the employees to make a commitment to transform the organization, top management (leader) has to begin by creating a mass of people in the organization who understand the philosophy and want to change the corporate culture. It is also a part of training and education. Two of Deming’s Fourteen Points, mention training and education.

*“Institute training on the job”* (Point 6).

*“Institute a vigorous program of education and self-development”* (Point 13).

Deming said, “Put everybody in the company to work to accomplish the transformation.” However, transformation needs to be lead by the top management. Top management must have a kind of ‘transformation leadership’. Change requires leadership. As Deming put it, “The aim of leadership should be to help people and machines and gadgets to do a better job. Leadership of management is in need of overhaul, as well as leadership of production workers.” (Point 7)

## **D. Attributes of a Quality Leader**

Some of Deming’s attributes of a leader that are needed to manage the change in a total quality process are:

1. A leader understands how the work of his group fits the aims of the company. The purpose of this group is to support these aims.
2. He works in co-operation with preceding stages and with following stages toward optimization of the efforts of all stages. He sees his group as a link in a system.
3. He tries to create, for everybody, interest and challenge and joy in work. He tries to optimize the education, skills, and abilities of everyone, and helps everyone to improve. Improvement and innovations are his aim.
4. He is coach and counsel, not a judge.
5. His source of power is (1) formal, (2) knowledge, and (3) personality. A successful leader develops 2 and does not rely on 1. He has nevertheless an obligation to use number 1, as this source of power enables him to change the system — equipment, material, methods — to bring improvement, such as to reduce variation in output.
6. He uses plots of points and statistical calculation with knowledge of variation to try to understand the performance of himself and of his people. One aim is to try to learn how he himself can improve his leadership. Another aim is to learn who, if anybody, is outside the system. Simple rearrangement of the work might be the answer. Transfer to another job may require prudence and tact, as the worker to be transferred may interpret this as one way to get rid of him or her.
7. He creates trust, he creates freedom and innovation. He is aware that creation of trust requires that he take a risk.
8. He does not expect perfection.
9. He listens and learns without passing judgment on whom he

listens to.

10. He understands the benefits of internal co-operation and the losses from internal competition.

Based on Deming's philosophy, we may attempt to make a comparison between traditional organization and a Deming organization .

## **IMPLEMENTATION GUIDELINES**

Deming has provided management with 14 basic principles for achieving quality. However, the implementation process is not clear in his approach.

It is suggested that we should first create an awareness of the harm caused by the Seven Deadly Diseases and the Obstacles in an organization, and let the employees appreciate the urgent need to cure them.

Deming's Fourteen Points are a long-term direction and aim, not a set of rules. Therefore, without a proper understanding of the Deming philosophy, one can harm the process of implementation and make some of the points look less credible. For example, to follow Point 3 and cease inspection suddenly would be disastrous. One first needs to improve the upstream systems and processes (Point 5), using better incoming materials (Point 4) and some quality tools and methods which must be learned (Points 6 and 13). Deming does not advocate the immediate abolition of performance inspection before the necessary groundwork is completed for introducing the transformation.

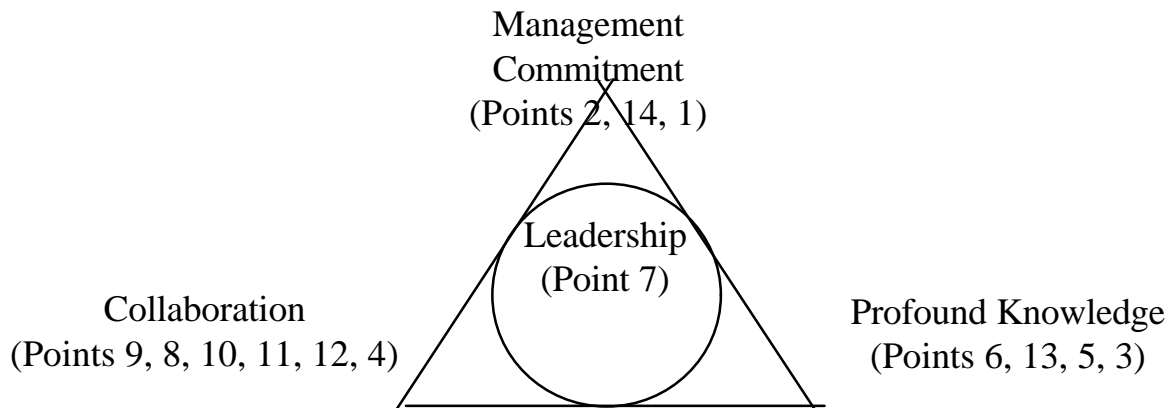
Practitioners should understand clearly the level of corporate cultural change before they start to implement Deming's Fourteen Points.

To implement them, it would be helpful to keep in mind the Deming Triangle (**Figure 4.4**).

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**Figure 4.4 Deming Triangle**

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Deming's Fourteen Points are divided into three separate groups in the Deming Triangle, where leadership is the driver for the transformation.

### **A. Management Commitment**

The main responsibility for guiding the transformation lies with the senior managers. They are responsible for more than 80% of the quality problems (Deming later revised this to 96%).

For adopting the new philosophy (Point 2), a cultural transformation is needed, which involves everybody within the company. The top management must take action to accomplish this transformation (Point 14), and it is responsible for achieving competitiveness, for staying in business and for providing jobs. However, all these can be achieved only by being continuously obsessed with quality, and through the creation of a constancy of purpose for innovation and never-ending improvement of production and service (Point 1).

### **B. Profound Knowledge**

Management must understand and fully appreciate the concept of variation and its negative consequences, and also the ways to tackle it. Statistical

thinking is an essential part of 'profound knowledge'. There are four ingredients of profound knowledge:

- Knowledge of (or appreciation of) the system and the theory of optimization.
- Some knowledge of statistical theory (or the theory of variation).
- Some theory of knowledge about change.
- Some knowledge of psychology.

Institute training (Point 6) and subsequent retraining and education (Point 13) in 'profound knowledge' as the best investment for the future. Only 'profound knowledge' can guarantee, at all times, the necessary ongoing improvement in the system of production and service (Point 5). Only through 'profound knowledge' can one build quality into a process at the earliest stage, thus preventing subsequent errors, minimizing costs and eliminating the need for mass inspection (Point 3).

### **C. Collaboration**

Quality improvement requires collaborative relationships between external customers, employees (internal customers), suppliers and all functions. It is a series of interdependent activities that work towards achievement of the aims of the organization.

Improve internal relationships and encourage team spirit by breaking down the barriers between the departments (Point 9) and eliminating numerical quotas and management by objectives (Point 11). Remove barriers to the workers' right to pride of workmanship (point 12). The effort should be directed towards improving the relationship with people rather than controlling them through a system of merit ratings. Improve the external relationship with suppliers and subcontractors, and end the practice of awarding business on the price tag alone (Point 4).

## **D. Leadership**

The central problem of management is to drive everybody to reduce common causes of variation. Senior managers must show leadership in changing the organizational character into a quality culture. Middle managers and supervisors must show leadership in quality improvement in processes and products. Institute leadership (Point 7) is the critical success factor for the whole approach.

## **DEMING'S ACTION PLAN**

Deming recommended an action plan comprising seven steps for quality improvement.

- Step 1 : Top management will struggle over the Fourteen Points, the Deadly Disease and the Obstacles; then it will agree on their meaning, their implications and the direction to take.
- Step 2 : Top management will adopt a new philosophy, new responsibilities, and a determination to break with the traditional management style.
- Step 3 : Through Common Vision Workshops and other means of communication, top management explains to the rest of the company employees why a change in everybody's current practices is necessary. The Fourteen Points, the Deadly Diseases and the Obstacles will have to be understood and appreciated by everybody.
- Step 4 : The customer-supplier relationship is addressed. Every activity is seen as a stage in a process. Every stage is the customer of the previous stage and the supplier of the next one. This implies that continual improvement will be taking place at every stage so that its customer is always satisfied. All stages will be working together towards the

quality that the ultimate, external customer will boast about.

Step 5 : The process is set up for the construction of an organization to guide continual quality improvement. The Showhant Cycle (Plan-Do-Check-act Cycle) is recommended as a helpful procedure to follow for improvement of any stage.

Step 6 : Everybody takes part in a team effort with the aim of improving the input and output of any stage. Every team member should contribute ideas and plans, irrespective of whether or not these ideas will lead (the team) anywhere. What is important is the effort and not the result.

Step 7 : With the participation of knowledgeable statisticians, embark on the construction of an organization for quality. The serious implementation of the Fourteen Points will ensure the establishment and permanence of a real quality ethos.

The Deming's Action Plan can be illustrated by **Figure 4.5**.

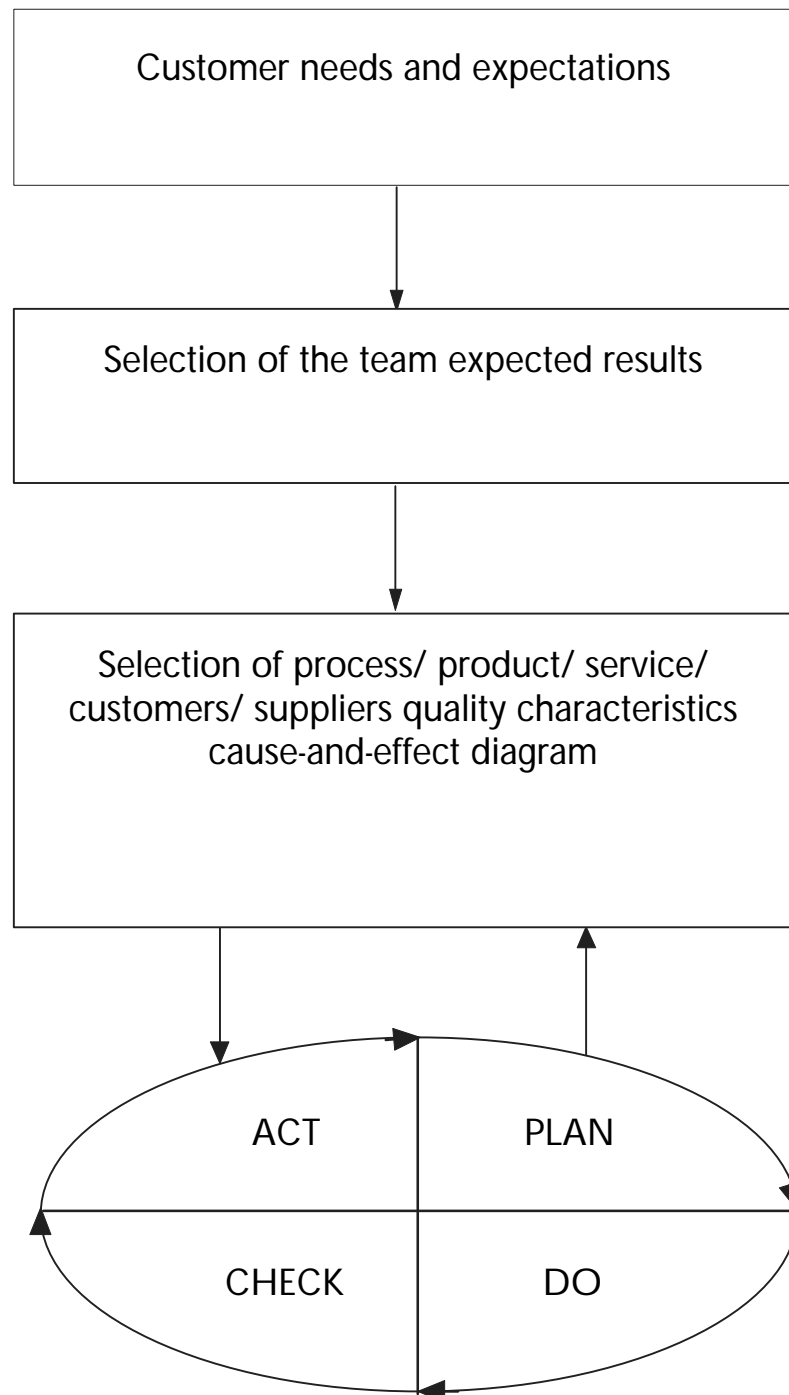
We can arrange Deming's 14 principles into a set of functional quality goals. Each functional organization in the company is required to set specific measurable objectives under each principle, and is held accountable for planning, executing and measuring the progress of each objective. The functional goals are as follows:

- A) General goals for management
- B) Goals for production
- C) Training goals
- D) Goals for the work force

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**Figure 4.5 Model for improving quality**

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**A. General goals for management**

Goals	Action Plan
1. Achieve consistency and continuity.	1. Set the quality vision mission and policy.
2. Eliminate fear and encourage communication.	2. Install an employee suggestion scheme.
3. Encourage teamwork.	3. Form cross-functional teams, project teams and quality circles.
4. Define management's commitment.	4. Form a quality to quality council. Set up quality objectives.
5. Remove barriers to worker's right to pride of workmanship.	5. Create employee recognition programs.
6. Create quality management structure.	6. Rationalize organizational structure.

**B. Goals for production**

Goals	Action Plan
1. Cease dependence on mass inspection.	1. Plan an SPC implementation policy.
2. End the practice of awarding business on price tag alone.	2. Set up supplier partnerships.
3. Refuse to allow commonly accepted levels of mistakes, defects, delays and errors.	3. Introduce detection and prevention procedures.

### C. Training goals

Goals	Action Plan
1. Train and update the workforce in all aspects of production processes or services.	1. Provide adequate training courses on the job.
2. Focus management and supervisors on leadership.	2. Teach and institute leadership.
3. Achieve mass education.	3. Mount a vigorous education campaign throughout the organization on a permanent basis.

### D. Goals for the work force

Goals	Action Plan
1. Encourage self-improvement of all employees.	1. Continuous staff appraisal to measure quality objectives.
2. Achieve leadership.	2. Team building.
3. Empower employees to deal with their task.	3. Change of managerial style [THEORY 'Y'], form antonymous groups.

