

# Commonwealth of Learning Executive MBA/MPA

## SCOM 4611: Quality Management

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**Commonwealth of Learning Executive MBA/MPA**  
**Quality Management**

**Block One**

**Introduction to Quality Management**

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# 1 A Tour of Block One: Introduction and Overview

*Quality is not an act. It is a habit.*  
*Aristotle*

Welcome to Quality Management! This block serves as an introduction to this course, and to motivate your interest in studying quality management (referred to as QM henceforth). To be an effective manager and leader at any level in any sort of organisation, in the private, public or mixed sectors of the economy, one must have a clear understanding of QM and its central role. In the words of a popular slogan of a major North American automobile manufacturer in the 1980s (Ford), ‘Quality is Job One!’ In completing this course, you will not become an expert in the tools and techniques of QM and Quality Control, but you will obtain a managerial perspective for, and an appreciation of, the role of QM throughout your organisation.

Quality may sound like an extremely dull topic. It is not and people who work in the quality field often experience a tremendous ‘high’ when, after countless unsuccessful efforts to try to solve a problem, everything comes together.

This block focuses on some basic concepts and definitions of quality, all put into a historical context. We will briefly discuss the history of what has been called the ‘quality revolution,’ and what is a relatively recent phenomenon. Quality will be viewed from the eye of the consumer, a perspective which you will find dominant throughout the course. We will briefly discuss some philosophical issues around quality, and introduce the Malcolm Baldrige Awards categories as a framework for defining the dimensions of quality.

## 1.1 Objectives

Upon completion of this block, you should be able to:

1. Summarize the contributions made by each of the five ‘gurus’ of the quality movement.
2. Correctly explain what is meant by quality, quality management, and why quality is important.
3. Appreciate the value of looking at quality from the philosophical point of view.
4. Define types of quality efforts.
5. Itemize the criteria used for awarding the Baldrige Awards (in the United States) and be able to rationalize the relevancy of their use (or non-use) in organisations within your own country.
6. Know the meaning of each of the quality management terms given in the block.

7. Have developed a little 'passion' for quality and the quality management discipline.

## 2 An Overview of Quality Management

### 2.1 A Brief History of the 'Quality Revolution'

This section details some of the more current events and trends in the QM movement. First, it details the move from a transcendent to a values-based approach. Then, the work of five 'gurus' is highlighted. These are:

1. Frederick Winslow Taylor
2. Walter A. Shewhart
3. W. Edwards Deming
4. Joseph M. Juran
5. And, although there are many people in Japan who made contributions, perhaps the best known in North America is Kaoru Ishikawa.

A sixth person, who had not heard of quality, who did not work in a factory, but whose theories had a tremendous impact on organisations and quality is also included – Max Weber.

Before outlining the history of the quality movement, some background information about the movement itself is helpful. Garvin (1988) discusses the evolution of quality concepts or philosophies as comprising of five stages:

- Transcendent: Quality cannot be defined, and can be recognized only when the product is used, or the service is experienced.
- Product-based: Quality can be judged by the presence or absence of particular characteristics of the product itself. If they are present, quality can be said to be present.
- Manufacturing-based: This concept states that quality exists if the product meets original specifications. A failure to meet the standards completely represents a lack of quality.
- User-based: The next stage recognised customer's wants, expectations, needs, and requirements, and that that they had to be met. Until the customer was completely satisfied, quality did not exist.
- Values-based. The current thinking is that there is a quality/cost trade-off. The concept extends beyond that,
- and includes a philosophy and a system approach to QM.

Most people in North America think of quality as a US and Japanese phenomenon that came into its own in the 1980s (somewhat earlier in Japan). But quality has always been an issue. No doubt, when man first lived in caves and hunted with wooden spears, there were those

who learned to make their spears sharper and more appropriate to their kill. When man moved into huts, quality issues were those involving protection from the elements. When igloos were built in northern climates, those who built them soon learned that some ways were better than others. Goldsmiths, blacksmiths, and other craftsmen took pride in their work and competitions and challenges were held to reward those whose products were judged as the 'best'. The harsh reality of nature and the environment has made quality a necessity.

Even today, basic ideas about quality that have been around for decades, if not centuries, continue to be used. Vegetable growers and shoppers have always sought perfect mangoes through feel, taste and smell; automobile purchasers kick tires, check out paint quality, and take cars for test drives; and computer customers like to see the computer in operation. All these latter methods are types of *inspection* to determine quality from the perspective of the consumer.

The movement in the early years of the twentieth century is attributed largely (and somewhat inaccurately) to Frederick Taylor (1856 – 1915). Taylor, a foreman and chief engineer in a steel mill, worked predominantly with immigrants who did not always understand the English language. He developed a systematic and analytical approach for improving employees' work. By selecting the best employees (the strongest, huskiest man), noting the tasks at which each was most competent, and timing that individual, Taylor was able to determine the right method and the most optimal time to complete each element of the entire task. The process, which others dubbed scientific management (and Taylor, the father of scientific management), had certain characteristics that led to the assembly line and the beginning of assembly line production and problems in quality. Among these were:

- Each task was broken into its various elements and the most appropriate movements (physical; this was manual labour) were determined for each element of the task. The task and the most appropriate times for each element were then aggregated in sequential order.
- Workers were selected on the basis of their suitability for the task (big and strong), and were trained in the sequence and methods of these movements.
- Piece-rate pay encouraged each worker to work at capacity.
- Through experimentation, Taylor was able to determine the length and spacing of appropriate rest periods and that these improved productivity.

There were both good and bad elements about Taylor's work. His work provided the impetus for Henry Ford and the assembly line. He initiated what we have come to know as piece-rate pay (or by a kinder term, pay for performance) and as such created differential pay for 'good' and 'poor' workers. The work was the forerunner of the much-abused coffee break. And, this was the first example of criteria being used for selection of employees, and the beginning of non-apprenticeship type training.

But Taylor's method also had one extremely serious drawback – it spelled the death knell for craftsmanship – and the intense competition for quality in each craft. But worse, he separated planning of the work (only managers did this) from the doing of work (those who could not

manage did this). This had three implications: First, the manager had less expertise in the work that was being done. Second, the worker had no responsibility for ensuring that the work was carried out other than in the prescribed manner. Additionally, he had no responsibility (indeed, no encouragement) for developing improved methods for doing the work. With the advent of the assembly line, Taylor's work led to the establishment of the quality department and inspectors (who together with the chief inspector made up the quality assurance department). This began the diffusion of responsibility for the work that was being done (including quality).

To blame Taylor for the ills of the assembly line and bureaucratization is unfair. It is only when mass-production expanded at incredible rates, when the extremely low wages paid to employees were more for coming to work rather than doing it in a quality manner, and when an extreme emphasis was placed on quantity of production, that quality deteriorated. To add to the problem, concern for quality was not worthy of a manager's time. It was therefore assigned to middle managers, who had little time to spend on a function in which there appeared to be little interest.

Simply stated, the assembly line proved to be an extremely efficient device for making as many products as quickly as possible, while using workers who were expendable and paid as little as possible. Quality became a problem. The answer: Inspect the final product and replace defective parts. Because quality was not built into products, as had been the case in the days of production by highly-skilled artisans, Taylorism (scientific management) – but not Taylor directly – led to many cases of poor-quality products.

On another front, Walter A. Shewhart (1891-1967), a statistician with Bell labs in the 1920s and 1930s, was working on statistical techniques to improve the quality of manufactured products. Garvin (1988) reports that Shewhart noticed that:

- It was impossible in manufacturing to make a product absolutely the same every time. Variations occurred at every part of the manufacturing process.
- These variations could be explained by applying very simple tools of statistical sampling and probability analysis.
- Upper and lower limits of variation on a process could be set. This led to the establishment of rules as to when a process should be left operating as it was or when intervention was necessary. That rule, which is still followed today, is that intervention should occur only when the limit, particularly the lower limit, has been exceeded.
- Through the development and use of control charts, Shewhart was able to make a tool available that would enable workers themselves to monitor their own work and avoid making scrap.

Shewhart's work would be used by Deming and Juran in helping the Japanese establish quality processes after the Second World War.

By World War II, quality in manufacturing was a serious issue because resources were scarce and demands were high. Society and companies could not afford the time required for extensive post-production inspection schemes, nor could they afford the costs of high rates of defective parts.

A defective part discovered just prior to shipment to a customer is very expensive. In addition to the materials wasted, the labour and machine time invested in the production of the product with the defective part, there is also the time invested in disassembling it, replacing the part with a newly minted one, and rebuilding the product – at least a double penalty in terms of cost.

Even more catastrophic is the assembled machine or appliance which is unusable or unsafe because of one small poor quality part! It is especially catastrophic if the defect is not detected until the product arrives in the hands of the final end-user.

As a consequence, the need for procedures and processes that would lead to quality products was well recognized. This gave rise to a flood of research and experimentation, beginning, as pointed out above, in the 1930s with Shewhart in the UK, and extending to the present. The initial focus was on the use of statistical techniques for deciding how many units needed to be inspected to give confidence that a final shipment would not include more than a specified low number of defective parts. Later, research focused on techniques for catching defective parts earlier in the manufacturing process, then on design specifications, and finally, on continuous improvements to manufacturing processes to reduce the occurrence of defects in the first place.

After the Second World War, Japan was faced with the task of completely rebuilding its manufacturing capacity, and on erasing a well-earned reputation for production of shoddy mass-market goods. The need to rebuild manufacturing capacity destroyed by war encouraged the Japanese to seek the best advice in the world and to design and build factories with quality built in at the design stage. The Japanese recognized early that it is economically better to design and manufacture for quality, rather than to achieve quality after the fact by inspection. This understanding was greatly aided by advisors recruited from the United States; key among them were W. Edwards Deming (1900 – 1993) and J. M. Juran (b. 1904), who found Japan a fertile place to apply all they had learned during the war and shortly thereafter, in the United States (ideas to which no one in their home country would listen). They had willing audiences at the highest levels of Japanese leadership who saw and seized the opportunity to rebuild their industry on modern quality principles.

The decades after the war saw Japan achieve international acclaim for the highest quality in manufactured consumer goods. A natural progression saw the Japanese incorporate quality concepts into the design and pre-production phases of the product life cycle, and inevitably, their way of life and decision making into the management of organisations. By the 1980s, Japan was acknowledged as the worldwide quality leader and the possessor of an economic system that had switched the basis for competition from the old emphasis on productivity to a new emphasis on quality.

Many Japanese worked together to improve quality and the methods used. One person whose name is very familiar to North American quality enthusiasts is Kaoru Ishikawa (1915 - 1989). All North American students in Quality Methods classes have heard of the Ishikawa's cause-and-effect diagram and have read (or at least will report to have read!) the English translations of the two productivity bibles – *Guide to Quality Control* (1968) and *What's Total Quality Control? The Japanese Way* (1985).

Max Weber (1864 – 1920), a German sociologist, was not connected to quality; in fact, he had probably never heard the word *quality*. His ideas, however, seriously affected how organisations, all over Europe and North America, were structured to meet the quality imperative. To understand the importance of what Weber (pronounced Vay-ber) advocated, it is important to understand the conditions that existed within organisations at the time. A large number of uneducated and industrially inexperienced rural people flooded into the emerging cities and were hired in the ‘factories’ and public institutions of the time. There was no structure, no documentation, no rules nor procedures. Nepotism was rampant, and jobholders came and went at the pleasure of superiors. Weber looked at two very efficient institutions – the Austro-Prussian army and the Roman Catholic Church, and modelled his ideal organisation on the philosophy and structure of these.

Weber proposed an ideal organisation – the bureaucracy – to solve the problems that were being experienced. This ideal organisation should have the following characteristics:

- Work exists to accomplish organisational goals and should be divided into small specialized tasks and a specific jobholder should be held responsible for each job.
- To ensure uniformity and ease of coordination, each task should be performed according to a ‘consistent system of abstract rules.’ These should be documented.
- Each member of the organisation should be accountable to his superior for his and his subordinates' actions. Superiors should be promoted to their positions because of superior knowledge. The use of authority is top-down.
- Every member of the organisation should conduct business in an impersonal, formalistic manner. The maintenance of a social distance is important to the superior/subordinate relationship. Personality should not interfere with the efficient accomplishment of the goals of the organisation. Above all, there should be no favouritism due to personal friendship or relationships. All processes should be documented.
- Employment in this ideal type of organisation should be based on technical qualifications. Promotion should be based on seniority and achievement and no employee should be dismissed other than for just reasons. Employment within an organisation constitutes a life-long career.

Weber's influence was strongly felt, and continues to be strong, throughout Europe, particularly Germany. Although senior managers did not realize this, the structure that he proposed, and they adopted, was perfect for assembly lines and quality assurance departments that were comprised of chief and lower-level inspectors. His influence is also felt in the standardization requirements required by the International Standards Organisation (ISO).

Problems occurred within the ideal organisation, of course. While the structure may have been ideal, employees are not. Structures, once entrenched within organisations, particularly if there is a philosophical basis for them, are difficult to change after their usefulness has been outlived. It is this bureaucratic structure (too frequently called ‘red tape’) that is keeping many organisations from accepting quality as the operating imperative.

## 2.2 What is Quality and Quality Management?

The terminology that describes quality is extensive and at times, confusing: statistical process control, total quality control, total quality management, just-in-time, quality functional deployment. If quality and quality management are to be studied, it might be wise to define the two words. Defining them might be a problem; it appears that there are as many models as there are experts and end-users. Or is there?

### 2.2.1 Quality is in the Eyes of the Consumer

So what is quality? Perhaps the best definition might be given by those who see its need. Outside the house of one of the authors of this course are five young lads in their early teens who, intermixed with colourful vocabulary, are having difficulty fixing a bicycle. It would seem that this would be an ideal group to ask about the meaning of quality. When questioned, all agreed that quality was important. When asked to talk about what quality meant to each of them, the responses were:

- I don't want my bike to break down
- I want to be able to get good parts for cheap when it breaks down
- I want it to look 'spiffy' (other guys to notice me)
- I want to be able to fix it quick-like if it breaks down
- I want to beat the other guys when we race
- My mother wants it to be safe – to have good brakes and lights when I'm out at night

This list is not too different from that prepared by Garvin (1987) who argued that there were eight dimensions of quality, that is: A product must do/have/be:

<b>Performance:</b>	What a customer expects it to do
<b>Features:</b>	Desirable characteristics (good race bike)
<b>Reliability:</b>	Not malfunction or break down
<b>Conformance:</b>	Meet specified standards
<b>Durability:</b>	Last, preferable until the customer has no further use for it
<b>Serviceability:</b>	Easy and cheap to repair
<b>Aesthetics:</b>	Look good (be credible and/or attract attention)
<b>Perceived quality:</b>	Value in the 'eye of the beholder'

But quality is more than this. It is delivery performance, time-to-market, responsiveness to changes in the environment and the marketplace, and most of all – at the lowest cost possible.

Undoubtedly, the most important element of the quality process is the consumer. If customers do not purchase the product, the reason for an organisation's existence is eliminated.

However, meeting customer expectations is a very messy business. A given product or service has many customers, each with potentially different uses of the product and definitions of quality. This potential for ambiguity has led to a search for 'objective'

definitions of quality, particular regarding what the consumer demands and how these expectations might be determined and measured. Throughout this discussion, we should keep in mind that the concepts relating to customers apply equally to internal customers as they do to the final consumers of goods or services. Except for the final delivery section, each department within an organisation, at each step in a production or service process, is both a consumer and a supplier to other parts of the organisation.

### **2.2.2 Fitness-to-Standard (conformance) and Fitness-to-Use**

One measure of customer acceptance is fitness-to-standard and/or fitness-to-use. When Deming went to Japan in the 1950s, the prevailing definition of quality was *fitness-to-standard*, where statistical quality control measures were applied throughout the production cycle, from purchasing to shipping, to ensure that stated standards were met. The quality of the raw materials was measured against defined specifications – for example, the aluminium sheet for use in the body of a stove should be of a certain thickness, and incoming aluminium sheets would be rejected and returned to the supplier if they were outside the thickness tolerances. Similarly, the temperature variation in the oven under normal operating conditions was defined as a standard, and ovens that failed the test were rejected and scrapped or reworked. Yet another example might relate to the standard requirement that a customer telephoning the complaints line of an airline company must have her call answered by the third ring, and must not be put ‘on hold’ for more than 7 minutes before talking with a customer service representative.

This sort of objective assessment of the quality of goods or services is largely focussed on the views of the provider or manufacturer of those goods or services. Of course, the provider has established the standards because he feels that they will yield a product or service which meets the needs of the final consumer. However, there may also have been an element of ‘I know what is good for you’ in this approach.

The more modern approach is to define quality in terms of *fitness-to-use*, where the ultimate user of the product or service determines the requirements. This approach extends the production cycle, so it now begins well before the purchase of raw materials and proceeds all the way through the use and final disposal of the good. The first step is the identification of a consumer need (often expressed not in terms of a product, but rather in terms of a function). This continues all the way through final disposal or consumption of the good or service.

An initial consumer need might be expressed as ‘need a way to have clean carpets in my home,’ rather than ‘I need a better vacuum cleaner.’ This approach can lead to a plethora of goods or services, each of which can be evaluated against the consumer's need. Thus, quality can be measured in terms of how clean the carpets are. In the carpet case, the range of solutions might include better vacuum cleaners, spray-on treatments to protect carpets from dirt and mites, carpet cleaning services, and new carpet materials which shed stains readily.

The customer's requirement might be of a more internal than overt nature: To an airline complaints line, for example, that unstated need might be, ‘I need to be satisfied that my complaint was heard and taken seriously.’ If recognized for what it is, the range of service solutions, using the fitness-to-use approach might include an automated call back system by a call centre, a personal letter from the Vice-President for Customer Relations, or an email

message describing how her complaint was dealt with. More about satisfying customer expectations is given in Block Three.

### **2.2.3 Assessing Customer Expectations and Satisfaction**

If one accepts the definition of fitness-to-use, then it is very important to have reliable and effective ways of determining the needs of customers and of assessing the degree to which those needs are being met by the products and services. Customer surveys, focus groups, consumer panels, post-purchase questionnaires and telephone calls are discussed in Block Three. At this point it is sufficient to understand that putting the customer's needs at the core of the process imposes onerous responsibilities on each part of the organisation.

### **2.2.4 Why is Quality Important?**

Quality has become extremely important because customers expect quality, because organisations function in an extremely competitive global environment. To survive they need to have not only competitive advantages, but distinctive competencies – and quality can be that distinctive competency. Quality is also important because costs are lowered when work is done right the first time; there is no rework and no correction of mistakes.

Quality is important from a personal point of view as well. In a world where most organisations are fighting to survive and prosper, employees are being asked to take on greater responsibility. Work life, as a result, is becoming increasingly stressful. None of us want the increased frustration of malfunctioning equipment or inadequate service. Quality is important because it makes each of our lives easier and because it helps us do our best for our employers, and thus helps us retain the jobs we have.

Buzzell and Gale (1987), for example, have documented many instances that show a strong relationship between excellent quality and profitability. Higher perceived quality leads to stronger customer loyalty; more repeat purchases; less vulnerability to price wars; ability to command higher relative price without affecting market share; lower marketing costs; and an improvement in share prices (relative to other companies and the economic environment).

What are the costs of lack of quality?

- Internal – rework, scrap, downgrades, inspection and re-inspection, retest, process losses
- External failures – warranty costs after the product has been sold and delivered, recalls, returns, required allowances, loss of goodwill
- Appraisal costs – When a product malfunctions, the cost of repairing it and making it functional again must be estimated. This is independent of repair cost.
- Prevention costs – When quality is not present, procedures need to be put in place to ensure this occurs. This may involve trial and experimentation.
- Personal costs – Loss of opportunity, frustration, anger, depression, and other feelings that are not only experienced, but that also may be vented on other people.

To avoid these costs, control is an important issue in quality management. In earlier days, this was of a bureaucratic (top-down) nature – rules and procedures, hierarchy of authority, inspections at the end of the line, a quality control department, and formal training in quality tools. In addition, technology was used to define the work processes (speed, work standards, type of interaction). Computers monitored what employees did with their time. The potential was, and is, available to capture every moment of an employee's life within an organisation. Even personal details! Daily productivity reports could be, and were, produced for each employee (particularly in the service industries).

There is some trend away from this bureaucratic system in North America. Whether it is possible in other countries, particularly those in the developing world, is open for discussion.

In summary, this section has answered the questions regarding the definitions of quality and quality management. But quality management is not about using tools and techniques. It is a philosophy – a way of thinking about what is done and how it is done.

### **3 Philosophy of Quality Management**

During the last two decades, a major change has occurred in the basic philosophies regarding quality management. This change basically encompasses five areas:

- a. Quality is a religion! Its advocates must live it, sleep it, and look for continually different avenues to spread its message.
- b. There is a quality imperative. If the organisation does not have quality (the aim is zero defects), nothing else matters. Furthermore, it must be embraced from the top to the bottom of the organisation. (More will be said about this in the second chapter.)
- c. The old ways of ensuring quality are no longer appropriate in the global world. The old ways included a very bureaucratic, rules-and-procedures-oriented control system. Quality was inspected in. The modern way depends on quality being built in and every employee being his or her own quality inspector – and designer of improvements.
- d. The customer's requirements drive the efforts of the organisation. Internal customers (the group that is next in line) are just as important as external customers.
- e. Quality management is not a one-time effort. Its demands are ongoing.

More follows about each of these topics.

#### **3.0.1 The Religion**

Managers want employees to 'get religion,' that is, to become committed to the organisation and to quality. Their managers, in turn, want the same thing from them. What does commitment mean? It means that the employee should:

- Completely internalize quality issues and problems. S/he should be personally involved (and not delegate all quality decisions), conduct audits, and lead change processes.

- Have a quality vision and communicate that vision with passion to all employees.
- Find the resources to ensure that change occurs.
- Be willing to give up short-term gains for long-term quality improvement.

More is said about this in Block Two.

### **3.0.2 The Imperative**

Cheaper, faster, better and zero-defects are today's imperative. Organisations that use programs such as Six Sigma think in terms of '3.4 defects per one million parts'. In North America, we like to think that our quality is superb and that of other manufacturing countries is lacking. This was an attitude that existed about Japanese manufactured goods – until the Japanese gained control of many of our markets (bicycles and motorcycles, electronics, video and audio equipment, for example) and, after considerable persuasion, agreed to use voluntary restraints to keep from over-shipping and overselling automobiles in Canada and the United States. Currently countries like India are gaining considerable footholds in the computer and data processing fields. The moral is that if domestic companies are not willing to provide what the customer wants at a price the customer is willing to pay, there are many organisations in both the developed and the developing world that will be glad to sell to those markets and customers instead.

### **3.0.3 The New Ways**

What does it mean to say that every employee is her own inspector? Every employee must be committed to ensuring that a product that does not measure up to all expectations does not leave her work area. New terms, such as 'collabronauts' (Kanter, 2001) describe employees who initiate and sell projects while at the same time attracting others to their ventures. The best collabronauts are good at personal networking, and are constantly on the lookout for new ways to partner for the benefit of the company. These employees work well in teams.

### **3.0.4 The Customer**

The customer may be king but there is a wants/costs trade off. Obviously, an organisation cannot produce products that last forever, or for which the costs of production are far more than what the product can be sold for.

### **3.0.5 The Implementation and Evaluation**

The current opportunities for continuous quality improvement are mind boggling. First, there is the daily improvement of very small procedures and processes that every employee, through his experience and knowledge, can develop and implement. But at a more strategic level, there is a requirement that products using new core and distinctive competencies in the area of quality be marketed. This involves trying to develop a unique product (or a hybrid of a product) that has disproportionately high customer-perceived value (e.g., exceptionally high quality), and which has a continuously extendible life.

In the name of continuous improvement, organisations are embracing flexible manufacturing systems that permit customers to design their own products (mass customization).

Information system managers follow Sun Microsystems and use instant translation software to communicate customer expectations. Others (Microsoft, for example) introduce new products that cannibalize their own very successful products before their competitors can do so. Every employee in today's global organisation needs to become a 'continuous improvement guru'.

## 4 Principles of Total Quality – An Integration

In summary, the above comments are those which several authors have proposed – sets of principles for embedding a focus on quality into the very fabric of the organisation, rather than seeing quality as something added on, or reflected only in the final inspection of manufactured goods. Deming, Juran, and Philip Crosby (author of the book *Quality is Free*, 1979) all developed sets of principles, which have much in common. A representative set reads as follows:

1. Poor quality is the responsibility of management and the system, not of the workers;
2. Build into the organisation a desire for improvement;
3. Strive for continuous improvement;
4. Seek out and solve problems;
5. Break down barriers between departments;
6. Focus on quality, not on production numbers;
7. Provide education and training;
8. Report and celebrate progress -- keep score;
9. Remove barriers to pride of workmanship;
10. Maintain momentum -- build continuous improvement into all systems and processes of the organisation.

## 5 Types of Quality Efforts

Deming identified three types of quality essential to the production of goods and services which meet the needs of customers, at an acceptable price, and having a predictable degree of uniformity and dependability. They are (1) quality of design or redesign, (2) quality of conformance, and (3) quality of performance.

*Quality of design* develops products from a customer perspective, aiming to yield products which are suited to the needs of the market, at a given cost. Needs are determined by consumer research and by analysis of feedback from salespersons (this is called sales call analysis) who are in regular contact with customers. Most decisions around redesign of goods and services are made on the basis of feedback from customers, often gathered by salespersons or by surveys of customers after purchase. Anybody who has called a financial

institution for information on a financial product in North America, such as a loan or an investment, has probably heard the recorded voice warning that ‘this call may be recorded or monitored to improve customer service.’ This is data collection for the purpose of quality redesign. Similarly, internal employee surveys on job satisfaction or stress, or the evaluation of supervisors, are all *data collection* directed at improvement in management policy (through redesign of roles and responsibilities and performance). Service call analysis is also a type of data collection for quality redesign; common problems resulting in service calls are obvious targets for re-examination of product or service features.

*Quality of conformance* refers to the ability of an organisation to produce goods or services with a predictable uniformity and dependability at a reasonable cost, and which conform with the quality characteristics determined in the quality of design studies. In other words, the goal in quality of conformance studies is to reduce the variability in products with respect to specifications.

*Quality of performance* focuses on performance of the product or service in the marketplace. It returns us full-circle to the customer! The focus is on how satisfied customers are with the performance of the good or service, in actual use. Tools used to measure quality of performance include analysis of service calls, customer satisfaction surveys, analysis of reasons why consumers do not purchase the company's goods, and maintenance and reliability studies.

These concepts will be discussed in more detail in other blocks in the course.

## **6 The Baldrige Awards**

The Malcolm Baldrige National Quality Awards, named after a Secretary of State who championed quality in industry, were established by the U.S. Congress in 1987. The Awards were a response to the perception that U.S. industry was falling behind international competitors. These awards have had a significant impact on U.S. industry and are now firmly established in much of the industrial world as standards for quality.

Organisations are evaluated on seven broad categories, each consisting of several sub-categories (or ‘items’ in the Baldrige terminology), with varying weights. The core values of the Award, expressed in its categories alongside their corresponding points in the system, are featured on the following page.

<u>Categories</u>		<u>Point Values</u>
1. Leadership		120
Organisational leadership	80	
Public responsibility and citizenship	40	
2. Strategic Planning		85
Development	40	
Deployment	45	
3. Customer and Market Focus		85
Customer and market knowledge	40	
Customer relationships and satisfaction	45	
4. Information and Analysis		90
Measurement and analysis of performance	50	
Information management	40	
5. Human Resource Focus		85
Work systems	35	
Employee education, training and development	25	
Employee well-being and satisfaction	25	
6. Process Management		85
Product and/or service processes	45	
Business processes	40	
Support processes	15	
7. Business Results		<u>450</u>
Customer-focused results	125	
Financial and market results	125	
Human resources results	80	
Organisational effectiveness results	120	
Total Points		<u>1000</u>

As you can see, the most important of the seven categories is the sum of the results of the other six categories – the outcome that is achieved. This outcome is four-fold: the customer reaction, the resulting sales and financial gains, employee reaction, and the effectiveness of the organisation itself.

Leadership plays a key role. Not only is the internal leadership important, but the Award specifies that the company must be socially responsible and be a good citizen. One can only assume that such behaviours as being sensitive to diversity, environmentally friendly, assisting individuals who are disadvantaged (e.g., literacy, the Special Olympics) might be

considered. The remaining five categories – strategic planning, focus on the customer and the markets, on employee issues, on the internal processes, and on information analysis and management -- are split about equally. Further information is available about the Awards on the National Institute of Standards and Technology (NIST) Web site at <http://www.quality.nist.gov>.

The cost of applying for a Baldrige Award is \$4,500 (US) for large businesses, \$2,000 for small businesses, and as little as \$300 for nonprofit organisations.

In Japan, the Deming Prize is awarded to companies that make outstanding progress in quality. Canada has its Awards for Excellence program. A large number of other countries, including Australia, Brazil, and India have adopted the Baldrige criteria. The European Quality Award is modeled after the Baldrige Award.

The Baldrige Award is probably the most important excellence award in the world. NIST has distributed millions of copies of the criteria. It also encourages organisations to copy the requirements for their own and others' use. Although many organisations cannot afford the costs associated with the improvements and documentation that are required by the Award criteria, they nonetheless use it as a source of information for improving their own quality and excellence.

## 7 The Terminology of Quality Management

The large number of terms and acronyms that have developed can be confusing and those who study quality management should be familiar with these. Some are introduced here. Others will be defined in the appropriate Blocks.

**American Society for Quality Control (ASQC)** is the organisation that officially represents those working in the area of quality management in Canada and the United States. Its website address is: <http://www.asq.org>.

**Benchmarking** is the process of continually comparing an organisation's processes with other institutions that are deemed to be best-in-class.

**Continuous improvement** is an ongoing commitment to improve product and/or service quality by constantly assessing and adjusting the processes and procedures used to make those products or deliver those services.

**Cost of quality** is an idea popularized by Philip B. Crosby in his books *Quality is Free. The Art of Making Quality Certain* (1979) and *Quality Without Tears. The Art of Hassle-free Management* (1984). Crosby's idea is that lack of quality costs; quality saves the company money.

**Deming Prize** is an award given in Japan to organisations that is somewhat equivalent to the Baldrige Awards. A large proportion of winners have produced innovations that combine statistical and engineering methods and improve cost and quality through product and process optimization redesign.

**Employee involvement** is the participation of all employees, usually in teams, as problem solvers and solution implementers, in the improvement of quality within the workplace. The term had its beginning with the Ford Motor Company. The same activity is known by many other names. The best known of these are quality circles, and quality control circles. In addition to the participants, there is usually a team leader, a facilitator, and a trainer. Often the facilitator and trainer are the same person. Many organisations employ an outside consultant to assist them with the facilitation and training processes.

**Malcolm Baldrige National Quality Award** is a set of awards established in 1987 by the US Government to honor Malcolm Baldrige following his death in a plane crash. Baldrige was a former Secretary of State who had a passion for improving the quality of US industry. The award was established to honour ‘companies for their achievements in quality and business performance and to raise awareness about the importance of quality and performance excellence as a competitive edge.’ (National Institute for Standards and Technology, 2003)

**Total Quality Control (TQC)** was used first by Japanese Industrial Standards (JIS) to define quality control as: ‘A system of production methods which economically produces quality goods or services meeting the requirements of consumers.’ (Ishikawa, 1985, p. 44). It involves development, design, production and service of a product in such a way that is ‘most economical, most useful, and always satisfactory to the consumer.’ (Ishikawa, 1985, p. 44).

Feigenbaum (1961) extended this concept to ‘cost of quality.’ He drew attention to the fact that quality improvements gained in manufacturing could be lost in other parts of the organisation. The manufacturing department could not have the sole responsibility for product quality. All facets in the value-chain had to be considered, including design, marketing, distribution, and delivery. Even the retailer or wholesaler had to assume a role in this process. On the other side of the coin, the problems in quality that originated in manufacturing had costs for other related departments.

According to Feigenbaum, the ten crucial benchmarks for total quality success are that:

1. Quality is a company-wide process.
2. Quality is what the customer says it is.
3. Quality and cost are a sum, not a difference.
4. Quality requires both individual and team zealotry.
5. Quality is a way of managing.
6. Quality and innovation are mutually dependent.
7. Quality is an ethic.
8. Quality requires continuous improvement.
9. Quality is the most cost-effective, least capital-intensive route to productivity.
10. Quality is implemented with a total system connected with customers and suppliers.

([http://www.dti.gov.uk/for\\_business.html](http://www.dti.gov.uk/for_business.html))

**Total Quality Management** (when spelled with initial capitals), like Total Quality Control, is a proprietary product developed to assist managers in implementing a quality management program in their organisations. In particular, it is an organisational-wide strategy for improving product and service quality. It is not a tool or technique but a philosophy for management that is characterized by three principles: customer focus and satisfaction, continuous improvement, and teamwork. Without the capitals, the term refers to any strategy that uses these three principles to improve quality.

## 8 Summary

This block has described the history of the quality management movement, calling attention to the efforts of F. W. Taylor, W. A. Shewhart, W. E. Deming, J. M. Juran, and Kaoru Ishikawa.

Quality (a rather muddy topic) and quality management were defined. Quality is perceived as having eight (8) facets – performance, features, reliability, conformance, durability, serviceability, aesthetics, and perceived quality. Fitness-to-standard and fitness-to-use are typical of the evolution that has occurred in QM. A key part of producing a quality product or service is knowing what the customer wants and is willing to pay for. This means that expectations and satisfaction must be assessed.

Moving in a different direction, the block addressed the reasons why quality is important. Lack of quality costs the organisation, in appraisal and rework, warranty payments, prevention programs, and personal anguish. This leads management to the need for control of quality.

The current philosophy of QM encompasses five (5) facets: Quality is a religion; there must be a quality imperative in every organisation; new methods are required for addressing that quality imperative; the needs of customers must be addressed; and finally, quality management is not a one-time effort - continuous improvement is required.

This led to the eight (8) principles of total quality, and to the three (3) types of quality efforts: design/redesign, conformance, and performance. The block concluded with a discussion of the Malcolm Baldrige National Quality Award and the terminology presented in the block.

## Points to Ponder

1. Put on your customer hat and imagine a need you would like to have satisfied. Try not to think of just a particular product or service. Write it down. (**Note:** The need of one of the authors might be to contact his family from the international cities where he spends much of his working life). Now brainstorm with a friend and name at least three goods or services (and possibly more) that might satisfy your stated need. Share these with your tutor. (**Note:** My solutions might include a video recorder and computer software to send files to my family, or a new cell phone which captures images and sounds and transmits them wirelessly, or a video recorder and a pile of courier envelopes to rush discs to faraway places, or a personal cameraperson who follows me around and records, processes, and transmits materials to my family.)
2. Described in this chapter are two methods of quality control. The first is based on a hierarchical approach, where direct-reports are told by supervisors what they should do, and how they should do it. They then are monitored to ensure the task is accomplished properly. To the extent possible, technology is used to monitor employees' actions. At the other end of the scale, at least in North American terms, is a more modern approach. It depends on a strong corporate culture in which common values, beliefs, and norms generate alignment of individual and organisational goals based on trust within the organisation. Instead of supervisors telling direct-reports what to do and monitoring their actions, self-control, and peer groups perform this function.

Which of these two systems exists within your organisation? If the response is the bureaucratic type, what barriers and obstacles exist to change? Can you think of some innovative approaches that personnel at the highest level of the organisation can begin to use in order to begin this process of change?

3. Think of a specific organisation and/or industry. If you cannot think of one, think about your own university. Then answer the following questions:
  - What does quality mean and how would an outside evaluator describe that quality?
  - Has any change in approach occurred during the last decade?
  - Have you/your friends, relatives or acquaintances experienced quality problems with the product or service provided by that organisation?
  - Do you see problems for the organisation (decrease in sales, returns, etc.) with the quality philosophy and approach that is dominant within the organisation?
4. Which three concepts outlined in this chapter do you consider most essential in improving quality within firms in your country? Why?
5. Today the Japanese economy is struggling. Do you think that this struggle can be related to the success the country experienced in the 70s and 80s, or do you think that Japan has been spared even deeper economic woes by having a solid quality infrastructure? Explain.

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**Commonwealth of Learning Executive MBA/MPA**  
**SC4 Quality Management**

**Block Two**

**Leadership and Strategic Management**

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# 1 A Tour of Block Two: Objectives and Introduction

*A leader is best  
When people barely know he exists  
... When his work is done, his aim fulfilled  
They will say:  
We did it ourselves.  
– Lao-tzu*

In this Block, we look in some detail at the crucial role of leadership and strategic planning in developing, nurturing and supporting a quality organisation. We discuss the need for the quality message to permeate the organisation, and the role of leadership in ensuring that happens. We also discuss techniques for incorporating quality principles and goals into strategic and operational plans, and the role of quality professionals in those processes. An example of a method that can be used to analyse a strategic quality problem is also given.

## 1.1 Block Two Objectives

After working through this Block, you should be able to:

1. Itemize the seven characteristics of leadership that are given careful scrutiny by the Malcolm Baldrige Awards committee.
2. Describe how to incorporate quality goals into strategic and operational plans.
3. Appreciate the role of quality professionals.
4. Identify and articulate quality principles and processes in ways that fit with strategic and operational plans.
5. In the context of a large organisation with which you are familiar (or which exists in your community), try to name specific activities that would be performed by professionals in each of the 11 functions described by the ASQC.
6. Determine whether your own leadership style is more closely allied to that of a leader or a manager.
7. Be able to seek roles within the quality structure that are more suited to your own particular style of leadership.

## 2 Demonstrating Quality Values Throughout the Organisation

As pointed out previously, achieving these objectives requires leadership. A closer examination of this topic, therefore, is in order.

### 2.2 Exercising Leadership

Dr. Carl Reimann, Director of the Malcolm Baldrige National Quality Award, based on his review of applications for the Award, has summarized the characteristics of excellent leadership, as follows (as cited in Omachonu & Ross, 1994):

**Customer contact.** The CEO and all senior managers should be accessible to customers.

#### 2.2.1 Leaders Vs. Managers

In many ways, these are 'motherhood' statements, with which everyone agrees. At the operating end, the quality literature tends to be very practical in orientation. It addresses the 'how' of managing quality. But neither approach is sufficient on its own. Where misunderstanding often occurs is between the theory and the implementation. The majority of quality people have not been highly trained in the roles of leader/manager, and so some things 'fall between the cracks.' This can create some confusion as to who does what. Large organisations have their own internal structures (not always optimal for quality management). In small organisations, both the senior management role (more visionary in direction) and the operating roles become the responsibility of whoever is available. Successful approaches, however, delineate the roles of leader and manager.

In many ways, the above statements are 'motherhood,' comments with which everyone agrees. What they say is that, at the senior level, the vision and direction for the organisation is set. That vision is more general, more global, and more theoretical. On the other hand, at the operating level, the quality literature (and the required responsibilities) is very practical.

The majority of quality employees have not been highly trained in leader/manager roles. This can create some confusion as to who does what. As a consequence, some activities 'fall between the cracks.' Large organisations resolve this problem by having their own internal structures (not always optimal for quality management) by which some effort is made to assign the different roles. In small organisations, both the senior management role and the operating roles become the responsibility of whoever is available. In both types of structures, successful approaches delineate the roles of leader and manager.

What are these approaches? Figure 2-1 explains the different expectations.

**Figure 2-1: Role Differences Between Managers and Leaders**

True Leaders	Managers
Create the vision and sell it to the organisation.	Make the detailed plans and implement the vision.
Show courage in trying new ideas.	Make certain that the quality implementation or change process is proceeding according to schedule and budget, sometimes at the expense of new ideas.
Take risk.	Ensure that all employees are knowledgeable and can provide the information required so that leaders can weigh the alternatives and make the decisions.
Seek, through quality improvement, to build something better for all stakeholders.	Set a structure in place to ensure, tactically, that continuous improvements occur.
Build trust, loyalty, and commitment among employees.	Prepare plans to ensure that these values develop incrementally over a period of specified time.
See themselves as servant leaders.	See themselves as carrying out the quality vision set for the organisation.

Two models help us to better understand the differences between leader and manager roles, that of Mintzberg (1971), and that of Bass and Avolio (1999). Henry Mintzberg, from Canada's McGill University, observed what managers do. Bass and Avolio's studies involved research on transformation, transactional, and laissez-faire leadership. This section examines both of these models.

The section concludes by looking at six additional leadership roles that are often cited in quality literature – first, the interactive leader, the servant-leader, and the symbolic leader; next, within the context of innovation and continuous improvement – the champion, the sponsor, and the orchestrator.

### **2.2.2 Mintzberg's Research**

Mintzberg's (1971) observations indicated that managers' (leaders') behaviours can be classified into three basic categories – informational, interpersonal, and decisional.

### **2.2.3 Bass & Associates**

Management by exception (passive) represents the failure of intervention until problems become serious in nature. The leader waits to take corrective action until problems are brought to her attention (Bass, 1997; Bass & Avolio, 1999).

### **2.2.4 Interactive and Servant Leaders**

Interactive leaders are concerned with consensus building, inclusiveness, participation, and caring. They also subscribe to the idea that reaching organisational goals helps employees reach their personal goals. Also, they tend not to believe that power exists as a 'fixed-sum' and therefore are more willing to share it, to empower their direct reports, and to be concerned about enhancing their workers' self-image and self-worth. Interactive leaders tend to pay attention to nonverbal behaviour, empathy, cooperation, collaboration, and listening.

Servant leaders are very similar. They see themselves not as bosses with power over others, but as stewards in a bottom-up approach to leadership, starting with the followers' needs. Servant leaders operate on the basic principle that if followers' goals and needs are satisfied, the goals of the organisation will be realized. Sam Walton of Wal-Mart is often cited as an excellent example of a servant leader. His view is that he should provide associates with whatever assistance and resources are needed so that they can better serve the customer (Saporito, 1994).

### **2.2.5 Symbolic leaders**

As pointed out in the Baldrige National Awards at the beginning of this Block, if top management is not behind the quality idea, it is not likely to be successful. But it is very difficult for those at the top of the organisation to be everything to all people. Their role as symbolic leaders therefore is very important. A symbolic leader is one who defines and uses signals and symbols to show that quality, and quality issues, are important. Symbolic leaders do five things that demonstrate to employees that quality is the most important imperative of the organisation. Working with members of the organisation, they:

1. Make quality a personal commitment. In other words, they 'get religion.' This means that some of their time is allotted to what is happening in this area, while some time is spent among workers who are doing the work.
3. Make sure that day-to-day activities affirm the quality vision that is desired. After sharing their vision, symbolic leaders change attitudes toward quality by many seemingly unimportant deeds, statements, accolades, and statements. What the company acknowledges and rewards is what it gets.

### **2.2.6 Leaders in the Language of Innovation**

Quality improvement depends on innovation. Innovation requires employees who develop new ideas. When employees are empowered and encouraged to improve their own work and the product they make or the service they provide, there is often a steady stream of innovations to choose from. For major ideas to be successful, however, three more types of

employees (which we call leaders) are required. These are the idea champion, the sponsor, and the orchestrator.

The orchestrator is a senior manager who can skilfully articulate and sell the need for the product/service, can find funding to develop and implement it, and who has the resources to encourage innovators and middle managers to support it and other new ideas.

### **2.2.7 Summary**

In summary, a more detailed discussion of leadership has been included because typically, people who work in the quality field have had limited exposure to issues on this topic. In fact, many of these employees have been taught a paradigm that stresses the importance of tools and techniques. Tools and techniques alone, however, are insufficient to bring about the changes that corporations now demand. Leaders must be able to manage people in such a way that trust in, and commitment to, the quality program and the organisation is developed.

First, the roles of managers and leaders were delineated. Leaders sell the vision and make certain that commitment to quality exists; Managers implement the vision. Second, three leadership styles were examined. Generally, those individuals with transformational skills are said to be leaders; those with transactional skills often can be more successful as managers. Third, the importance of both groups taking an interactive role, being a servant leader, and assuming a symbolic responsibility, was stressed. Furthermore, in the specific area of quality improvement, innovation is important. If an innovation is to succeed within the organisation, it must have a champion, a sponsor, and an orchestrator.

## **3 The Role of Quality Professionals**

### **3.1 The Work of Professionals**

The American Society for Quality<sup>1</sup>, (ASQC), a credentialing body (among other things) which awards the Certified Quality Manager (CQM) designation, has delineated eleven functions of quality professionals, whether they are in an independent group in a traditional hierarchical organisation, or are distributed throughout an empowered organisation. Depending upon the size of the organisation, one individual may carry out several of these functions as part of his/her job. The functions are:

of time, under conditions of real use. Most of the analyses carried out by the reliability engineering function are highly technical and statistical in nature.

#### **3.1.1 Supplier quality assurance**

This function works with suppliers and the purchasing department to ensure that purchased parts and sub-assemblies (whether 'purchased' internally from another department, or externally) meet quality requirements. The supplier quality assurance function will often

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<sup>1</sup> The Certified Quality Manager Handbook, ASQ Press, 1999, pp. 94-97.

spend more time with suppliers, helping them to design and implement quality systems, than with his/her own organisation.

### **3.1.2 Internal Auditing**

There is an adage that says, what gets measured gets attended to. The function of internal auditing is to measure the many elements of the quality system to ensure they are fully implemented and compliant with standards and specifications. The internal auditing function also is responsible for measuring the effectiveness of the quality system on a value-for-money basis.

### **3.1.3 Customer Quality**

This function operates in a similar fashion to the supplier quality function, but it also has the responsibility of staying close to the customers of the organisation. This function is charged with responding to problems identified by customers, and working with internal units to anticipate and prevent problems. An important source of data for this function comes from the sales forces, who are in close contact with customers all the time.

### **3.1.4 Consulting and Training**

This function serves as a resource to provide quality training throughout the organisation and to serve as internal consultants to units having implementation or process design problems. For example, the consulting and training function teaches and works with an employee involvement group from two different units who are tasked with solving a problem involving a fastener. The fastener (a screw) continues to be dislodged and the employees who receive the product are blaming the previous group on the assembly line for the defect. The problem has become so frustrating that words of anger are being exchanged between the two groups.

## **4 Making the Connections**

### **4.1 Incorporating Quality Goals into Strategic and Operational Plans**

The key message of this section is that quality goals cannot be simply tacked onto strategic and operational plans as an afterthought! Quality goals must be central aspects of the plans, or they risk being seen as less important than other goals, such as financial goals, growth goals, or productivity goals.

A simple example of the difference between strategies and strategic objectives might be the following: For the United Way, a large national charity (organisation) in Canada, a strategy might be 'to be the most efficient charity in the country, as measured by having the smallest percentage of charity donations spent on internal administration', and a strategic objective might be 'to decrease the number of administrative staff by 10%, while increasing the amount of donations collected by 5% in each of the next three years'. As you can see, the strategic objective focuses on something the organisation can improve upon to achieve its

strategy. The operational task is then to develop action plans to achieve the improvements described in the strategic objectives. This latter task is sometimes called strategy deployment - the development of action plans, identification of necessary resources and performance measures, and the alignment of work unit plans, supplier plans and partner plans with the strategic objectives.

You will delve much more deeply into strategic planning in your strategy course. Later in this Block, we give an example of how a specific quality problem within the organisation can be studied from a strategic point of view.

#### **4.1.1 Organisational Change**

There is one additional strategic issue that needs to be discussed, and that is organisational change. While much more detail about change is given in Block 7, a few comments are made here. There are two basic approaches to changing the organisation to a quality culture – the steamroller or the snail approach. Both are exactly what they say – one is immediate and abrupt; the other proceeds over a longer period of time (e.g., a number of years).

The steamroller method disrupts employees' work habits, friendships, and lives, tends to create considerable antagonism, destroys trust, and encourages non-cooperation (often subtle), or even sabotage. It does, however, achieve results quickly. This is an appropriate approach for old established quality cultures that are in a state of entropy and will not change in any other way. CEOs that are new to an organisation tend to use this, particularly if their own position depends on improvement of the bottom line (i.e. - profit).

#### **4.2 An Example of Tools for a Strategic Planning Activity**

At least in North America, MBA and MPA students leave programs thinking that those who work in strategic management develop a five-year plan and then once a year update that plan. This occurs, and while important, it is not the only strategic planning that is done. Equally important are the operating issues that occur on a rather frequent and unexpected basis.

We give an example of an organisation that uses moulds and a chemical solution to make parts. Parts are of two kinds – Class I (external objects that must be bubble free) and Class 2 (hidden from view). Some of the completed parts are very large -- doors, for example. The chemical solution is very sensitive to temperature and humidity and depending on these and other factors, takes from 7 to 10 days to mature. Operators know when the solution is perfect. It is easy to use, but also, there is a consistency and 'feel' that operators can recognize. For this maturing process, the chemical solution is kept in large vats in a specially designed room – much like a warehouse. For many reasons, including the age of the equipment, temperature, humidity, and several other factors, the process has become very difficult to control. The organisation in question was about to lose a contract because the first class product was not meeting customer requirements.

### **4.3 Determining Most Feasible Alternative Using Strategic Tools**

To study the process that is causing defects, three tools are suggested to assist executives charged with making strategy decisions in deciding on a course of action. These are: SWOT, external and internal environmental analyses, and 4-pairs. Before explaining these, an 8-stage process for studying the problem is suggested. That is:

1. Identify the problem.

Our example focuses on a new prototype that is available to the company. If the quality problems that now exist can be resolved, the organisation stands to make considerable money. The resolution of the problem will be quite costly in terms of time spent, innovations and experimentation, and the purchase of programming expertise and electronics.

2. Determine steps in process of correcting problem.

3. Suggest an initial SWOT.

4. Examine the external environment.

5. Examine the internal environment.

6. Complete a 4-pairs diagram.

7. Make choices as to the most feasible.

8. Create an action plan.

#### **4.3.1 Stages in Determining Strategy**

Stage 1 in the process requires that the quality problem needing to be resolved be identified. One problem may be whether the organisation has the financial resources and is psychologically ready to proceed with a quality improvement program. A more usual strategic (and operating) issue, however, is whether or not to expend considerable resources to make quality improvements at a critical point in the process. On the one hand, the improvement is something that is very important to a customer. On the other hand, the resources required to make the necessary changes may be prohibitive. For large organisations, this is not often the problem; for those that are struggling financially, or who do not have the appropriate knowledge, skills, and attitudes among their employees, a sensible decision may be to forego the opportunity or look for partners that may provide some of the missing elements.

Stage 2 requires that the steps for achieving the quality level expected be identified. If someone within in the organisation can do this, so much the better. Many organisations find, however, that an outside facilitator can guide this process. The statements that are developed are similar to the following: Train selected employees in six sigma, establish quality decision-making groups, and so forth.

Stage 3 requires the development of a temporary SWOT matrix (an identification of the strengths, weaknesses, opportunities, and threats) based on the entire production process.

In Stage 4 the forces in the external environment that can help or hinder the organisation to define, organize, and achieve its quality goals are identified. External environments tend to be classified in six or more categories (a helpful acronym is STIPLE):

Sociocultural  
Technological  
International  
Political (including the military environment)  
Legal  
Economic

Stage 5 requires that the internal environment (particularly the culture) be examined. Much more will be said about this in the Block on change (Block 7).

Stage 6 in the process is to determine if the initial strengths, weaknesses, opportunities, and threats that have been identified continue to be true, in view of the external and internal analysis that has been completed. A new SWOT chart is usually required. Transferring the above information to the SWOT chart would result in the notations shown in Figure 2.2

The seventh stage involves the completion of a 4-pairs diagram. The pairs of the 4 categories in the SWOT analysis are taken together and an analysis made of possible strategic alternatives that can be taken to make the required quality decision. The step-by-step process follows.

The last two stages (8 and 9) are deciding on the most feasible strategic option(s) and developing an action plan to carry out the required activities. In this course we give only the basic fundamentals of an action plan – your course on Strategic Management will cover this in more depth.

At the top, the activity that will be completed is specified. Following this is the specific name of the individual(s), and the title, of the person(s) who will carry out the action plan. At the third level are the activities that are required. The most important step is the last one: the action steps required to successfully complete each of the activities, the responsible person for monitoring this, and the start and end dates. The responsible person can use a similar action plan to assign the duties to those who will implement them. The action plan provides managers with a method that can help them monitor progress.

### **4.3.2 The Strategic Tools – The Initial SWOT Analysis**

This has three steps.

The first step is to develop a rough schematic of key individuals' suggestions in each of the four categories.

As previously pointed out, the acronym SWOT stands for Strengths, Weaknesses, Opportunities and Threats. In using this tool, the appropriate members within the organisation each identify, based on current records and analyses and their own experiences, the distinctive competencies, or lack of competencies, that the organization has. These are the strengths and weaknesses. They also identify their perceptions of the quality challenges and opportunities that exist in the various environments outside the organisation. One method that is often used is to focus on the forces driving quality within the industry, that is, what present and potential competitors are doing to achieve better quality, what products could replace the product in question, can suppliers deliver to our requirements, and what are the requirements of our customers (in terms of what they are prepared to pay).

### 4.3.3 The Strategic Tools -- External Environment Analysis (STIPLE)

The SWOT analysis has identified factors in the external environments that affect strategic decisions regarding quality within our own organization. Some additional analysis is required. This analysis can be completed by asking and answering the following:

1. How dynamic or stable (rate of change) is the particular environment or pertinent facet of the environment? Strategic planners like to use a very complicated tool -- two coloured markers (or the computer) -- to assist them. Dynamic forces are marked in red and stable forces in blue. There is nothing magic about the colours; any colours will do, but the red signals a warning.
2. How simple or complex (number of factors that are involved) is the change process that is occurring? This addresses the issue of how easy it is to understand. (Simple = straight line, complex = erratic wavy line).
3. The relationship between the stakeholders in the external environment and the organisation. In other words, to what extent can the organisation influence the environment (the persons within it who make decisions regarding quality issues)? Except for large and/or appropriately placed organisations (perhaps politically), the answer is usually, 'to no great extent.' The item has been omitted from discussion of this model.

Figure 2-2 shows part of what an environmental analysis might look like:

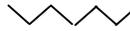
	Environmental force	Impact on quality efforts
Economic:	Energy availability 	-- (1) 2 3 4 5 +
Technological	New training program for six sigma 	-- 1 2 3 4 (5) +
	Prototype for new product available from strategic partner 	-- 1 (2) 3 4 5 +

Figure 2-2: Analysis of the External Environment Affecting Required Action for New Prototype

#### 4.3.4 The Strategic Tools – The Internal Analysis

Many aspects of the internal organization must be considered in determining whether changes in quality processes can be accomplished. Among these are the culture (is it conducive to change?), the distinctive competencies (in what ways is our quality better/worse than those of our competitors?), and the available resources that can be allocated to make necessary changes.

#### 4.3.5 The Strategic Tools – A More Definitive SWOT Analysis

Based on the analyses of the external and internal environments, a more definitive SWOT analysis can be constructed. Some previous items are dropped; others are added. Basically, however the same tool is used. The new version may look something like that shown in Figure 2-3.

<b>STRENGTHS</b> New training program for six sigma issues has been completed	<b>WEAKNESSES</b> Prototype has a number of quality that have not been resolved
<b>OPPORTUNITIES</b> Company with whom strategic alliance has been made has prototype that can be used for Tymet XYL process	<b>THREATS</b> Energy supply very erratic

Figure 2-3 Revised SWOT

#### 4.3.6 4-Pairs Matrix

We have now come to the stage where a 4-pairs diagram can be utilized. The 4-pairs analysis is based on the SWOT chart. At this point, the key strengths, weaknesses, threats and opportunities have been listed. The 4-pairs matrix helps the quality strategist to do exactly what its name suggests. Each strength is considered in terms of each opportunity and each threat; each weakness is also considered in terms of each opportunity and threat. Figure 2-4 shows an example of what this chart might look like.

	<b>STRENGTHS</b> (List these here)	<b>WEAKNESSES</b> (List these here)
	<b><i>Six sigma training completed</i></b>	<b><i>Quality issues exist with prototype</i></b>
<b>OPPORTUNITIES</b> (List these here) Partner has better prototype	Use six sigma techniques Also JC: reprogram MR: build electronics <b>Cell A</b>	Buy chips from Japan  <b>Cell B</b>
<b>THREATS</b> (List these here) Energy supply erratic	Six sigma may be too complex. Hire consultant <b>Cell C</b>	Buy back-up generator  <b>Cell D</b>

**Figure 2-4: Portion of a 4-Pairs Analysis for Prototype Problem**

The 4-pairs matrix is developed in the following manner:

1. First, all the entries that have been identified are grouped in one of four cells according to the following categories:
  - Strengths and opportunities (Cell A)
  - Weaknesses and opportunities (Cell B)
  - Strengths and threats (Cell C)
  - Weaknesses and threats (Cell D)
2. Each of the entries is paired with every element in the each of the entries in the same cell. For example, if there were **3 entries** in the strengths cell (a, b, c), and **2 entries** in the opportunities cell (g and h), these would be paired and strategic alternatives that could be used to resolve the quality dilemma would be identified. In other words, what emerges for the strengths/opportunities cell (A) might be a schematic that looks something like this:

a + g: Alternative 1  
Alternative 2  
Alternative 3  
Alternative 4

a + h: Alternative 1

b + g: Alternative 1  
Alternative 2  
Alternative 3

b + h: Alternative 1

c + g: Alternative 1  
Alternative 2

c + h: Alternative 1  
Alternative 2  
Alternative 3

In other words, when each of the three strengths and the 'g' opportunity are considered, the quality strategists has 4 alternatives for 'a' and 'g;' 3 alternatives for 'b' and 'g;' and 2 alternatives for 'c' and 'g;' and so forth.

This process continues for opportunities and weaknesses, threats and strengths, and threats and weaknesses. The idea is to suggest alternatives that will eliminate or nullify the threats and weaknesses and use the organisational strengths (competitive advantages) in exploiting opportunities.

There may be no reasonable alternative to resolve some of the paired issues, and some of the alternatives may overlap. Overlap is an ideal situation because it suggests that there may be a feasible approach and far fewer alternatives require analysis. In any event, the usual practice is to try to group as many alternatives as possible so that only a few remain. Additionally, some can be discarded very quickly because support is not available to champion their progress. When the benefit/cost analysis is completed, some will be found to be inappropriate or unachievable given the resources, including time, that are available, and the possible internal political or external legal problems, for example, that must be overcome.

3. Having examined most possible strategic alternatives, the most feasible choice can be made. Doing nothing is one course of action.

In exercises we have done with strategic planners, we have found that groups jump the gun. They like to estimate the resources that will be required to achieve each alternative and compare this with the benefits that are likely to accrue from that alternative. In other words they like to do a benefit/cost analysis at the same time they are listing alternatives. We suggest that this not be done. The reasons for this are that the exercise tends to inhibit the search for alternatives. People like to "jump on" a solution they agree with.

## 5 Summary

This Block has focused on the central role of leadership in building and managing a quality organisation. We discussed in some detail the key differences between leaders and managers – mainly on the dimension of establishing the vision of the organisation and building the internal culture to achieve that vision. We discussed the key roles played by a variety of quality professionals, from assuring supplier quality to internal consulting and training, all with an eye on moving the organisation towards its vision. The key tasks involved in incorporating quality goals and objectives into strategic and operating plans were discussed in detail. The central issue here is that quality goals need to be an integral part of all plans and budgets, rather than being seen as an add-on. To accomplish this integration, we studied a number of tools for strategic planning and analysis.

The Block concludes with a glossary of terms commonly used in strategic planning for quality.

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### **Point to Ponder**

Think about situations where you have been in a leadership position (in work, in school, in sports, in your community, in your family) and list three lessons you have learned about effective leadership. Relate them to the Baldrige criteria described above, and in more detail in the reference cited from the CQM Journal<sup>2</sup>. Here's an example:

For one of the authors, personally, if he reflects on his leadership role in a community charity, where he served on the board and chaired the strategic planning committee for three years, he learned:

1. The importance of articulating a personal vision
2. The importance of valuing the unique perspective and contribution of each committee member, and
3. The powerful motivational effect of small compliments and thank-you's for tasks completed.

## **6 Glossary of Terms**

**Action plan** – The final step in a strategic decision-making process. This specifies who will do what and during what time.

**Champion** – The person who shepherds an innovation through the political, financial, and other obstacles within an organisation.

**Empowering employees** – Giving employees who do the work, the authority to make decisions concerning that work.

**Environmental analysis** – This can be of the external environment or the internal environment. The analysis of the external environment usually examines the political, legal, international, technological, sociocultural, and economic aspects. It also looks at the rate of change and the number of factors that must be considered.

**4-pairs analysis** – A technique for eliciting alternative actions by looking at each of four cells of the SWOT matrix (strengths/opportunities, strengths/threats, weaknesses/opportunities, and weaknesses/threats).

**Inspection** – The process of seeing if a product meets product or service specifications.

**Interactive leaders** – Are concerned with consensus building, inclusiveness, participation, and caring.

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<sup>2</sup> CQM Journal, Volume 7, Number 1, Summer 1998, 'Leadership in TQM: What does it mean?' Lee, Thomas and Jamshid Gharajedaghi

**Internal auditing** – The department within an organisation that determines how well the many elements of the quality are being implemented, and the cost of this implementation.

**Laissez-faire leadership style** – A hands-off style. An individual who has this type of style addresses problems only when forced to do so.

**Leader** – The person who identifies the quality vision for the organisation and communicates it to employees.

**Manager** – The person who plans the implementation of the vision and monitors and ensures that operational plans are completed.

**Metrology** – This is the process of selection, designing, and training of operators in devices used to measure of test materials and output.

**Mobilization** – This is the act of energizing all parts of the organisation.

**Orchestrator** – A senior manager/leader who has the power to ensure that an innovation is adopted.

**Quality assurance** – This is the certification that a product or service meets certain standards. These may be ISO requirements.

**Quality engineering** – Concerned with the design, production, or servicing of a product. The goal is to prevent problems prior to their occurrence.

**Quality control** – A term applied to the series of tests and interpretations that are used to measure in-process production of the final output.

**Reliability engineering** – Reliability engineers are charged with ensuring the likelihood that a particular product or service will meet customer needs.

**Servant leaders** – These are individuals who see themselves as stewards in a bottom-up organisational approach. They see their job as meeting the needs of those who do the work.

**Shared vision** – A vision of quality that is accepted by the majority of employees.

**Sponsor** – The person who helps obtain funding for an idea and facilitates its implementation.

**Supplier quality assurance** – Employees in the supplier quality assurance department meet with suppliers and ensure that their products meet company specifications.

**Transactional leadership style** – Includes three facets: contingent reward, management by exception (active) and management by exception (passive).

**Transformation leadership style** – Includes five facets: idealized influence (attributed), idealized influence (behaviour), inspirational motivation, intellectual stimulation, and individual consideration.

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**Commonwealth of Learning Executive MBA/MPA**

**SC4 Quality Management**

**Block Three**

**Customer and Market Focus**

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# 1 A Tour of Block Three: Objectives and Introduction

In this Block, the focus turns squarely onto the customer (sometimes called the ‘end user’) and her/his central role in quality management. As we have already discussed, the modern approach to QM is to define everything from the perspective of the customer. Essentially, every activity in every organisation must obtain its reason for being from its contribution to satisfying the needs of some customer. We will discuss the similarities, differences and relevant characteristics of both internal and external customers, as these characteristics have effects on the quality management systems of the organisation. We will pay particular attention to the concept of customers as partners in the business, and, on the central importance of effectively managing supplier relationships. We also discuss the concept of Customer Relationship Management, as it relates to QM.

## 1.1 Block Three Objectives

After working through this Block, you should be able to:

1. Define and identify internal and external customers for an organisation.
2. Explain the differences between the perspectives and expectations of internal and external customers.
3. Describe and interpret three different categories of customer expectations.
4. Define and interpret concepts of Customer Relationship Marketing.
5. Explain the role of partners in marketing.
6. Define different types of relationships between organisations and their partners.
7. Describe the roles of suppliers in QM and approaches to managing the relationships between organisations and their suppliers.

## 2 Internal and External Customers

A helpful definition of a customer is: ‘A customer is anyone to whom is supplied a good or service.’ Using this definition leads to the understanding that each and every person in an organisation is likely to be simultaneously a customer and a provider of goods or services to other customers. The people in the finance department provide services such as payroll processing to every employee, and they receive services from, for example, the IT staff. The staff in a hotel restaurant provides services to ‘end user’ customers, while receiving services from the Human Resources department and receiving goods (such as clean uniforms, or fresh vegetables) from others, inside and outside the organisation. The premise of this course is that an organisation can only achieve quality if it addresses the quality of goods and services

provided by and to each customer, internal or external. Indeed, one of the trends, especially in manufacturing organisations, is to attempt to erase the concept of internal versus external. The growing field of Supply Chain Management is mainly an attempt by organisations to manage the quality of goods and services provided by all their suppliers, and by the suppliers to their suppliers, and so on. This management of the entire supply chain, from raw materials to final product in the hands of the end user has the effect of bringing many more people 'into' the organisation, from the point of view of quality management.

## 2.1 Defining and Identifying the Customer

An important principle in QM is the focus on the external customer who eventually pays for a good or service, and it is important not to lose track of him or her. For this reason, some organisations have shied away from talking about internal customers, for fear that employees will be so focussed on their internal customers that they lose track of the important end user customer. This focus must not, of course, allow the organisation to lose sight of other customers than the consumers of the ultimate good or service. For example, a manufacturer of consumer goods must pay very careful attention to the distributors of their products, and must see them as key customers. Major national or international distributors have a great deal of influence on consumers through their advertising, through their ability to place a suppliers' goods in advantageous locations in their stores, and through their ability to sense consumer wants and needs through direct contact with consumers – a contact which the manufacturer may have difficulty establishing economically.

Several writers have attempted to list categories of customers, as an aid to describing their roles in ensuring quality. One such taxonomy lists Indirect Customers, External Customers, End Users/Consumers, False Customers, and Internal Customers. These categories, which are not exclusive (a given customer can fall into more than one category) are described as follows:

An *Indirect Customer* is usually defined as an internal function within an organisation with the characteristics that it cannot carry out its functions properly unless other, more central functions are properly performed. Typically, Indirect Customers do not actually receive process outputs as they are being produced, but they are dependent on them being produced in a timely fashion. An example of an Indirect Customer in a manufacturing context might be the function which schedules and books shipping. They do not actually come into contact with the manufactured goods, but their planning and scheduling of truck loading cannot be effective unless the manufacturing process is effective. And, it is clear that this department can have an impact on satisfaction of the consumer – if shipping is not scheduled in such a way that goods get to the end users on time, dissatisfaction will result.

An *External Customer* is located outside the organisation, but is not the final end user/consumer. For example, a travel agent is an External Customer of a resort hotel for a supply of suitable rooms. The travel agent deals with the end user, arranging reservations, payment, etc., and with the hotel for rooms to 'sell'. Similarly, a manufacturer of small, quiet cooling fans supplies them to computer manufacturers, who install them in computers for

sale to consumers. The computer manufacturer is an external customer for the fans, but is not the end user.

The *End Users/Consumers* are the final users of a good or service, although they are occasionally also the same as external customers. In most cases, however, the good or service will pass from the producer through a number of external customers before ending up with the final consumer. These external customers will include assemblers who combine the product or service with other products or services, or distributors, or shippers. For example, a hotel ‘manufactures’ clean, empty hotel rooms and supplies them to a travel agency (an external customer) which assembles them into packages (including air travel, sightseeing tours, meals, guide services, visa assistance, etc.), and supplies the packages to travel agent/sales staff (internal customers of the agency), who sell them to consumers.

A *False Customer* is a concept discussed in the Total Quality Management Handbook<sup>1</sup>, to describe an individual or function which is responsible for activities which do not add value to the product or service. If a business process or function cannot identify its customer, then it is a candidate for being a false customer of the company’s process. If you are not able to identify the real customer for a process or product, and if the process is not a necessary part of a larger process, then it should be eliminated.

An *Internal Customer* is typically defined as an individual or group within the organisational boundaries, performing functions which have real customers and which add value to the ultimate good or service.

## 2.2 Understanding Customer Needs and Expectations

Having carefully defined the many customer groups, a quality organisation can then focus on understanding customer needs and expectations. One useful approach to this task is to *segment* customers into a small number of groups, or segments, which are likely to have similar needs and expectations. This approach is most commonly applied to end users or consumers, although the same principles apply to the other categories of customers in the taxonomy used by the organisation. Customers are most commonly segmented by characteristics such as *geography*, or *age*, or *gender*, or *socio-economic status*, or *purchasing habits* (online shoppers versus ‘big box store’ shoppers, versus specialty store shoppers), or *profit potential*, or by other factors yielding groupings which tend to be more homogeneous than the overall population of consumers. Having more homogeneous groups (or segments) means that it is possible to tailor or customize marketing and distribution strategies to meet their needs. It is also possible to customize properties and characteristics of the good or service to better meet customer needs. For example, a resort hotel might segment their guests into three groups: families; honeymooners; and budget-minded seniors. Each segment will have quite different needs and expectations in the rooms they request: families might want a kitchenette and rollaway cots in the room, while honeymooners might want quieter locations, romantic colours and finishing, and seniors might prefer rooms on lower floors with basic finishing and easy access to elevators. The hotel can then differentiate in the design and finishing of their rooms, to be able to meet the needs of each customer segment.

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<sup>1</sup> New York: McGraw –Hill, 1995, p 29

## 2.3 Collecting and Interpreting Customer Information

Decisions, such as those described above, about product characteristics, and about marketing and distribution, must be based upon reliable and dependable information. You will have discussed market research in your marketing course, so there is no need to repeat those concepts here. Let us, rather, focus on some key issues and challenges when the focus of market research is more directly on issues of quality management. Some of the tools most commonly used to gather customer information are: formal surveys and comment cards; focus groups; personal contact with customers; analysis of complaints; and monitoring of Internet chat groups. Each of these approaches has its own strengths and weaknesses and requires expertise in the design of the data collection approach, and in the analysis of the resulting data. Excellent companies adopt the practices of tracking customer satisfaction over long periods of time, in order to be able to spot emerging trends and issues related to customer needs and wants. An excellent company will ensure that they have in place effective feedback mechanisms, so that customer information is fed into the design and production functions of the company regularly. It is the existence of such customer feedback mechanisms which differentiates excellent companies from average ones.

An interesting model for discussing product characteristics and their relationship to customer satisfaction is due to Dr. Noriaki Kano, a Japanese professor and member of the Union of Japanese Scientists and Engineers. Dr. Kano suggested three categories of customer expectations or requirements:

- **Dissatisfiers:** these are the expected characteristics in a good or service – their absence leads to customer dissatisfaction. They generally have the property that they would not be frequently mentioned by customers when asked about what they are looking for in a product or service, because they are assumed to be present. Examples (by current North American society's standards) might be air conditioning, a CD player, and seat belts in a brand new automobile.
- **Satisfiers:** these are characteristics which customers say they want in the product, and their presence leads to satisfaction. In a new car, things like anti-lock brakes, a sunroof or power seats might be in this category.
- **Delighters or excitors:** these are characteristics, often new or innovative, which customers do not generally expect to find in the good or service. Soon, automobile ground-positioning systems (GPS) with automatic mapping might fall into this category.

It is often the case that a new feature of a product first appears as a delighter or exciter, and, when many suppliers incorporate it, the feature may move to the satisfier category and eventually to the dissatisfier category. Anti-lock braking systems (ABS) are a good example of this progression. When they were first introduced, they qualified as a delighter, but they have now become so widely available and appreciated for their contribution to safety that they qualify as a satisfier – purchasers will prefer one model over another because it has ABS included. Before long, when they are found in virtually all new vehicles, they will become a dissatisfier – ABS will be assumed to be included in the vehicle price and if they are not, consumers will be dissatisfied.

## 2.4 Customer Relationship Management

The ultimate form of a relationship between a customer and a supplier is a partnership or an alliance, where a customer has a strong and enduring relationship with and preference for, a particular supplier. The establishment and nurturing of such relationships has come to be labelled as Customer Relationship Management (CRM), and has spawned a virtual industry in the training of staff to be part of the CRM team in organisations. Key leaders in the development of this concept are Don Peppers, Martha Rogers, Bob Dorf<sup>2</sup> and Regis McKenna, who collectively defined the concepts and helped to make them one of the most profound advances in business in the 1990s. McKenna has this to say:

Differentiation, from the customer's viewpoint, is not something that is product or service related as much as it is related to the way you do business. In the age of information, it is no longer possible to manufacture an image. The distinction between perception and reality is getting finer. Further, in a world where customers have so many choices they can be fickle. This means that modern marketing is a battle for customer loyalty. Positioning must involve more than simple awareness of a hierarchy of brands and company names. It demands a special relationship with the customer and infrastructure of the marketplace.<sup>3</sup>

A university has the following slogan: '*We want to be your life-long learning partner.*' The CRM manifestation of this slogan is an approach that says that, each and every contact between the University and a learner (or potential learner) is viewed in the context of a wish to partner for life with that learner. The University recognizes the truism that it is much harder and more costly to find a new client than it is to ensure that we satisfy the needs of (and retain the loyalty of) an existing client. The CRM approach is based on a framework described in the Peppers, Rogers and Dorf paper.<sup>4</sup> Four of the key steps in the framework are:

- *Identify Candidates.* The task is to recognize which customers or potential customers are candidates for one-on-one attention, based upon their segment, in most cases.
- *Differentiate among Customers.* The task is to pinpoint those customers who can be classified as 'high worth' based upon their volume of purchases, or their impact on the organisation as opinion leaders, for example. It is common to rank customers as A, B, or C priority customers and to allocate resources to them based upon their priority.
- *Interact with Key Customers.* Key, or high-priority (A) customers will be the subject of more frequent and higher-level dialogue with the organisation. In the University, the Dean will personally relate to some key, high-priority candidates, while the assistant Dean will deal with category B customers. Contact should be frequent, friendly and appropriate to the needs and wishes of the clients.

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<sup>2</sup> 'Is Your Company Ready for One-to-One Marketing?', *Harvard Business Review*, (January-February, 1999), p. 3

<sup>3</sup> *Relationship Marketing: Successful Strategies for the Age of the Customer.* (New York: Addison-Wesley, 1991), Vol 77: p.44

<sup>4</sup> Peppers et al, pp 4-7

- *Customise the System.* Each key customer will have unique needs and expectations, and the CRM team must address them appropriately. Customers should be able to be communicated with in ways they prefer. The media and frequency of contact should be established by asking the customers what they prefer. In the University, learners who have completed a program are asked if they would like us to alert them to new programs which might be of interest. And they are asked how they would like to be informed – by post, by email, or by telephone.

The implementation of CRM using this framework can have a lasting and valuable benefit to the organisation in allowing it to recruit and retain high quality customers. Some of the benefits of effective CRM are:

- Increased customer satisfaction
- Higher customer retention rates
- Increased sales
- Increased opportunities to learn from loyal and committed customers

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### ***Point to Ponder***

‘CRM is not just smile training!’ This expression appears regularly in advertising by consultants offering to develop and deliver CRM training to organisations. The origin for this admonition lies in a perception that good customer relationships are simply about being ‘nice’ to customers.

Reflect on your own experience as a customer and, if relevant, as a provider of customer service to others, and describe the important characteristics of quality customer relationship management which extend beyond being ‘nice’. Try to differentiate between things that make the customer feel good at the time and things that make the customer come back repeatedly.

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## **3 Customers as Partners**

There are natural tensions built into the relationship between a customer and a supplier of a good or service – the customer wants high quality goods at the lowest possible price, when and where he needs them. As well, the customer is inclined to view the various possible suppliers of a given product to be interchangeable. The supplier, on the other hand, wants to obtain the best (highest) possible price, and wants to nurture a special and enduring relationship with the customer. This part of this Block talks about the benefits and techniques in building strategic partnerships between suppliers and customers, for mutual advantage.

### 3.1 Types of Partnerships and Alliances

Some organisations find it very useful to formalize alliances or partnerships between departments or functions internal to the organisation. These *internal* alliances are even sometimes expressed as written service agreements, elaborating the needs and preferences of both parties – the customer and the supplier. They often include explicit performance measures and accountabilities. Mutual agreement on issues such as timely provision of goods or services, prompt notification of delays or shortages, reliable feedback on quality and suitability of goods or services provided, all can help both the customer and his internal supplier to achieve corporate goals.

More common are partnerships between a customer (often an organisation rather than an individual) and key suppliers. The importance of these types of relationships is highlighted by the Baldrige Award criteria, which ask applicants to describe how they manage key suppliers and the interactions and processes involved in partnering. Some of the key aspects of the establishment of such alliances are suggested by the Baldrige criteria categories:

- Incorporation of performance requirements into supplier contracts
- Monitoring and assessment of performance requirements
- Minimization of costs and delays caused by inspection and testing of goods received from suppliers
- Provision of assistance and incentives to suppliers, to help them improve their performance, and to help them to help you to meet performance goals
- Continuous improvement of supplier relationships and processes.

### 3.2 Benefits of Customer-Supplier Partnerships and Alliances

In order for partnerships or strategic alliances to persist, both the customer and the supplier must see and obtain benefits. The ideal partnership is one where partners complement each other, with each one contributing from an area of strength and receiving support in areas where they are weaker. Some explicit benefits usually sought in alliances are:

- *Cost or time savings.* The just-in-time (JIT) supply arrangements now common in the automotive industry, where parts are delivered to the production line just as they are needed for assemblies, is a good example where a partnership between supplier and customer leads to significant savings. Committing to an agreed quantity of parts on an agreed JIT schedule allows for the reduction of inventories, both at the auto plant and at the parts manufacturer – and both gain benefits from reduced investment in inventory. To be effective, these JIT alliances require a high degree of mutual trust, even to the extent of sharing confidential company data on matters such as production plans.
- *Improved products or services.* A strong alliance leads to a sharing of technology and expertise, which leads to improved products for both the supplier and, eventually, the customer. An extreme example of alliances where technological advances have changed old patterns is illustrated by NIKE, the world's dominant provider of athletic shoes. This company has evolved to become world class in design of shoes and in marketing and

distribution, but it does not manufacture any shoes itself. Through highly integrated alliances, NIKE outsources all manufacturing to more specialised and expert suppliers.

- *Improved suppliers.* Suppliers benefit from strategic alliances through the support and expertise of their customers, as well as from the pressure for continuous improvement which, inevitably, comes from their customers.

## 4 Managing Supplier Relationships

In many cases, a company cannot arrange a partnership or strategic alliance with all their suppliers, but it is still very important that the relationship between the organisation and each of its suppliers is effectively structured and actively managed. Suppliers play a very crucial role from the beginning of the product development process all the way through to the customer – they can supply early design advice, access to innovative new technologies, and means for the organisation to expand capacity, all the while contributing to the quality management efforts of their customer (the organisation to which they are a supplier). This section discusses some principles of supplier selection and retention, certification and rating, and the emerging trends in supply base and customer base reduction strategies.

### 4.1 Selecting Suppliers

One of Deming's 14 points for management<sup>5</sup> suggests 'End the practice of awarding business on the basis of price tag alone'. This admonition against the selecting of suppliers based on the single criterion of lowest unit price is an important one – suppliers must be selected in a strategic way, after evaluation of the total cost of working with them and balanced against quality considerations. Included in the evaluation of total cost are factors such as inspection costs, the costs incurred because of defective products received (rework, delays, scrap), costs associated with supplier unreliability, as well as costs related to service levels. For example, a low cost supplier may not be able to guarantee high enough reliability in deliveries to work effectively in a JIT system, while a higher cost supplier may have the infrastructure and systems in place to offer that service level. At the end of the day, total costs will likely be lower with the higher unit cost supplier, when costs associated with delays in the JIT system are included in the calculus.

This expanded focus on total cost is a major mind-shift for many traditional organisations, in which purchasing managers were traditionally rewarded on the basis of negotiating lowest unit cost relationships with suppliers. This mind-shift is also important, because the old approach of attempting to squeeze the last penny out of unit costs had the effect of squeezing supplier profit margins, so that they were driven to reduce investments in maintenance, modernisation and innovation. This short-term 'success' for the purchasing agent inevitably had longer term deleterious effects on supplier quality and competitiveness, leading to a

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<sup>5</sup> W. Edwards Deming, *Out of the Crisis*, MIT Centre for Advanced Engineering Study, Cambridge, Mass., 1986.

tendency for purchasers to have to switch suppliers regularly. This switching added substantial costs to the whole system.

The supplier selection process needs to be organised and planned, just as any other process in the organisation. The organisation must develop criteria for screening potential suppliers, prior to the performance of detailed assessment of the potential supplier. These criteria will include everything from: ensuring that the supplier has guaranteed access to necessary raw materials (and the financial stability to pay for them – the organisation does not want to end up captive to a supplier just at the time when that supplier gets into a fight with its raw materials suppliers over payment issues!); ensuring that the supplier has all necessary licences, certifications (including, for example, ISO certification, if appropriate) and permits to operate and to assist the organisation to meet its certification standards; and ensuring that the potential supplier can meet product specifications, in terms of quality, quantities, and delivery times.

The assessment of supplier capabilities is a complicated and important task, involving several levels of data collection and analysis. Typically, the organisation would ask potential suppliers to complete a survey, and the survey data would be analysed, and then, if necessary, audited through on-site inspections. Suppliers which appear to meet requirements would then be asked to provide samples of product, which could be tested for conformity to specifications. At the same time, the organisation would be checking references the supplier's other customers, enquiring into issues such as on-time delivery performance, stability and quality. Eventually, a decision would be taken to enter into a relationship with the supplier, and a long-term contract would be signed. It is important that the contract clearly elaborate the respective roles and responsibilities of each party, especially in areas such as quality improvement, delivery times and quantities, and ongoing cooperation in design improvements and in process innovation.

## **4.2 Supplier Certification and Rating**

Active management of supplier relationships, to the end of continuous quality improvement, includes regular assessment of their performance. A useful approach that is followed by many organisations is to institute formal certification and rating systems for suppliers. Terms like 'Preferred Supplier' are used to denote suppliers who have met high standards in their business relationship with the customer organisation. Variables used in typical certification or rating systems are: defect rates; on-time delivery rates; and total costs. Benefits to the organisation of certification are improved quality, cost, and service; at the same time, the supplier benefits through a preferred supplier designation, obtaining more business, and participating as a partner in the design and production decisions of the organisation. Such relationships sometimes go even further, from a system which is mainly one-way (the organisation certifies suppliers) to a more balanced system where suppliers are formally involved in evaluating (and 'rating' or 'certifying') their customer, offering suggestions for improvement. These suggestions can cover the full gamut of the organisation's activities, from design, to production scheduling, to business practices affecting suppliers. A simple change, such as agreeing to accept supplier invoices in a different format (to conform to the

supplier's systems) or on a different schedule, can require minimal adaptation on the part of the organisation, but it can mean real savings for the supplier.

### **4.3 Supply Base and Customer Base Reduction**

A modern trend is supply base reduction, where organisations work actively to reduce dramatically the number of suppliers with whom they relate. Companies such as Xerox report reducing the number of suppliers by 90%, and figures in the 50% range are not unusual. In addition to the obvious benefit of dealing with many fewer invoices and contracts each month, supply base reduction has very real benefits in terms of QM. Dealing with fewer suppliers reduces the variability in incoming products, and makes the active suppliers stronger (through having more business with the organisation) and, hence, more able to innovate and to improve performance. The extreme of the trend to supply base reduction is the achievement of meaningful alliances or true partnerships with a small number of suppliers, as discussed above.

The other side of the coin of supply base reduction is for suppliers to implement customer base reductions. Similar efficiencies and benefits are possible when a supplier focuses on a small number of key customers, leading in the extreme to strategic alliances with customers. Of course, neither the supplier nor the customer will want to permit itself to become captive to the other, for fear of being overly reliant. A rule of thumb often used is that a supplier should be no more than 30% reliant on business from a single customer. This diversification in customers provides some protection, but it is not fail-safe, of course. A supplier of automobile seatbelts will try to diversify by having several automobile assemblers as customers, but they will still be vulnerable to downturns in the automobile industry as a whole. This is why suppliers are always on the lookout for opportunities to diversify their customer base outside of a single industry – a seatbelt manufacturer might look for business in other industries, such as airline manufacturers, where their technology has application.

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#### ***Points to Ponder***

1. What mechanisms does your organisation have in place to receive feedback from customers?
2. Is there a risk involved if an organisation gets too 'close' to its suppliers through partnerships and alliances, to the extent that closeness makes it more difficult to manage the relationships? Discuss the pros and cons of close relationships in an industry with which you are familiar. Be sure to describe the industry sufficiently to allow the reader to understand the degree of 'upstream' and 'downstream' integration common in the industry.

## 5 Summary

This Block has been devoted to the role of marketing and customers in a quality context. The core idea is that quality, as a concept, is fully understood and firmly rooted in the eyes of the customer. All activities in any organisation must be clearly and purposely directed at providing to a customer a good or service which that customer will determine to be of satisfactory quality.

We have also studied the role of partners, sharing that the mission of the organisation is to put quality products into the hands of customers, be they internal or external. Finally, we have discussed the crucial role of suppliers, as partners in the process. The underlying model used here is one which envisages a seamless interconnection, from suppliers of raw materials, all the way to the end-user, with all elements inter-dependent and inter-related, and all focussing on the single, over-riding goal: to put a quality product into the hands of the customer.

---

### **Self-test**

1. Explain the difference between an internal and an external customer. Does each group have a different perspective and expectation of what constitutes quality? Should these be treated differently? In what way?
2. What are the different categories of expectations? How can the organisation meet the needs in each category?
3. What is CRM (customer relationship management)? Why is the concept important to two different organisations – one that is a purchaser and the second, a supplier of services?
4. What assistance can a company expect from its partners?

**Commonwealth of Learning Executive MBA/MPA**  
**SC4 Quality Management**

**Block Four**

**Quality in Human Resources**

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# 1 A Tour of Block Four: Introduction and Objectives

In this Block we will explore the dual role that the human resources department has in QM. First, the department itself must make every effort to follow quality principles. Second, it is the responsibility of the human resource department to ensure that the support mandated as part of the duties of that department is available to the organisation as a whole and to each of the departments.

A house of quality for human resources is presented. That house has five parts:

- The four cornerstones consist of vision and mission, the organisational culture, the culture of the country, and servant leadership.
- The foundation is the internal customers and clients.
- The four pillars are continuous improvement, product and process quality procedures, people development, and facts and measurements.
- The roof forms the constraints and includes strategy, rules and procedures, systems, processes and structure, and environment.
- The mortar holds the house together. It consists of respect for the individual, ethical and moral behaviour, and respect for authority.

## 1.1 Block Four Objectives

After working through this Block, you should be able to:

1. Explain the two conflicting roles that the human resources department (HR) has within the organisation
2. Name the five parts of the house of quality for human resources and the elements related to each.
3. Explain the type of national culture that exists within your own country in terms of power dominance, uncertainty avoidance, individualism/collectivism, and masculinity/femininity
4. Explain the extent to which servant leadership exists within your organisation (or university) and whether it would be advantageous to that organisation
5. Identify three critical points and three critical success factors for your own organisation, or university
6. The Block addresses four types of people development that are needed in addition to training (in general). Name the four and explain what elements constitute each of the four
7. Explain the importance of ‘speaking with facts’ and why measurement is required

8. Identify at least one constraint that may exist in the industry in which your organisation functions that might keep the human resources department from providing the services that they should.
9. Identify where your own organisation is on the ethical chain.

## 2 Nature and Role of HRM

*The most valuable 'currency' of any organisation is the initiative and creativity of its members. Every leader has the solemn moral responsibility to develop these to the maximum in all his people. This is the leader's greatest priority.*

- W. Edwards Deming (Principle Centered Leadership)

In a large number of organisations, the definition of quality and its applications in the context of human resources (HR), are those that are used in production. However, this may be inappropriate for a number of reasons. First, in the area of manufacturing, the responsibility for quality can be at three levels – corporate, strategic business unit, and the functional levels. Implementation of the goals and objectives, however, is always at the functional level. The human resources department (HR) operates only at the functional level. It differs from other functional units in the following ways. Other departments can:

- Program product and process life cycles as fairly straightforward paths.
- Take responsibility for their own quality improvement process.
- Identify critical points in the product manufacturing or service cycles.
- Have measurable outcomes.
- Concentrate on worrying only about their own employees in terms of utilization and layoff.

For HR, however, the functions of other units are intertwined with its own.

- Selection, appraisal, compensation, quality are not only internal issues, but HR has responsibility for these functions in all departments within the organisation.
- HR has responsibility for developing people throughout the entire organisation. This is explained in greater detail under people development.
- HR does not have objectively measurable outcomes. How, for example, does one measure the satisfaction of an employee following a high level of frustration experienced in attempts to resolve the problem with his own manager? In fact, frequent outcomes cannot be identified, much less measured.
- This means that critical points in the service process are difficult to isolate.

- HR is the department that is entrusted with layoffs – often without initial input into the best plan of action. Unfortunately, its members also are the first to be terminated when an organisation is in financial trouble.
- HR is expected to keep management out of problems and difficulties, while at the same time, upholding the decisions made by that group.
- Also, HR personnel are expected to uphold decisions made by management while being an advocate of those employees who are disadvantaged by unjust management policies and actions. And, who is their advocate?

One of the real dangers that exist for HR management is that the department will advocate one thing to the rest of the organisation, but fail to implement it within its own area. QM in service areas is very difficult.

In short, the human resources unit is in an impossible role – personnel must attempt to please all stakeholders all of the time. But they do it and almost always do it well!

## 2.1 History

HR academics (and these writers are no exception) talk about HR practitioners taking their rightful place in the strategic planning/management process. In fact, there has been pressure in some larger organisations and a movement away from staff support roles to a strategic partner role. Too frequently though, this is not possible to do. Only within the last few decades has HR become a profession. Prior to this, HR was an unimportant function and those given responsibility for it were second-class citizens, performing a support role. Why?

A historical look may provide some insight.

One of the authors started a career in HR in a strange way. Back in the days before computers (yes, there was such a time), she found herself out of school, broke, and without a job. As a result, she registered with a temporary help agency as a typist -- the ‘secretary’ of a successful plumbing and heating shop had quit suddenly and the author was sent as a temporary replacement. A thousand tasks needed doing:

- Men had to be hired and sent out on projects
- Projects had to be scheduled
- Time cards and records had to be kept
- Payroll (complete with government and other deductions) had to be calculated, cheques made out, and remittances made.
- Policies and procedures (particularly concerning government deductions) had to be explained
- Conflicts between plumbers and pipe fitters, between clients and tradesmen had to be resolved – and generally the boss was available only before 7:00 in the morning, and after 8:00 or 9:00 at night.

With some amendment, the original saying, ‘What doesn't kill you, makes you learn a lot about HR and other topics and skills in a hurry’ was true. In retrospect, the job was not that difficult; there

were no uniform HR policies and procedures. The Christian work ethic (Working hard will help a person earn her way into heaven) was accepted by most employees in the Canadian province in which she worked.

We tell this story for two reasons – to illustrate the beginning of HR (personnel administration) and to call attention to conditions that may continue to exist in economically developing countries. In earlier days, there was no HR department (at least in smaller and medium-sized organisations). There was someone who performed all the tasks that were left over – considered the unimportant ‘stuff.’

However, at about the same time, three changes were occurring that would have a tremendous impact on organisations. Unions were getting a foothold; government was getting less lenient with organisations that kept slipshod records; legislation was being enacted that gave some protection to workers.

Companies countered by appointing, to what might be loosely termed the HR positions, tradesmen who were excellent at their jobs, or those who were injured, whose skills and strength were failing. These individuals knew little about HR functions, and more to the point, really did not want to learn this knowledge and skills. It was women's work! Nonetheless, personnel administration (the forerunner of human resources) was born.

Following World War II, organisations grew, governments brought in wage and price controls (resulting in a growth of benefits which were not restricted); unions became more militant and adversarial, and tasks had to be split – a sort of departmentalization of HR. Compensation became one area; labour/management relations became another. What happened was that ‘chimneys’ were created – not only in the human resources field, but also throughout the entire organisation. People knew one small area of work and were concerned only about that area and keeping their jobs. This brought with it a territorialism and a protection of one's own job and unit.

Although legislation to protect workers was passed during the 1930s, it was not until the 1950s that much of this was enforceable. Suddenly, in the 1960s, legal and regulatory compliance was mandated. A new role for HR was born – keeping the company out of trouble.

This was followed during the 1980s with a need to redesign work, and the systems approach to managing took hold.

Organisations in many developing countries are moving through the stages we have just described. The lack of education and expertise in HR, the lack of interest or commitment to helping others in HR issues, and the territorialism make it very difficult to build the types of quality organisations in demand by today's global world.

## **2.2 The House of Quality**

We propose a model for HRM that is quite different from those described in the literature. A large number of the items, of course, are the same. Sometimes their placement is different. Before the model can be understood, however, a little knowledge about house construction is required.

We have envisioned a house (please don't confirm this with real house contractors!) as generally having five parts – the cornerstones, the foundation, the pillars, the roof, and the mortar that binds everything together.

- The *cornerstones* are placed first. They are placed in each corner of the house and stabilize it, that is, they prevent the house from sinking in any one corner.
- The *foundation* is laid on top of the cornerstones. It is the part on which everything else rests.
- The *pillars* are placed one in each of the four corners. They are used as supports for the walls and the roof.
- The *roof* completes the structure. It is the top covering, the constraint beyond which the house cannot be continued without extensive restructuring. Figure 4-1 is the structure (house) that we envision for human resources.
- The mortar holds the house together.

### **3 A House of Quality for Human Resources**

In this model that looks specifically at the human resources function, the cornerstones are four:

- The vision and mission of senior leadership;
- The organisational culture;
- The culture of the country itself; and
- Servant leadership.

The foundation on which everything else is built is the internal customers and clients of the unit. It is for them that the department and management of that function exist.

The four pillars, in our model, are:

- Continuous improvement;
- Product and process quality procedures, tools, and measurement;
- People development; and
- Speaking with facts (not opinions or political views), and measurement.

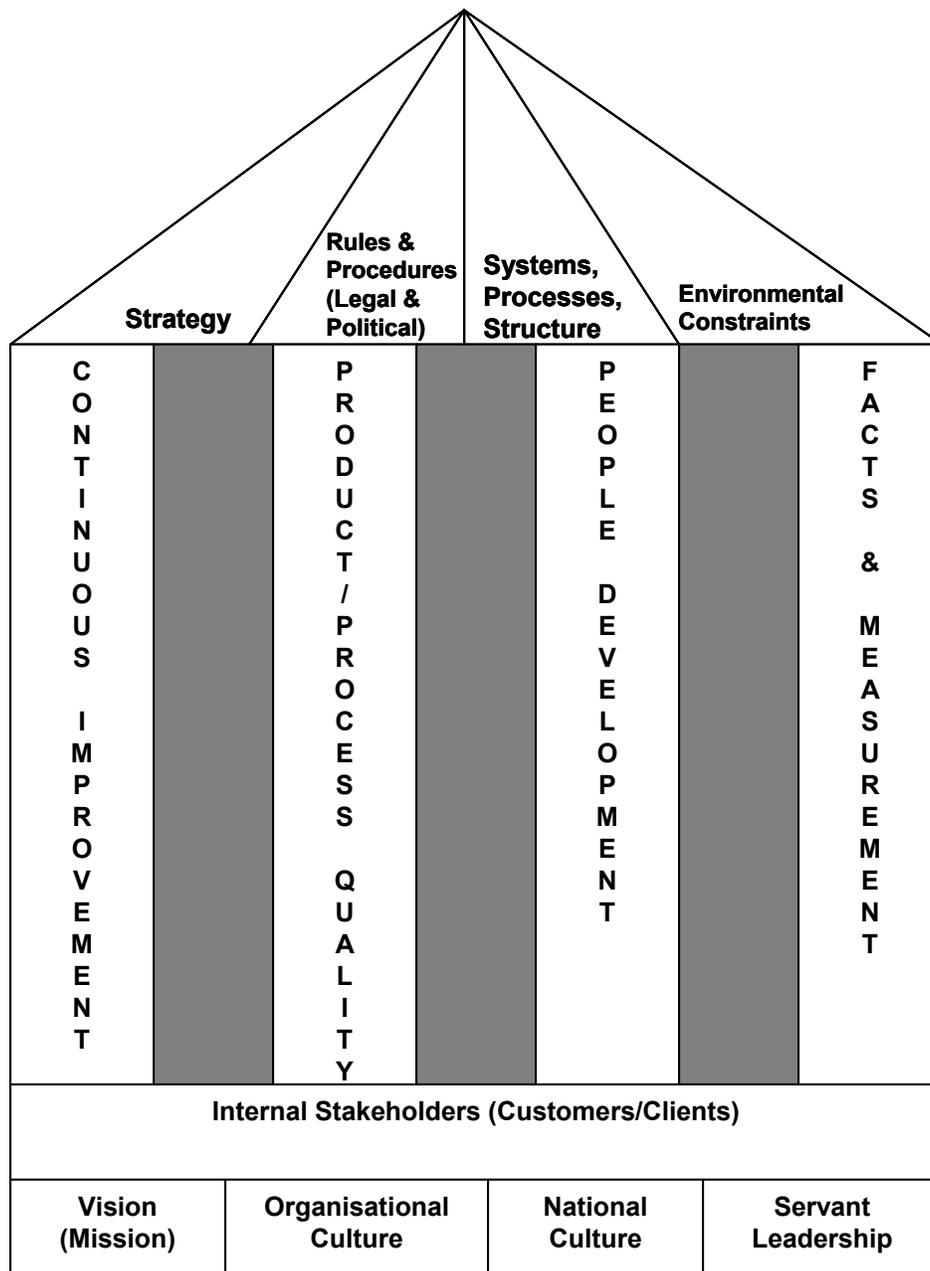
The roof forms the constraints. We have identified four, but others may claim there are a fewer or greater number of barriers. The four constraints are:

- Strategy, both short-term and long term.
- Rules and procedures. Some of these are internal. Others are forced on the organisation and on human resources management by the legal and political structure that exists at large and within the organisation.
- Systems, processes, and structure.
- Environment.

The mortar is the cement that holds the house together. It is based on:

- Respect for the individual,
- Ethical and moral behaviour, and
- Respect for authority

**Figure 4-1 The House of Quality for Human Resources**



## 3.1 Cornerstones

As mentioned above, each house has four cornerstones. In the human resources quality house (HRQH), those four cornerstones are: vision and mission, organisational culture, national culture, and servant leadership. Each is discussed in turn below.

### 3.1.1 Vision and Mission

The vision and mission state what the organisation feels it wants to be – its importance and direction – the company's purpose or reason for existing. From the quality point of view, they (and the goals and objectives) specify where the company and specifically, the human resources unit (or department) are headed. Senior management, sometimes after canvassing other groups of employees, sets the vision. For example, the initial broad quality vision of Southwest Airlines (one of the few successful airlines in the United States) is to deliver ‘passengers where they are supposed to be on time.’ Motorola, and many other organisations, have specified a more specific quality vision: ‘Zero defects per million parts.’ The quality vision of a human resources unit may include such targets as accurate information, reliability, thoroughness of investigation, 100% compliance to federal and provincial/state laws...

At senior levels within the organisation, the vision is all encompassing. As we move to functional units, that vision will be extremely specific.

### 3.1.2 Organisational Culture

Organisational culture is an important ingredient of QM success. Everyone talks about it but few do anything to change those cultures that are dysfunctional to the organisation, and especially quality. Quality gurus (e.g., Deming, Crosby, Feigenbaum) agree that there is a need for a cultural (value) transformation – at least in North America. How to achieve that becomes much more controversial.

What is organisational culture and why is it important in QM? Culture is a set of unwritten key values, norms, beliefs, assumptions, and understandings shared by the members of the organisation that describe how they should perceive, think, feel, and behave. Culture knits an organisation together. For example, to Thomas J. Watson, Sr., founder of IBM, the company stood for the pursuit of excellence, customer service, and respect for employees. This philosophy was operationalised in strategy, and permeated IBM long after Watson was no longer CEO.

What types of cultures promote exceptional quality management? Denison and Mishra (1995) advocate the acronym MCIA – a clear mission, consistency, involvement, and adaptability. Trilogy Software (2001), in addressing quality issues, suggests that integrity, customer success, people who innovate and expand the company's intellectual property, software that is built to last, and the ability to solve business problems for customers, are key. Many other models exist.

How can culture be changed? The answer is *with great difficulty*. Although there are many models and consultants, no universal guide has been discovered for doing this. What is known is that cultural changes start with a vision at the top of the organisation. A realistic plan for its implementation is added. The changes continue because of the commitment and participation of employees at all levels, and because there are appropriate and adequate organisational rewards.

In many ways, changes in quality within product organisations are easier than those that are required of service organisations. We know that external environments – political, legal, international, socio-cultural, technological, and economic – are having a dynamic impact on the culture of society in general, and the organisations in that society, in particular. More is said about this in the section on Pillar Two (processes and products of quality) later in this Block.

More will be said about changing quality culture in Block Seven.

### 3.1.3 The Culture of the Nation

Frequently, organisational culture is not the only one that needs to be considered. The culture of the nation is at least as important, if not more so. Among the cultural comparisons across nations that have been conducted, the best known are probably those of Hofstede (116,000 IBM employees in 40 countries) (1984 & 1985).

Hofstede identified four dimensions of national value systems:

- Power distance. High power distance means that people accept, and expect inequality in power (treatment) among institutions, organisations and people.
- Uncertainty avoidance. In nations where uncertainty avoidance is high, people feel uncomfortable with uncertainty, ambiguity, and taking risk.
- Individualism and collectivism. In individualistic societies, individuals are expected to take care of themselves. In collective societies, on the other hand, there is a preference for a social framework in which individuals look after one another.
- Masculinity and femininity. Masculinity carries with it a preference for achievement, heroism, assertiveness, importance of work, and material success. Femininity reflects values of relationships, cooperation, group decision making, and quality of life.

An examination of four countries (India, Japan, Thailand, and the United States) might be of interest.

	<u>India</u>	<u>Japan</u>	<u>Thailand</u>	<u>US</u>
Power distance	High	High	Moderate	Moderate
Uncertainty avoidance	High	Low	Moderate	High
Individualism/collectivism	Collectivism higher	Collectivism higher	Collectivism higher	Individualism
Masculinity/femininity	Masculine	Masculine	Feminine	Moderate

Looking at these examples, we note that IBM employees in India, in the years under study, expected to be treated unequally, were risk averse, more collective than individualistic, and highly masculine in their value systems. In the U.S., by contrast, expectations of unequal treatment were high, but not as high as in India, people were risk averse, very individualistic and while in the middle, perhaps more masculine in value systems than feminine.

What does this mean for quality management? It means that leaders and managers who are attempting to implement quality processes should be extremely aware of their own cultures. What is possible in Canada and the United States is not always possible in other countries. For example, employee empowerment can be a rather explosive issue that must be handled carefully. Workers with high power distance perceptions and high uncertainty avoidance, for example, will most surely ask why they are doing the managers' work – work for which he is being paid.

### 3.1.4 Servant Leadership

The idea of servant leadership came from the teachings of the Christian church. A number of business authors saw this as an opportunity to apply these principles to the business environment. In no other area of the organisation is the concept more compelling than in HR management. In fact, the role of human resources personnel is to be servant leaders.

Servant leadership works on the principle that the organisation is an inverted pyramid – with those who do the work at the top, and leaders at the bottom. Basically, the differences and similarities between the bureaucratic, top-down structure and the servant-leader structure are:

	<u>Top-down leadership</u>	<u>Servant leadership</u>
Basic Philosophy:	Me first Drive for power Acquire material possessions Serve own interests Trust no one	Help others to become something they could never be on their own Help others reach the top Stress others' highest priorities Delegate, coach, teach, facilitate Roll up sleeves and help
Leadership Style:	Authoritarian Direct control Supervise and criticize	Utilize all available talent Help employees accomplish goals Use support and encouragement
Quality Vision:	Clear vision, direction, & goals set by leader group Focus is on leader and what she decides is best	Clear vision, direction and goals set by leader group Making the goals clear Focus on customers & operations
Leader Role:	Make decisions Tell others what to do Assign work Evaluate results Discipline -- One error and out	Listen and help others decide Inspire, involve & empower Create environment that encourages commitment, innovation, co-operation
Worker Role:	Worker responsible but not given authority Work independently	Team participation and discussion Empowered team makes decisions
Greatest fear:	Become redundant	Fail in the assisting process
Techniques:	Command and control	Motivate and mobilize others Give credit when deserved
Results:	Fear; stick to the rules No innovation	Power of the group used for the organisation

In summary, in the old method of managing quality, leaders (and their technical employees) knew what had to be done, made the decisions, assigned and evaluated work, and, punished those who did not reach expectations or who made mistakes.

The servant leader sees herself quite differently. In the inverse pyramid in which she works, her role is to help other workers. This involves support and encouragement. She delegates work, listens, coaches, teaches, and facilitates its accomplishment. Thus she motivates and creates an environment that encourages commitment, innovation, and cooperation. Every person in the organisation, but particularly those who work with her, is important. The input of those affected by decisions is sought, and teams make the decisions.

Spears (2001) lists the following 10 characteristics of servant-leaders:

- Knows how to listen in such a way that she understands
- Accepts others and has empathy for them
- Has a sense of foresight and intuition
- Is aware of situations and has a keen perception concerning these
- Has highly developed powers of persuasion
- Can conceptualize and communicate concepts
- Is a healing influence on employees and the institution
- Has the ability and builds a community of professionals
- Makes a habit of practicing contemplation
- Is willing to change

Perhaps Covey (1995) expressed the concept of servant leadership best when he stated:

You may be able to buy someone's hand and back, but you cannot buy their heart, mind, and spirit. And in the competitive reality of today's global marketplace, it will be only those organisations whose people not only willingly volunteer their tremendous creative talent, commitment, and loyalty, but whose organisations align their structures, systems, and management style to support the empowerment of their people that will survive and thrive as market leaders.

**Source:** Advertising for Spears, L. (2001). *Servant-Leadership from the Inside Out*

## 3.2 Foundation

In manufacturing companies, customer satisfaction is one of the pillars of the house. Not so in the human resources unit (HR). To human resources, the sole reason for existence is the requirements and needs of clients and customers. They ARE the foundation. Who are these customers?

First, there is senior management. HR is the eyes and ears of the executive level. It acts at the bidding of that group but it also provides input into the decisions that are made. HR also keeps the organisation out of trouble with the law, and the community. Its role is to monitor what is occurring (the laws that are being passed and implemented and the changes in values and well-being of the community), and similar issues.

Second, HR is the linking pin between management and its employees, and between management and the union or the association that represents those employees.

Third, HR is the advocate of the individual employees – whether as groups or individuals. When an employee has an organisational complaint (as opposed to one that concerns the functions of his own department), he addresses it to HR.

Fourth, HR has a responsibility to all other units as a group within the organisation. But more than that, it has a responsibility to each unit as well.

Fifth, HR has a responsibility to the community and society. Perhaps the most important of these roles is ensuring that the organisation and its employees (at all levels) operate in an ethical manner and that it abides by the rules that society has established.

And last, but not least, HR has a quality responsibility to its own employees – those that perform the services that others expect. Why is it important to treat one's own employees as the most important customers? Because employees will treat others in the same way that they are treated!

What is the nature of this quality requirement? Any list that is developed could probably continue for pages. The quality issues that arise can probably be subsumed as the functions of HR: staffing, training, appraisal and feedback, compensation and benefits. These services require such things as competence and courtesy in the delivery of flawless communication, improved routing and attention to customer requests (including minimal response time), creativity and innovation in meeting these customers' needs, pleasant assistance in work and personal problems, feedback, flexibility, support, follow-through, elimination of bottlenecks, and whatever else the customer may feel leads to satisfaction.

If customer satisfaction is a key requirement, HR must know what this means and how it can be measured. Because of the wide variety of customers, each of which has different needs and expectations, this responsibility is particularly onerous. Furthermore, these desires can be contradictory. For example, what the union wants is often not in keeping with what senior management wants.

### **3.2.1 Satisfaction**

What is satisfaction? – it's whatever the customer says it is. What constitutes satisfaction for the sales area may be 'the program from hell' for the manufacturing department. Worse yet, the customer may not be able to specify what is important. Thus, a negotiated position that satisfies the concerned parties is all that is possible.

Satisfaction is a set of momentary emotional responses that are affected by just about everything that can be listed. Because of this, it can be said to be the gap between expected and perceived personal/group/unit outcomes. Measurement of these two concepts is extremely difficult in a service

organisation. Several tools can assist the organisation in getting a sense of what the customer expects to receive and what she sees being delivered. One of these is a collection of data regarding what constitutes not only satisfaction, but also dissatisfaction. One of the earliest sets of authors to prepare such a list was Berry, Zeithaml, and Parasuraman (1985). These authors argued that satisfaction has 10 dimensions:

- *Access* addresses the ease with which the service can be obtained. It refers to such things as hours of operation, method of contact (online, in person) and waiting time.
- *Communication* is keeping customers informed. It involves a number of skills. Among these is listening empathetically. Communication also involves the use of a common language, and the explanation of the service, its advantages and disadvantages.
- *Competence* involves a high level of skills and knowledge in providing the service.
- *Courtesy* is the friendliness and politeness of those who provide the service.
- *Credibility* is the trust that customers put in the organisation and the person who is providing the service.
- *Reliability* is the performance of the right service at the right time done right the very first time.
- *Responsiveness* constitutes a willingness and a readiness of employees to provide immediate service.
- *Security* is a freedom from danger, risk, doubt, and physical safety – but it is much more than this. A key element is confidentiality of what the organisation learns about each employee.
- *Tangibles* are the proof that the service and the organisation are credible and trustworthy. Customers, employees too, want physical examples (tangibles) to perceive this credibility.
- *Understanding* refers to the extent to which the organisation understands what the customer's expectations are, and her feelings about the services that are being provided.

First, it should be mentioned that not every one of the 10 characteristics in this list (or any other list) applies to every situation. Second, it is important to understand that the entire human resources department is not subject to the same evaluation process. HR has many different activities and units.

### **3.3 Pillars**

The four pillars identified in our HR house of quality are:

- Continuous improvement;
- Products and processes of quality;
- People development;
- Speaking with facts (not making decisions on the basis of opinions or politicking); and using measurement.

### 3.3.1 Pillar One: Continuous Improvement

Continuous improvement is the process of making something better and doing this over an extended period of time. It often involves experimentation with processes, systems, and structures to find the current best method that will increase effectiveness and/or efficiency. Generally, until the technique or replacement part is perfected, organisations prefer to do this experimentation on a small scale.

Again, the human resources department has two sets of responsibilities in terms of activities that must be implemented before *kaizen* (a Japanese word for continuous improvement) can occur. The first is to provide the organisation with the type of support needed to help in the implementation of any program or process. The second responsibility is to implement such a program within its own area.

Petrick and Furr (1995) point out that there are three types of continuous improvement processes<sup>1</sup> – cost reduction, best in class, and breakthrough dominance. Breakthrough dominance is also a method to outdistance competitors. For the most part, it involves reengineering.

Cost reduction is more long-term, and involves continuous and incremental patterns. As the term states, it is aimed at greater efficiency and lowering of costs. It tends to work well in a slow-growth economy or when a product is in the mature-growth stage.

Best-in-class continuous improvement (CI), on the other hand, is more short-term in orientation. Because considerable benchmarking is involved, some initial investment and commitment of both financial and human resources is required. This style of CI is best suited to organisations that are on the cutting edge and interested in fast growth.

Reengineering is not really continuous improvement because the attempt is to make quantum leaps to outpace the competition. It usually involves a tearing down of what exists, and a complete restructuring (including downsizing and delayering) – often in very new directions. The process is seldom incremental; instead it is revolutionary. By its very nature, a large initial investment is required and considerable funds are necessary to maintain product dominance.

Before delving deeper into the topic, some definition of terminology is appropriate. These appear at the end of this Block, on page 30.

### 3.3.2 Pillar Two: Product/ Process Quality

The second pillar is process improvement. We have chosen to think of this as different from continuous improvement. The two, of course, are closely related but our emphases are different. In this section we address the issues from an HRM point of view. The following topics are discussed:

Considerable disagreement existed in the past as to whether quality improvement was a process or a program. Diehards did not like the thought of a program, arguing that a program had a beginning and an ending date. Processes, however, were, at least in definition, continuous. In recent years, the discussions appear to have decreased and the two words are used inter-changeably. Others, to the extent possible, avoid their use entirely. In any event, the difference is more semantic than real.

One way that HR can be at the forefront is to ensure that its own database is current and tied to other organisational software programs and systems. This database must be more than just an employee

information system that gives the qualifications and experience of all employees; it must provide HR with the heart and pulse of the organisation.

The HRM database includes:

- Internal rules and procedures
- The process improvement cycle
- Special problems and concerns
- Job redesign and reengineering
- Recognition systems
- Zero service ineffectiveness, reducing response time, privacy protection

### **3.3.3 Definitions, Importance, and Other Matters**

To the HR professional, quality means four things: first, there is a need to assist other areas of the organisation in achieving this – no matter how the organisation or that area defines the term. Second, there is a need to internally create the kind of structures and processes that will ensure that HR is doing its job effectively and efficiently. That job is a service. Unfortunately, it is very difficult to define what is required. However, everyone knows when it is not being done properly. Third, there is a need to accomplish both these functions with decreasing resources. Fourth, if HR is to be a major player in the implementation of whatever quality decisions are made at a micro level, it also must be a partner in these decisions. The word *quality* within the HRM function is defined as a need to be relevant in the 21<sup>st</sup> century.

What are the difficulties and barriers that HR faces as it attempts to carry out its required HRM role? Petrick and Furr (1995) provide a list of thirteen points that we have interpreted liberally.

- Goal conflicts and differences among managers about strategic priorities exist. If their own departments are at risk, quality alternatives and initiatives are not likely to be supported.
- Senior management support, at times, does not exist for quality improvement initiatives.
- The work culture is not supportive of QM or the types of initiatives that HR would like to implement to make continuous improvement a core competency within the organisation.
- The organisation may try too much improvement at once and feel frustrated when the expectations are unmet.
- HR specialists often resist the expansion of their roles from the narrow functions in which they operate.
- A perception exists among HR specialists that continuous improvement and participation already exist.
- Continued chimneys and old loyalties remain within the organisation
- Because of fears of losing their positions, persons in managerial positions resist the kind of changes that QM requires.
- The compensation system favours individual performance – payment merely for showing up and being at the workplace.

- Standardization and minimizing variation are negative concepts to those employees who have flexible jobs and/or prefer innovation and creativity.
- Fear exists that QM will intrude on personal work styles and freedoms.
- HR personnel claim they are already overloaded and cannot take on the additional tasks that QM requires.
- QM is believed to be a passing fad.

HR is the keeper of internal rules and procedures that affect employees. Here again, the database is important. Additionally, employees will be affected by QM changes. Some will be laid off; others will be transferred; and still others will be retrained. This puts additional strain on limited HR budgets. New methods and techniques must be developed to do both jobs. It may be appropriate to outsource some of the routine HR duties.

### **3.3.4 The Process Improvement Cycle**

What is the process improvement cycle? The steps that are given by a number of authors are very similar: Tenner and DeToro (1994) suggest the following:

1. Define the problem in the context of the process. This involves identifying the output, the customers, the processes producing the outputs, and the 'owners' of the processes. In addition, customers' requirements should be defined.
2. Identify and document the process. To do this requires: first, identifying the participants, and second, providing them with a common understanding of all the steps in the process and their particular roles. Third, non-value adding activities, or those that are wasteful, should be removed from the process. These activities should lead participants to define a framework for deciding how process requirements will be measured. Flowcharting, modelling, and measuring are used.
3. Measure performance.
4. Participants must understand *why* a system is performing the way it is.
5. Given that the above steps have been successfully accomplished, it is now possible to develop and test new ideas.
6. Implement solutions
7. Monitor and evaluate how these solutions have met the needs.
8. The last two steps involve implementing and documenting system performance and changes, rewarding participants, and starting the process all over again.

### **3.3.5 The Critical Success Factors**

Every process has its critical success factors (CSF) or critical points (CP) in the process. A critical point is defined as a part of the process that is so important that, if it is not successfully managed, the process is doomed to failure. The same is true for CSF. Some activities are perceived to be extremely important to an organisation's success and/or survival.

Voehl (1992) categorizes critical success factors as being in one of three groups: building, benchmarking, or monitoring. When an organisation is under considerable pressure, more of its resources are spent on monitoring. If an organisation can be insulated from economic pressures or if it can be decentralized or spun off as a separate business unit, resources can be diverted for building – including quality systems. If programs and processes are already in place, and the need exists to improve these, a greater amount of resources are allocated to benchmarking.

Voehl continues by identifying five criteria that are used by organisations to determine the criticality of specific activities. These are:

- An overall impact on performance
- Overall relationship to strategic direction
- Part of more than one business activity
- Related to the introduction and growth stage of a product or service
- Use or generation of large amounts of capital and resources.

Why is this important to HRM? Organisational resources will be diverted to critical success factors. Quality management money will be utilized to improve and sustain critical points in the process. While this needs to occur, it may not be advantageous to HR and the activities that department must develop and the services it must provide.

### **3.3.6 Special Problems and Concerns**

In assisting production to bring a QM program into existence, a number of problems and concerns exist for HRM. Among these are those concerning:

- Job redesign and reengineering
- Recognition systems
- Benchmarking
- Internal operations

As employees become more involved in their work, a greater demand exists for job redesign. Certainly in the past and in many organisations currently, most employees perform the same narrow job – whether they are line operators or members of the HR area. Job enlargement and job rotation place minimum demands on HR time and resources. Job enrichment, whereby decision making becomes the responsibility of the employee, however, is a very different issue. Workers have to be retrained and new skills developed. Perhaps new positions have to be created or found.

Reengineering, which consists of the tearing down of numerous processes and rebuilding from scratch, and which affects many units and people, is even more taxing for HR. First, there inevitably are a considerable number of individuals who are downsized. Second, HR must support an entirely new process, which may or may not work. Third, with the assistance of the departments involved new skills and attitudes must be developed.

To be successful, any major organisational changes require a change in the reward and recognition systems. Literature, however, is very contradictory about the best systems of pay, and how to

encourage innovation, continuous improvement, and attention to quality. What is known is that if teamwork and a systems approach are desired, these must be rewarded in economic terms. At least one organisation with which we are familiar has used gain sharing effectively. The steel galvanizing plant is organized as a flat structure. Teams make the operating decisions. Operators are paid at almost the same level as their counterparts in the largest companies in the automobile industry. In the past, when quarterly quantity/quality quotas were met, operators earned an additional amount equal to anywhere from one-third to one-half of their salaries for that period. The majority of employees are very committed to meet that quota – both from a quality and quantity point of view. Because of the long-term impact (most perceive they have lifetime jobs), equipment is not abused, and required and preventative maintenance is done. There are, however, many companies where gain sharing has not been a success. It is the responsibility of HRM to examine incentive systems and bring recommendations to senior management, who in turn, will bring this to the board.

From an internal point of view, three additional issues are highlighted – zero service ineffectiveness, reduction in response time, and privacy protection. It is generally presumed that HRM is the link between management and the employees. Each employee expects HR to be able to provide him or her with answers to questions, to present her case, when necessary, favourably to senior management, and to make no mistakes. Not only that, but the expectation is for responses that are almost in hyper time. In fact, HR personnel expect this of themselves. Laws, rules and regulations are very complicated, often difficult to interpret, and require lengthy research. The time to do this is not always available.

HR is expected to ensure employees that their personal records and private information is protected. It is not clear, with today's technological advances, and the ability to hack into systems, that this is entirely possible.

It appears that in many organisations, for HR there is a process quagmire that still needs to be addressed and for which systems and process need to be developed. If this is to occur, Tenner and DeToro (1994) suggest that six ingredients are essential:

- HR employees must take ownership of the design, operation, and improvement of the process.
- A structured and disciplined approach is required to understand, define, and document all major components, not only in the process, but also in the inter-relationships in that process.
- To ensure effectiveness, assistance must be geared to customer needs. Furthermore, there must be consistency and predictability in HR assistance efforts.
- Embedding improvements in processes on a permanent basis increases effectiveness.
- Efficiency and productivity also can be increased by embedding these improvements into processes.

### **3.3.7 Pillar Three: People Development**

The third pillar is people development. HR has a special responsibility to the rest of the organisation to ensure that the right types of people are available at the right time, in the right place, in the right quantity. This also applies to quality management, in that employees have to be selected and trained. For a successful QM program, employees need to understand what the organisation expects and what it will offer in exchange for services, loyalty, and commitment (psychological contract), and

that a change in their attitudes may be required. They must also be able to problem solve and work in teams. These last two activities require interaction skills.

### **3.3.8 Psychological Contract**

An employee's work life starts with a psychological contract. When a new employee is hired, that individual has certain perceptions of what she will do for the company and what the company will do for her. Part of that expectation will be career progression and possible career paths.

At the same time, the company or organisation has expectations of what it will do for employees in general, and the new person, in particular. It also knows how it plans to reward the employee -- what benefits and perquisites of office it plans on giving. If the two psychological perceptions are in alignment, all is well and good. If they are not, the employee is likely to be dissatisfied. It is doubtful that unhappy employees will be concerned with quality. HR's job? To ensure the two views are in alignment before the potential employee is hired.

### **3.3.9 Change of Attitude**

Effective QM usually requires a flat organisation. Flat organisations require different attitudes and ways of looking at relationships. Most of these are outlined in the seven Blocks of this course. To recap:

Employees must be willing to be their own bosses and inspectors. This means that they have to be prepared to accept responsibility for ensuring that work is done in accordance with quality expectations. Autonomy, but also self-control, creativity, and innovation are required. While the organisation may not be able to promise much in the way of long-term commitment, the employee, on the other hand, is expected to be loyal and committed to the organisation. Obviously, this means that an element of trust must exist between the two parties.

### **3.3.10 Problem-solving Skills**

HR has a responsibility to ensure that all employees receive the training that they need to perform to the expectations of the organisation. Training that should be offered to employees, from a problem solving point of view, includes the following (Ishikawa, 1986, and others):

- The new quality understanding – conformance to requirements, prevention, zero defects, and conformance to customer expectations
- Collecting data
- Charts and graphs – histograms, scatter diagrams
- Cause-and-effect (CE) and process diagrams
- Check sheets
- Pareto diagrams
- Control charts
- Sampling, sampling inspection and control
- Manufacturing vs. service requirements

- Quality in profit vs. nonprofit organisations
- Measuring performance

### 3.3.11 Employee Involvement and Team Building

A crucial role for HRM is the selection and training of people for employee involvement and for teams. The first thing that must be understood is that a group of people who are working together are **not** a team; nor are all members of that group ‘involved.’ Considerable preparation must occur before a group begins to function as a team and before there is true employee involvement. Team leaders and facilitators also need development. Additionally, if teams are to function properly, senior and middle management must be trained in their new roles.

Scholtes, Joiner and Streibel (1996) suggest a number of ‘soft’ skills that are important in team development and functioning. Among them are: meeting and discussion skills, conflict resolution skills, the ability to know when a team is not functioning effectively and efficiently, and know how to identify the root causes of the problem.

According to George and Weimerskirch (1998) high performance companies ask their employees to:

- Contribute to work unit, department, and cross-functional teams.
- Solve process problems in all parts of the company.
- Communicate with customers and suppliers, both internal and external.
- Measure and analyze indicators of performance and improvement.
- Manage processes to improve quality and reduce cycle time.
- Learn a wide range of skills to improve flexibility.
- Take the initiative in identifying and addressing improvements.
- Assume responsibility for quality and productivity. (p. 87)

As a result, HR must conduct a needs assessment, and answer such questions as:

- What kind of training is needed from a corporate (organisation-wide) perspective, from a departmental perspective, and from a task perspective?
- Who needs the training?
- At what level should the training be given – an orientation, at a skills-application level, or at the proficiency (expert/specialist) level?
- Who will deliver the training?
- Where and how will the training be delivered?
- How can the effectiveness of training be measured – employee satisfaction, immediate understanding, ability to apply the skills on the job, long-run impact?
- What can be done to improve the training content and process?

Numerous books and articles have been written on these topics. They are also discussed in other courses in this program. That content, therefore, is not repeated here. Suffice it to say that employee

development is an extremely important responsibility of HR. Although it has been said before, we repeat it here. If HR personnel are to fulfil their roles effectively, they also need development.

### **3.3.12 Pillar Four: Facts and Measurements**

The fourth pillar involves gathering data so that discussion and analysis can begin with what exists (the reality). We look at speaking with facts and measurement.

### **3.3.13 Speaking With Facts**

Speaking with facts means that required resources and methods are available to determine what is actually true within an organisation. The process used to collect or obtain the facts is as important as the data itself. A variety of tools, techniques, and instruments are used to obtain factual data. Every attempt is made to eliminate barriers to fact finding in an accurate and honest manner.

The alternatives to speaking with facts are:

- Speaking without facts (either because of political reasons, personal investment, or ignorance). Instead, opinion, conjecture, assumption, an attempt at persuading others, or just shooting from the hip (hearing oneself talk) is used.
- Knowing the facts but not speaking them, often because of fear of being wrong or being seen as stupid.

HR has a role in silencing those who are giving personal comments, and encouraging those who are reluctant to speak. It also has a role in ensuring that all employees understand the **PDCA cycle** (Plan – Do – Check – Act). Petrick and Furr (1995) point out that speaking with facts requires ‘disciplined application of quality control steps, cycles, and tools to the system itself’ (p. 180). The steps in the process are outlined in Block 5.

An important tool that is generally not discussed in the QM literature, but is often used by engineers and designers to diagnose timing problems, is PERT. It is also an excellent HR tool. The PERT network is a graphic representation of the steps in a procedure. The usual terminology is activities, events, paths, critical activity, and critical path.

- Activities are tasks that must be completed.
- Events constitute the completion point of the activity, and the beginning of the next one.
- Paths are a string of activities (much like a network diagram)
- A critical activity is one that, if delayed, will make it impossible to complete the entire project on time
- A critical path shows the longest time that is required to perform the activity.

PERT follows 5 basic steps:

- All major tasks (activities) are identified;
- The sequence in which the activities can be completed (together with whether or not it is possible to do more than one activity at the same time) are identified;
- The amount of time required to do each task is determined;

- The PERT network is drawn;
- The network is interpreted and improvements are made, when and where necessary, to ensure timely completion. Generally, this is done by assigning additional resources. One of those resources might be an expert in skills required to change some essential portion of an activity.

### 3.3.14 Measurement

Measurement is an important part in speaking with facts. It ensures that everyone understands the situation that is being discussed in the same way. It also invites questioning of those facts.

What does measurement mean? It is the establishment and use of performance indicators that evaluate what has been done through the use of some type of assessment instruments. Measurements include internal performance assessments and external stakeholder-related evaluations.

Measurement occurs for four reasons:

1. To see if a process is within tolerance (within specifications or specific upper and lower limits)
2. To compare the current measure to one from a previous time
3. To evaluate
4. To provide feedback

What are some types of measuring instruments? First, there are physical ones. A ruler, a calibrator, a gauge are all examples of physical instruments. Second, there are objective instruments. An arithmetic test is objective. Third, there are subjective instruments. If attendees at a training session are asked to rate the course they have just completed, a subjective instrument is being used. These days, computers are frequently used to record participant responses to both subjective and objective instruments. The fourth type of instrument is sampling. Actual products are taken off the assembly line and examined for defects. Last, there are also more sophisticated and complex instruments. Among these are models.

Tenner and DeToro (1994) present a model that ties the quality measurement process together. Between the supplier and the customer is the work group. We indicate that measurement should occur at three levels: process, output, and outcome. Measurements go beyond those that are merely internal. Of course, employee satisfaction and buy-in are important, but so are shareholders and the community. We also point out that not only must methods of measurement exist, but a system for collecting data must also be in place.

Davidow and Uttal (1989) provide a number of cautions concerning measurement –

All measurements must be examined routinely in terms of whether or not they continue to meet customer satisfaction. Customers change as the type or quality of product or service changes. The needs of customers also change – sometimes very frequently. If re-assessment is not done, sub-optimization will occur.

One way this occurs is through goal displacement. It has often been said that what a company pays for is what it gets. In other words, unless there is continuous training and assessment, employees will

do exactly what the company measures and pays for, and no more than that. The majority of measures address performance and financial outcomes. They therefore meet the needs of only shareholders, and perhaps customers. A large number of stakeholders however (suppliers, employees, the community, government, environmentalists, consumer advocates and others), need to be considered. Two very simple tools can be used for doing this.

The first tool is *Keeping Score*. Across the top of the page are three columns: *Stakeholder Category*, *Short-term Measures*, and *Long-Term Measures*. Vertically, down the page, on the left, the names of the various stakeholders who may be concerned with changes, or lack of these changes, are written. The matrix is completed and the information that has been collected is analyzed. This instrument makes it easy to see which stakeholders attach greater importance to particular kinds of issues in the short-term and in the long-term.

The second tool, *Stakeholder Priority Matrix*, is useful when extensive changes are being contemplated and it is anticipated that there will be quality fallout, and reaction from a number of stakeholders. Again a matrix is used. The words *Low power*, *Medium power*, and *High power* (referring to the ability to influence the organisation) are written across the top. Down the side, three categories that indicate the degree of stakeholder involvement with the organisation (particularly from a quality level) are indicated.

One of the authors had occasion to be asked to resolve an issue that an organisation was having regarding ‘a fantastic new measurement instrument’ that the company had purchased. One of the suppliers was visibly annoyed; the instrument would unfavourably rate the particular product that the company provided. (It, incidentally, was not one of the items that were required when the company bid for the contract.) Had the client carried out an examination of stakeholder priorities, the company would have known that the measurement instrument (software program) would be unsatisfactory before they expended the large sum of money it cost to get it.

What does HR look for when it measures quality?

In addition to the usual measures – customer satisfaction, supplier interaction, internal performance (communication, assistance, and organisation), efficiency and effectiveness – there are characteristics and traits that HR departments in their effort to provide quality service to their constituents, usually examine:

- |  |                                    |
|--|------------------------------------|
| Bottlenecks created and resolved   |                                    |
| Change in attitude in a more positive direction                          |                                    |
| Communication (level, appropriateness, frequency, detail, tone, outcome) |                                    |
| Cooperativeness  |                                    |
| Coordination   | Creativity and innovation          |
| Decision making and judgment   | Experience                         |
| Expertise  | Feedback                           |
| Improvement in knowledge and skills                                      | Improvement in learning capability |
| Information and data dissemination                                       | Interpersonal skills               |
| Planning and execution   | Problem prevention skills          |
| Problem solving skills   | Self-esteem and self-efficacy      |
| Self-management  | Self-motivation                    |
| Service knowledge  | Teamwork                           |
| Trust  | Leadership                         |
| Accuracy of information  |                                    |
| Timeliness   |                                    |

Measurement depends on the type of industry and processes that are being examined. To have accurate interpretations of measurements, input, process, and output should be examined. Also, measurements must have certain characteristics. They must be:

- Quantifiable on a scale appropriate to the defined tolerances
- Credible (measure what they say they are measuring in a manner that is usually acceptable)
- Reliable (measure the same thing in exactly the same way each time)
- Easily understandable

Additionally, they must provide information that can be used to correct a deviation from expectations or to improve a process.

### **3.4 Roof**

The roof constrains what can and cannot be accomplished without substantive reengineering. It consists of:

- Short-term and long-term strategy
- Rules and procedures
- Systems, processes, and structure
- Environmental constraints

#### **3.4.1 Short and Long-term Strategy**

Although many topics could be discussed under strategy, we limit our remarks to cautioning managers that both short-term and long-term strategies must emphasize quality and that the structure (discussed later) must be in place to ensure that employees are committed. Corporate, business unit, and functional strategies for quality, in both the short-term and the long-term, must be in alignment. Some of these have been discussed throughout the various Blocks.

Two other issues are equally important. Core and distinctive competencies in quality should be developed, and a remuneration system that rewards employees for improvements in quality should be in place. Most organisations find that a combination of remuneration based on corporate profitability, on team work, and on individual contribution, ensures that workers stay committed to quality issues. Gain sharing, when well planned and executed, appears to be a successful approach for this purpose.

Another set of strategy issues concern production. These are: just-in-time, cost management, and quality improvement in the context of automation. Strategy should be developed only with full knowledge of what is happening in this area.

**Just-in-time** (JIT) delivery is a badly misunderstood concept. Contrary to what many believe, it does not mean zero inventories and pull production (response only to consumption). Ideally:

- Production should satisfy immediate demands rather than manufacture on the basis of speculation.
- Daily deliveries from world-class suppliers should equal the quantity consumed since the last delivery.
- Supplies delivered should have zero defects.
- Reliable tools and equipment should be available to every operator.
- Short setup times are preferable.
- If a problem is determined to exist, feedback to the supplier is immediate.

Unfortunately, goods are not produced in an ideal world. Every organisation would prefer that inventory were minimal. It is important, however, that production not be jeopardized for want of a part. Inventory builds slack into a system. It tends to hide lack of identification of root causes. For production line balance, however, it is necessary to have repetitiveness, operations that fluctuate minimally, and stable schedules. If these are impossible to achieve or maintain, inventory is necessary. Additionally, in some countries, roads are in dismal shape, and delivery equipment is prone to breakdown. This also means that inventory is required.

**Cost Management.** Gains made on the production line are often lost in non-value added processes, such as inspection time, time spent moving the product from one location to another, queue time (waiting for a machine or operator to become available), and storage. If process time is only a small fraction of time spent completing the product, there is a quality problem. The solution to this is to identify cost drivers and improvements. Ernst and Young (1990) provide a list of about 20 of these (p. 193).

This brings us to performance measures. A large number of these exist and need to be identified and quantified. Of particular importance are direct labour, indirect labour, and machine utilization. In terms of direct labour, efficiency, utilization, and productivity should be determined (Ernst and Young, 1990).

**A final comment:** Lately, considerable emphasis appears to be placed at fairly senior management levels on the importance of positive feedback. Feedback is important but the system should be set up in such a way that this is provided directly to those who do the work and manage the process. Additionally, in homogeneous culture, extensive extrinsic feedback is unnecessary; there is an implicit understanding. Insincere, or ‘phoney’ compliments probably do more harm than good; employees see through the façade and the insincerity, and loss of trust occurs. The importance of positive feedback, however, depends on the country. In some countries, criticism (always seen as personal) is abhorred and those who give what they feel is constructive criticism are labelled as insensitive.

### **3.4.2 Rules and Procedures**

Every organisation has rules and regulations that make it impossible for workers to do their job efficiently and effectively. One of the areas of continuous improvement should be the elimination of paperwork and procedures that serve no purpose except to frustrate individuals. Some organisations have a guideline that one unnecessary rule or report should be eliminated every six months or each year.

### 3.4.3 Systems, Processes and Structure

A number of changes are occurring that are forcing revisions in organisational structure. Tall bureaucratic organisations are becoming flatter and more organic. Department heads and supervisors are disappearing; team leaders, who rotate frequently, are taking their place. The isolated chimneys where each department was an island are disappearing; interacting systems are taking their place. Also, the emphases on quality issues and new technologies are resulting in new structural designs. There is greater decentralization; and more efforts at reengineering (to cut unnecessary steps in the process). This includes cross-functional cooperation and information sharing.

With greater globalization, organisations are becoming not only borderless, but also boundary-less. Mergers and acquisitions put pressures on partners to mesh culture and quality programmes and systems. Customers, particularly in service industries, are demanding structures that are seamless. In health services, for example, clients (patients) want to move from one specialty to another very quickly and with minimum inconvenience. During the last few decades there has been considerable growth in project and matrix organisations (and the dual authorities and responsibilities that come with these). Cellular strategic business units are completely autonomous from their parent companies. Within network (virtual) organisations, and knowledge and learning organisations, new quality issues that appear to be difficult if not impossible to eliminate, are surfacing. While some inroads have been made in service industries, it is not clear that the quality structures that have been established for manufacturing facilities will work as well in service and non-profit situations.

Boundarylessness attempts to address the need for flexibility. Its main purpose is to change the boundaries of authority, task completion politics and identity, and to fill the authority vacuum that often exists when an organisation moves to a flatter structure. Hirschhorn (1992) points out that boundary-less does not mean there will be no boundaries. These new boundaries, however, will be more psychological than organisational. Additionally, they need to be continuously renegotiated on a one-to-one basis.

New trends in corporate governance are emerging (the involvement of board members in the everyday business of the organisation). Board members are not only reviewing strategy, but they are also shaping it. Institutional investors, such as pension and mutual funds and insurance companies, are putting considerable pressure on top management to improve performance. A key area of concern is QM and the building of distinctive competencies in this area. Boards are demanding that new appointees have considerable and very specialized experience in areas like security, quality, state-of-the-art analytical tools, and so forth. International experience is becoming more valued. Large corporations are becoming increasingly more concerned, not with where a potential top executive originates, but what he has accomplished.

At the same time, special interest groups are demanding changes in materials, processes and procedures. The McDonald's hamburger franchise, for example, on pressure from environmental groups, changed from Styrofoam to paper cups. If organisations do not respond to popular lobbying efforts, governments force them to do so. Either way, it makes the job of QM more challenging and perhaps more frustrating.

### **3.4.4 Environmental Constraints**

Environmental issues, such as the economy, new technology, and societal mores, are forcing organisations to change. This means, in QM, a readjustment in what is being done and what is learned is required. The do-more-with-less mentality demands that every employee contribute more. Often, this means being knowledgeable beyond one's own immediate specialty.

On the socio-cultural side, lifestyle changes, consumer activism (especially when defective parts are a problem), and age distribution are forcing organisations to rethink how consumer interests can be met and consumers protected. At the same time, political and legal-systems are placing constraints on what can and cannot be done. The solution has been to move offshore to developing countries. If quality is not maintained at a high standard, opportunities are quickly lost. The Internet and other tools in the telecommunication infrastructure make the world a very small place.

At a recent conference, the keynote speaker asked the audience to think about the impact on quality and what QM must do to meet the challenges of the advent of the following trends:

- Portable information devices and electronic networking (a combination of computer, networking, television images, with the convenience of the telephone)
- Fuel cells and alternate energy sources
- Precision farming (computers that point out problems on the land)
- Virtual personal assistants
- Genetically altered vegetables and grains
- Smart mobile robots

Brainstorming groups indicated that QM was not as immune from these changes as it would first appear.

The world is changing and this is affecting organisations. Changes that occur in organisations force quality issues to the forefront. Only the surface of the problems and required improvements has been scratched. In future, we will see a new and different world of quality management. It will take dedication, commitment, and ingenuity to meet the challenges in the context of the extensive constraints that exist. The challenge facing HRM is to ensure that the organisation is ready.

## **3.5 Mortar**

The mortar that binds the HR house of quality is three-fold: respect for the individuals, ethical and moral behaviour, and a respect for 'authority.'

### **3.5.1 Respect for Individual Differences**

There is also greater opportunity and mobility among the indigenous population. Whether low mobility causes, or results in less commitment, less loyalty, and lowered levels of motivation can be argued. That these exist, however, probably cannot.

What is the effect of respect for individuals within the work area? Petrick and Furr (1995) maintain that it may:

- Introduce new ideas, concepts, and innovations
- Foster collaboration and mutual support
- Improve work performance
- Require all individuals to learn new interaction and communication skills
- Result in the search for best solutions that defy the biases and traditions of the home country
- Result in greater accountability and personal responsibility
- ‘Raise the bar’ so that continuous improvement is sought
- Show individuals the need for self-improvement
- Expose personal biases and prejudices

Additionally, given that employees are now also competing against the best that many countries have to offer, the need for self-analysis and improvement may become more evident

What is one way that an organisation can show the quality of its respect for individuals? Through the manner in which it attempts to motivate its employees. A substantial number of theories exist. Motivation theory, as a whole, however, has a major flaw -- the majority of these portray the employee as an object to be manipulated or controlled. Some do this through intrinsic appeals, others by rewards, and at least one (behaviourism) by conditioning. Additional methods that have been utilized include management by objectives, goal setting, and job enrichment. We would like to point out, however, that motivation has never entered the thinking of the purists (Deming, Juran, and others). With the increasing importance of the Baldrige Awards, it seems to be coming into greater prominence. Does it work? The results are mixed which suggests that the total system approach is very important.

### **3.5.2 Ethical and Moral Decision Making and Behavior**

As has been said very frequently, not only in this course, but also in almost every other business course, there is a new interest and demand for ethical decision making and ethical behaviour. Governments all over the world, although not quick to respond, have nonetheless done so when perceived fraud of shareholders and ‘cooking of the books’ was shown to exist.

So, what is the meaning of the words *managerial ethics* and *quality ethics management*? Managerial ethics is the standards of behaviour that guide managers and other employees in their work. In a sense this tells employees what values to hold and when to hold them. It specifies how the organisation treats its employees, how the employees treat the organisation, and how both employees individually and, on behalf of the organisation, treat other stakeholders, constituents, and agents.

Ethics management is a continuous process of underlying thinking and behaviour patterns that lead an organisation to where it wants to be. Specifically applied to quality, questions such as the following are answered: What percentage of products that are delivered to a customer can have defects? (Can the organisation successfully pass off?) Botoroff (1999) describes ethics quality as process capability that is directly linked to organisational performance. It must use universally accepted principles of reasoning. This standard is accepted by most employees within an organisation. Its base is diagnostics and system integrity. It must address, not overt behaviour, but

the underlying root causes of unethical behaviour. As such, internal consistency is required. Ethics quality addresses performance improvement.

A number of terms are used to give clearer definition to the term, namely ethical intensity, concentration of effect, magnitude of consequences, probability of effect, proximity of effect, social consensus, and temporal immediacy.

*Ethical intensity* is the degree of concern that the organisation (its senior leaders and other employees) has regarding ethics in general, and a specific issue in particular. *Concentration of effect* is the degree to which an act affects the average person. *Magnitude of consequences* -- As the term suggests, magnitude of consequences is the total benefit or harm derived from a decision. *Probability of effect* is the estimated probability a specify action that can inflict harm will occur. *Proximity of effect* describes the psychological, social, physical, and cultural distance that separates a decision maker from the effects of her decisions. *Social consensus* is the general agreement of what constitutes acceptable and unacceptable behaviour, i.e., how it affects the average person. In other words, to some people, if an act is harmful to someone else that is not of great consequence. If, however, it could be happening to us, personally, that is more cause for alarm. These personal acts are perceived as disdainful by society. *Temporal immediacy* refers to the time between an event and the time when benefit or harm occurs.

Ethical behaviour is difficult to achieve within an organisation. Unethical behaviour, on the other hand, can permeate an organisation very quickly. An important issue is the lack of consensus about what constitutes ethics and/or managerial ethics. Hermes (n.d.) and Hosmer (1995), among others, point out that there is no set standard by which the presence or absence of ethics can be judged. Instead, in a compilation of work by numerous authors, both point out that orientation and value systems range very widely. For example,

- *Hedonistic*. This is a philosophy that is basically pleasure seeking and concerned with self.
- *Might equals right*. Just as it states, the most powerful person or organisation is the one who can determine what others will do. Many leaders of other countries have accused George W. Bush and the United States of taking this 'bully' approach in their relationships with the rest of the world.
- *Conventionalist*. Conventionalism is a philosophy that is often practiced among competitors, old style labour-management negotiators, for example. Both parties withhold their bottom position, bluff, and grandstand. They also take advantage of all legal opportunities, social conventions and customs.
- *Intuition*. This suggests that the organisation behaves in the manner that key individuals feel is appropriate. This is really a 'gut feeling' or a perception of what the individual understands to be right at the present time in the present situation.
- *Organisation ethics (long-term self interest)*. Those who follow the organisational long-term approach are 'organisation' men and women. They ask what the organisation would expect of them, and then blindly do what is best for the organisation. The classic case is Colonel Oliver North, aide to former President Ronald Reagan. North testified at the inquiry that he was not in the habit of questioning orders. He did what he was told.
- *Machiavellianism ('means to an end')*. In the 16<sup>th</sup> century, Machiavelli wrote a book titled *The Prince* in which he pointed out the many ways in which the prince could act if he wanted to

succeed. The premise of the book is that the end justifies the means. [A side note: Machiavelli was not advocating that the prince be unethical; what he was saying is that if the prince insisted on being unethical, there were processes, rules, and guidelines he could use].

- *Utilitarian.* The utilitarian approach is one where the individual examines the benefits and the harm that will result from a particular action. If the benefits are greater than the harm, the action is carried out. The principle says that an organisation (or individual) should take only those actions that result in the greater good of society, i.e., the greatest good for the largest number of people.
- *Professional ethics.* Every professional body has a standard set of ethics to which all members are expected to adhere. Accounting, for example, has a code of ethics. Basically these professional codes state that only those behaviours that can be favourably justified to one's peers should be performed.
- *Disclosure.* This principle is based on the perception of the common man – what an individual with no interest in the issue but concerned with fairness and equity for everyone would do. Important is that all facts and knowledge about the issue are communicated openly.
- *Distributive justice.* The treatment an individual or organisation receives should be based on an equitable and fair assignment of benefits. The principle, opposite to utilitarianism, speaks of the good of the minority and the disadvantaged.
- *Legal/Categorical imperative.* This principle states that the law must be respected and before actions are taken thought should be given to what is right and just for any other person in a similar situation.
- *Golden rule* (personal virtue; religious injunction). In this category, the issues that fall under a 'good guy, good gal' rubric are grouped. Basically the golden rule says, 'Do unto others as you would have them do unto you.' In other words, the individual (and by extension, organisations) should not do anything that is dishonest, lacking in truth, or subversive. The religious injunction principle takes this one step farther and cautions that an individual (or an organisation) should never do anything that is unkind or harmful, not only to individuals, per se, but also to the community. The sense of community, belonging, and working together must be preserved.

Voehl, Jackson & Ashton (1994) provide the following advice for establishing a process approach:

- Systematically define the activities necessary to obtain the desired result.
- Establish clear responsibility and accountability for managing key activities.
- Analyse and measure the capability of key activities.
- Identify the interfaces of key activities within and between the functions of the organisation.
- Focus on the factors, such as resources, methods, and materials that will improve key activities of the organisation.
- Evaluate risks, consequences, and impacts of activities on customers, suppliers, and others.

Try your hand at applying these, in the context of quality ethics, within your organisation or industry.

### 3.5.3 Respect for Authority

When most people think of authority they think of the hierarchy and the boss giving instructions to those lower ranks in the organisation. There are, however, different degrees of knowledge and expertise; leadership; charisma (e.g., Mohandas Gandhi, 1869-1948); tradition (the Queen, a father or mother). Sometimes, as in a household or a matrix organisation, there are dual lines of authority.

Someone within organisations must set the vision, mission, goals, and objectives. Someone also must also take responsibility to facilitate the required activities in order that those objectives, and hence the vision are accomplished. Authority relationships, therefore, are necessary. Patterson (1955) described five authority roles as:

- *Exdominus* authority rests with the hawk that searches for new visions and new directions.
- *Indominus* authority rests with the dove who is the peacekeeper.
- The eccentric is the person who has the crazy, off-the-wall ideas, and who needs to be brought down to earth. On the other hand, this is a very important individual in the organisation. He forces others to think and to build on his ideas. Thus, he makes the organisation more innovative and sends it in newer usually more profitable or more satisfying directions.
- The exemplar ensures that there is compliance with the laws, rules, and regulations.
- *Mimetic* authority rests with all the rest of us who let the other four leaders do their tasks.

Having described the above, however, it is also important to state that, depending on the situation, the roles, not only must, but do change. It is becoming increasingly less possible for organisations to function – particularly when quality is the issue – in the old hierarchical ways. Employees who know the job must assume responsibility for changing it. In other words, employees must be hired who are able to think and contribute. This factor is not related to colour of skin, to parental ancestry, to religion, to previous family background, or other irrelevant issues.

This is a particularly difficult concept to understand in some countries. Often, there are traditional expectations and a hierarchy that does not permit people at lower levels of the organisation to take an authority role. For example, if newspaper stories in North America can be believed, the caste system, although illegal, is still in existence in some parts of India. No matter on what basis it can be or is justified, the bottom line is the same – the talents and abilities of all employees are not fully utilized, or a problem exists in the staffing process. Individuals in those countries may correctly argue that this is a North American concept that is not applicable in that particular country. As countries like China, Mexico, those in Africa become more technologically complex because of external demand, as well as more industrialized and conscious of quality issues, the advantages of having mass quantities of cheap labour may disappear.

Part of the mortar of the house of quality is this respect for authority and whoever may have the type that is required for the particular situation at the particular time.

## 4 Summary

The following concepts were developed in this Block:

HRM has a unique role in the organisation and in QM. Quality tools must be used and improvements must be achieved for its own services – to date, almost an impossible task. The unit must also aid other units in achieving quality and anticipating new directions.

A house of quality for human resources is presented. That house has five parts, that is:

- The four cornerstones, which consist of vision and mission, the organisational culture, the culture of the country, and servant leadership.
- The foundation is the internal customers and clients.
- The four pillars are continuous improvement, product and process quality procedures, people development, and facts and measurements.
- The roof forms the constraints and includes strategy, rules and procedures, systems, processes, and structure; and environment.
- The mortar holds the house together. It consists of respect for the individual, ethical and moral behaviour, and respect for authority.

## 5 Definitions

Knowledge of the following definitions is helpful in the understanding of this Block.

**Delphi technique.** This technique can be used to evaluate alternatives and choose among them. The technique is very similar to the nominal group technique except that participants do not meet face-to-face. After each person has weighted each of the items on a scale, the scores are averaged. This becomes the importance score of that particular item. A second set of weightings specify how well each item satisfies the criteria that is being considered, e.g., cost.

**Employee involvement.** Employee involvement refers to the use of the skills and capabilities of all employees within the organisation. Of necessity, it is usually limited to a small group who function as a team and provide advice to management. Some organisations prefer to call these teams quality circles.

**Feedback loop.** A feedback loop is a series of links that provides an organisation the opportunity to examine the gap that exists between the achieved and the desired outcomes. Feedback may be obtained from employees, from equipment, from measuring instruments, the environment, or from customers.

**Ishikawa diagram.** The Ishikawa diagram (named after Kaoru Ishikawa, 1986) is either a process or cause-and-effect diagram. It shows all the possible causes, as identified by a brainstorming group or team, pertaining to a particular problem.

**Nominal group technique (NGT).** The nominal group technique is similar to the Delphi technique except that there is face-to-face interaction. The session starts with individual idea generation. This

continues for several minutes, or until it is obvious that team members are out of ideas. In round robin fashion, each member contributes one idea, in turn, until all ideas are recorded in view of the participants. No discussion (only clarification) is permitted during this time. It is important that the facilitator stress that there are no stupid or naïve ideas.

Following the recording of the ideas, they are grouped by types of causes. The advantages and disadvantages of each set of causes are discussed in turn. Following this discussion, each member of the team independently ranks all of the ideas. These are recorded on a matrix in full view of all team members.

If there is no agreement, an attempt is made to obtain additional information and the discussion and voting process is repeated.

**Pareto law/principle/analysis/chart.** The Pareto principle (named after Vilfredo Pareto), states that 80 percent of the problems are based on 20% of the causes. It is one of the criteria used to determine whether a problem is worthy of study and the specific causes that should be selected.

**Process.** A process is a series of activities or steps that use a transformation process to change inputs into desired outcomes. Both inputs and outcomes may be tangible or intangible. Processes can be classified as management, functional, or cross-functional.

**Quality circles** (quality control circles). A quality circle is an employee involvement group or team.

**Structure.** A structure is a real or perceived edifice. The word is usually used to describe how the various units of an organisation are organized and linked.

**Subsystem.** A subsystem is a specific subset of interrelated activities and mechanisms that are a portion of the whole.

**System.** A system is a set of interrelated activities and mechanisms that function as a whole.

**Technique.** A technique is a method for carrying out a particular activity. It is often known as a tool, procedure, or method.

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### ***Points to Ponder***

1. In the latter part of this Block, are 10 ways of looking at ethics. Which of these most closely represents the view of different groups in your organisation?
2. Apply the ISO standards of ethical behaviour to your organisation.
3. How well is the HR unit within your organisation meeting the demands that are placed on it? In view of what was said in the Block, what improvements could be made?

---

## Self-Test

Match the words on the left with the explanation on the right:

- |  |  |
|--|--|
| a. critical point  | _____ Preference for achievement and heroism.  |
| b. Mortar  | _____ Previously when the telephone company was contacted regarding a problem, it was necessary to talk to 5-7 people to resolve the issue. When work was changed, the customer can explain the problem to only one person and it is solved. |
| c. Culture   | _____ In a manufacturing process, the coming together of products from two assembly lines that have to match perfectly.  |
| d. Reengineering work                                    | _____ A willingness to help others.  |
| e. Feminine aspect of national culture                   | _____ A perception of where the organisation would like to be at some future date.   |
| f. Psychological contract                                | _____ Type of culture required for exceptional quality management.   |
| g. Continuous improvement                                | _____ Ethical standards within the organisation  |
| h. Bottleneck  | _____ Values placed on relationships, cooperation, group decision making and quality of life.  |
| i. Clear mission, consistency, involvement, adaptability | _____ The expectations that the employee and the organisation have regarding what they will provide the other party and what they will gain from the relationship.   |
| j. Vision  | _____ A desire to work together rather than individually.  |
|  | _____ Gradual quality improvement over an extensive period of time.  |
|  | _____ Set of values, norms, beliefs, assumptions, and unwritten rules  |
|  | _____ A stop or hold-up in the production process.   |

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**Commonwealth of Learning Executive MBA/MPA**

**SC4 Quality Management**

**Block Five**

**Tools and Techniques for Quality Management**

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# 1 A Tour of Block Five: Objectives and Introduction

In this Block, we will explore some of the many tools and techniques available to assist in the management of quality. We cover the gamut from basic tasks such as data collection, analysis and interpretation, all the way to fairly sophisticated statistical approaches. What we shall discuss is a blend of quantitative techniques as well as simple, but very useful qualitative methods. The tools and techniques are grouped into three categories: tools for data collection and interpretation; tools for planning; and tools for continuous improvement. We also discuss the systematic approach to continuous improvement, called the *Deming Cycle* by the Japanese – although it was originated by Walter Shewhart, who called it the *Quality Cycle*. Finally, we discuss the Six-Sigma approach pioneered by Motorola and made a centrepiece of GE (General Electric) under Jack Welch in the 1990s.

## 1.1 Block Five Objectives

After working through this Block, you should be able to:

1. Describe three categories of tools and techniques for QM
2. Define and interpret tools used in data collection and analysis
3. Define and interpret tools used in planning.
4. Define and interpret tools used in continuous improvement activities.
5. Describe the Deming P-D-C-A cycle and apply it to QM situations.
6. Recount the Six Sigma approach and the DMAIC and DMADV approaches.

## 2 Tools for Data Collection and Interpretation

Any systematic attempt to manage quality, be it in a manufacturing or a service activity, must rely upon data collection and interpretation to measure progress, to guide decisions, and to enable deep understanding of customer needs. Businesses regularly collect market and customer data using many tools and from many sources, and it is important to evaluate the relative quality and reliability of each data source, as it contributes data (or information, which is sometimes described as data which have been analysed and interpreted) that is useful to the decision-makers in the organisation. Under the rubric of *Voice of the Customer* (VOC), Jeff Israel<sup>1</sup>, the founding Principal of Satisfaction Strategies, a consulting firm specializing in satisfaction measurement and customer-focused change, describes the data inputs in five useful categories: customer records; complaints; surveys; benchmarking; and transaction data. We discuss each of these briefly.

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<sup>1</sup> Jeff Israel, *Satisfaction Strategies*, 1993

## **2.1 Customer Records**

Customer records of purchase history, warranty claims, and credit information are a valuable source of intelligence. It is important that the organisation has systems in place to collect information relating to quality (of product or service), and to ensure that it reaches decision makers. It is not adequate to have questions on warranty cards, but to fail to collate the responses and to ensure that they reach design and marketing groups.

## **2.2 Data on Complaints**

Complaints are often a rich source of ideas for continuous improvements in products or services. Some organisations have found very innovative ways to capture complaints from customers while they are fresh and current. For example, British Airways has installed video kiosks in several airports, to receive and record customer comments. Customers with complaints are encouraged to record them, with the assurance that they will be reviewed by management of the company. This approach has the benefit of capturing the urgency and emotion attached to complaints, something which is difficult to capture on surveys or customer response cards filled in later. Once again, the best companies have systems in place to collect and analyse complaint data, and to ensure that it is shared with decision makers. It is, of course, important that staff working at complaint desks (whether face-to-face, on the telephone, or online) be well trained in responding proactively to complaints, but it is equally important that they see it as their role to be part of the continuous improvement system. This part of their job requires that they are trained in data collection and summarisation, so complaint data are captured in useable forms for decision makers.

Some companies go out of their way to solicit complaints from customers. For example, one of the authors recently had some repair work done on the heating system in his home. A few days after the service call, he received a telephone call from the customer service department of the company enquiring into his satisfaction with the service call. ‘Was the service technician courteous?’ ‘Was the cost of the parts and labour reasonable?’ ‘Was the response time acceptable?’ These were some of the questions asked, in a clear attempt to see if there was any cause for complaint in the service provision. Similar types of data collection take place through customer response cards in hotels, restaurants, etc. All of these are attempts to collect data to be used in continuous improvement efforts in progressive organisations. Something as simple as the question posed by the hotel desk clerk during checkout: ‘Was everything suitable during your stay?’ can be an effective data collection approach – so long as it is systematic, the data are collected and summarized, and provided to decision makers.

## **2.3 Survey Data**

Surveys are used by many companies, especially when exploring new products and services, or new features for existing products and services. Quality improvement is a key aspect of any survey system, and questions about the quality of products and services should be part of any survey of customers or potential customers. Especially important is the collection of data on the relationship between quality and price in the opinion of customers. Regular surveys of

customers are a useful tool to assist in early spotting of trends in the marketplace, and in the perceptions of customers with respect to the company's standing in the marketplace.

Various types of surveys are commonly used: mail surveys; telephone surveys; interviews; and focus groups. Each type has its advantages and disadvantages with respect to reliability and validity of data, with respect to cost, and with respect to the kinds of opinions and attitudes which can be probed. Detailed discussion of the methodology most appropriate in a given situation is beyond the scope of this course. As a manager, you are advised to consult with experts in survey methodologies, if you wish to gather survey data. You could also apply the techniques and tools discussed in your statistics course.

## 2.4 Benchmarking

According to Xerox, the company that pioneered the concept of photocopying in North America, benchmarking is the continuous process of comparing products, services, and practices against the best in that particular activity. Benchmarking is the process of continuously searching for new ideas and innovations in methods, practices, procedures, and implementing them to achieve improvement. It is not the examination of an entire process at the same time. It is a process of examining very narrow activities and determining how other organisations, both within the industry and outside of it, are performing the task.

Benchmarking can be accomplished by looking for companies that may be carrying out a function extremely well, no matter what their size. This may mean examining: (1) internal operations, (2) competitors' procedures, (3) methods used by other companies that are carrying out the same function in different industries. For example, Boeing Aircraft Company benchmarked manufacturers of everything from computers to ships when they were exploring ways to reduce the manufacturing cycle time for 747 and 767 aircraft.<sup>2</sup>

Another good source for companies against which to benchmark would be Baldrige Award winners, who have similar characteristics.

Benchmarking usually involves:

Identifying the portion of the process that is to be examined (what to benchmark).

Determining how the process is measured, and what difficulties are being experienced.

Planning the benchmarking project and receiving the resources required to complete it.

Finding organisations that do that function extremely well, i.e., defining benchmarking partners.

Collecting data from benchmarking partners.

Comparing one's own procedures with those whose data has been collected.

Making recommendations and implementing the ideas.

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<sup>2</sup> Shawn Tully, *Why to Go for Stretch Targets*, Fortune, November 14, 1994, pp 45-58.

## 2.5 Transaction Data

Organisations have much data regarding transactions with their customers, and they need to be conscious of the improvement opportunities presented by these data. Information about frequency and volumes of purchases by a customer over time will possibly signal changes in that customer's satisfaction with products. Such patterns must be tracked and monitored, with intervention taken when signals present themselves. A customer who has ordered 1000 units each month for the past six months and who now orders only 500 units must be examined carefully. The best companies institute automatic tracking systems to alert them to changes in customer purchase or return patterns.

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### ***Point to Ponder***

A recent Internet discussion forum saw several postings on the question of whether or not VOC is killing off innovation because paying such close attention to the Voice of the Customer (VOC) prevents a company from being more creative than its customers. Do you think that VOC is killing off innovation? In your consideration of this question, try to think of organisations (and the innovations that they have developed) that made the leap beyond customers' expectations.

## 3 Tools for Planning

The collection of customer data is, of course, only the first step in QM. Once data are collected, they must be translated into action, if they are to have an impact on quality. This section describes a number of tools used in quality planning: Quality Function Deployment (QFD); Simultaneous Engineering; and a set of Seven Management Tools commonly grouped together.

### 3.1 Quality Function Deployment

Quality Function Deployment (QFD), also known as The House of Quality, is one of the best devices created to tie product and service design decisions directly to customer wants and needs. It has led to a host of successful breakthrough products. QFD is designed to deploy customer input throughout the design, production, marketing, and delivery facets of a given product or service. In a typical QFD application, a cross-functional team creates and analyzes a matrix linking customer wants and needs to a set of product and service design metrics that the company can then measure and control. This matrix is sometimes called the House of Quality, leading to the close identification of the two similarly named tools.

Dr. John Hauser, Professor of Marketing at the MIT Sloan School of Management, co-authored the first widely-read English paper about this breakthrough product development technique: *The House of Quality*<sup>3</sup>.

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<sup>3</sup> *Harvard Business Review*, May-June 1988

Since 1966, Quality Function Deployment (QFD) has been used worldwide in every industry and sector to:

1. Prioritise spoken and unspoken customer wants, needs, and desires;
2. Translate these needs into technical characteristics and specifications; and
3. Build and deliver a quality product or service by focusing everybody toward customer satisfaction.

QFD helps organisations seek out both spoken and unspoken needs, translate these into actions and designs, and focus various business functions toward achieving a common goal. QFD enables organisations to exceed normal expectations and provide a level of unanticipated excitement that generates ‘Wow!’ responses.

Professors Shigeru Mizuno and Yoji Akao developed QFD in Japan in the late 1960s. At the time, statistical quality control, which was introduced after World War II, had taken roots in the Japanese manufacturing industry, and the quality activities were being integrated with the teachings of such notable scholars as Dr. Juran, Dr. Kaoru Ishikawa, and Dr. Feigenbaum that emphasized the importance of making quality control a part of business management (which eventually became known as TQC and TQM).

The purpose of Professors Mizuno and Akao was to develop a quality assurance method that would design customer satisfaction into a product *before* it was manufactured. Prior to that time, quality control methods were primarily aimed at fixing a problem during or after manufacturing.

The first large scale application was presented in 1966 by Kiyotaka Oshiumi of Bridgestone Tire in Japan, which used a process assurance items ‘fishbone’ diagram to identify each customer requirement (effect), and to identify the design substitute quality characteristics and process factors (causes) needed to control and measure each of them.

In 1972, with the application of QFD to the design of an oil tanker at the Kobe Shipyards of Mitsubishi Heavy Industry, the fishbone diagrams grew unwieldy. Since the effects shared multiple causes, the fishbones (Note: see Section 4 of this Block for more information on the fishbone diagram) could be refashioned into a spreadsheet or matrix format with the rows being desired effects of customer satisfaction and the columns being the controlling and measurable causes.

At the same time, Katsuyoshi Ishihara introduced the Value Engineering principles used to describe how a product and its components work. He expanded this to describe business functions necessary to assure quality of the design process itself.

Merged with these new ideas, QFD eventually became the comprehensive quality design system for both product and business process.

The introduction of QFD to America and Europe began in 1983 when the American Society for Quality Control published Akao's work in their journal *Quality Progress*, and Cambridge Research (today Kaizen Institute) invited Akao to give a QFD seminar in Chicago.

Together with the English publication of QFD: The Customer-Driven Approach to Quality Planning and Deployment<sup>4</sup> and QUALITY FUNCTION DEPLOYMENT: Integrating Customer Requirements into Product Design<sup>5</sup>, QFD became popular across a wide variety of industries in the U.S. and Western Europe. In the U.S., in particular, because of its flexibility and comprehensiveness, the methodology was eagerly embraced by the businesses that were facing the Japanese competition. There, new and innovative applications of QFD were experimented by industries and businesses that were not reached before. A survey in the mid-1990s of 400 major U.S. companies found that almost two thirds (2/3) of them were using QFD in some parts of the production planning process.

Japan has continued to push the envelope of QFD applications through an on-going QFD Research Sub-Committee at the Union of Japanese Scientists and Engineers (JUSE) as well as their annual QFD Symposium established in 1993. They hosted the first International Symposium on QFD and are a charter member of the International Council for QFD.

Today, QFD continues to inspire strong interest around the world, generating ever newer applications, practitioners and researchers each year. Countries that have held national and international QFD Symposium to this day include the U.S., Japan, Sweden, Germany, Australia, Brazil, and Turkey.

QFD is quite different from other quality initiatives in that it seeks out both 'spoken' and 'unspoken' customer requirements and maximizes 'positive' quality (such as ease of use, fun, luxury) and this is what makes the information valuable. Traditional quality systems aim at minimizing negative quality (such as defects, poor service). With those systems in place, the best you can get is zero defects - which we see is not enough to strive for, especially when products still fail to sell despite being defect-free.

What are the characteristics of QFD as a quality system?

1. QFD is a quality system that implements elements of Systems Thinking (viewing the development process as a system) and Psychology (understanding customer needs, what 'value' is, and how customers or end users become interested, choose, and are satisfied, etc.).
2. QFD is a quality method of good Knowledge or Epistemology (how do we know the needs of the customer? how do we decide what features to include? and to what level of performance?)
3. QFD is a quality system for strategic competitiveness; it maximizes positive quality that adds value; it seeks out spoken and unspoken customer requirements, translates them into technical requirements, prioritises them and directs us to optimise those features that will bring the greatest competitive advantage.
4. Quality Function Deployment (QFD) is the only comprehensive quality system aimed specifically at satisfying the customer throughout the development and business process -- end to end.

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<sup>4</sup> 1994 Quality Resources: ISBN92-833-1122-1; written by Mizuno and Akao; translated by Glenn Mazur

<sup>5</sup> Productivity Press: ISBN 0-915299-41-0; written by Akao; translated by Glenn Mazur and the staff at Japan Business Consultants for GOAL/QPC for the first advanced QFD training outside Japan

The details of QFD are beyond the scope of this managerial course. Those interested in the technical details are referred to the footnoted readings, where much more information can be found. The book *Quality Function Deployment – Practitioner’s Approach*<sup>6</sup>, is a good applied guide.

### **3.2 Simultaneous (Concurrent) Engineering**

Concurrent Engineering (CE) is the systematic approach to the integrated, concurrent design of products and related processes, including manufacturing and support. This approach is intended to cause the developers to consider all elements of the product life cycle, from conception through to disposal, including quality, cost, schedule, and user requirements.

The basic tenet of CE is the integration of methodologies, processes, human beings, tools, and methods to support product development. CE is multi-disciplinary in that it includes aspects from object-oriented programming, constraint programming, visual programming, knowledge-based systems, hypermedia, database management systems, and CAD/CAM.

Concurrent engineering involves the interaction of a diverse group of individuals who may be scattered over a wide geographic range. To enable effective and complete communication among them, there are certain technological concepts that must also become organised into concurrent layers. Distributed information sharing and collaborative/cooperative work are important techniques to maintain or exceed the current level of product development productivity. Concurrent engineering takes advantage of shared information and allows simultaneous focus on different phases of the product or service development life cycle. Many existing World Wide Web (WWW) capabilities could support a wide area CE environment. For a CE approach to be effective, however, a strong level of communication between the developers and end-users must exist.

In the context of CE, a customer is both internal and external to the development process. Each member of the CE staff is an internal customer for intermediate products during development. CE advocates an integrated, parallel approach to design. By paying attention to all aspects of the design at each phase, errors are detected prior to being implemented in the product. The integrated design process must include a strong information sharing system, an iterative process of redesigns and modifications, trade-off analysis for design optimisation, and documentation of all parts of the design.

In a typical project, the role of CE is to integrate the interests of diverse people: the designer, whose goal is to create a product or service which meets customer needs; the production people, whose goal is to manufacture (or implement) the product efficiently; the marketing people, whose goal is to sell and deliver the product or service; and the finance people, whose goal is to make a profit on the product. All these functions (and several others) have an interest in the product and must work together. The objective of CE is to ensure that they do! An early example of the CE approach was the development of the Taurus line of

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<sup>6</sup> Bossert, James L. 1991, Milwaukee, ASQC Quality Press.

automobiles by Ford<sup>7</sup> in the 1980s. Representatives from all the interested functions worked closely together on Project Taurus teams, communicating regularly and solving problems much before they could affect the results. For example, manufacturing was able to suggest minor design changes that would have important productivity and quality impacts.

### 3.3 Seven 'New' Management Tools

A set of seven management and planning tools has come to be used widely in the improvement of quality planning efforts. The set traces its roots to operations research in the U.S. in the post-World War II era, but the tools have been combined and popularised as a set by the Japanese since the mid-1980s. The tools are especially useful in assisting managers to bring order and structure to unstructured problems, to plan strategically, and to manage large, complex projects. We provide here only a brief description of these tools. For much more detail, you can refer to the many books on the subject, listed in the References section<sup>8</sup>.

The **affinity diagram** is used to generate ideas, and then organize these ideas in a logical manner. This is a modification of traditional brainstorming methods. The first step in developing an affinity diagram is to post the problem (or issue) where everyone can see it. Next, team members write their ideas for solving the problem on cards and post them below the problem. Seeing the ideas of other members of the team helps everyone generate new ideas. As the idea generation phase slows, the team sorts the ideas into groups, based on patterns or common themes. Finally, descriptive title cards are created to describe each group of ideas.

The **interrelationship digraph** allows teams to look for cause and effect relationships between pairs of elements. The team starts with ideas that seem to be related (often generated from affinity diagrams) and determines if one causes the other. If idea 1 causes idea 5, then an arrow is drawn from 1 to 5. If idea 5 causes idea 1, then the arrow is drawn from 5 to 1. If no cause is ascertained, no arrow is drawn. When the exercise is finished, it is obvious that ideas with many outgoing arrows cause things to happen, while ideas with many incoming arrows result from other things. The items with mostly arrows going in are long range targets and the items that have mostly arrows going out are initial action items.

A **tree diagram** assists teams in exploring all the options available to solve a problem, or accomplish a task. The tree diagram actually resembles a tree when complete. The trunk of the tree is the problem or task. Branches are major options for solving the problem, or completing the task. Twigs are elements of the options. Leaves are the means of accomplishing the options.

The **prioritisation matrix** helps teams select from a series of options based on weighted criteria. It can be used after options have been generated, such as in a tree diagram exercise. A prioritisation matrix is helpful in selecting which option to pursue. The prioritisation matrix adds weights (values) to each of the selection criteria to be used in deciding between options. For example, if you need to install a new software system to better track quality

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<sup>7</sup> *How Ford Hit the Bull's Eye with Taurus*, Business Week, June 30, 1986, pp. 69-70

<sup>8</sup> Shigeru, Mizuno, *Management for Quality Improvement: The 7 New QC Tools*, Cambridge, Mass.:Productivity Press, 1988

data, your selection criteria could be as follows: cost, leadtime, reliability, and upgrades. A simple scale, say 1 through 5, could be used to prioritise the selection criteria being used. Next, you would rate the software options for each of these selection criteria and multiply that rating by the criteria weighting.

The **matrix diagram** allows teams to describe relationships between lists of items. It is the most widely used of the planning tools and helps managers to address two questions: ‘Are these data related?’ and ‘How strong is the relationship?’ It can be very useful in facilitating an analysis of the relationship of each item in one set to all items in the other set. This often triggers some thinking that would not have happened if this organised approach were not used. It is also helpful to see patterns of relationships – which items don't relate to anything and which ones are heavy hitters?

A matrix diagram can be used to compare the results of implementing a new manufacturing process to the needs of a customer. For example, if the customer's main needs are low cost products, short lead times, and products that are durable, and a change in the manufacturing process can provide faster output, larger quantities, and more part options; then the only real positive relationship is the shorter lead time to the faster output. The other process outcomes – larger quantities and more options – are of little value to the customer. This matrix diagram, relating customer needs to changes in the manufacturing process, would be helpful in deciding which manufacturing process to implement.

The **process decision program chart** is a contingency planning tool that can help a team to identify things that could go wrong, so corrective action can be planned in advance. The process decision program chart starts with the problem. Below this, major issues related to the problem are listed. Below the issues, associated tasks are listed. For each task, the team considers what could go wrong and records these possibilities on the chart. Next, the team considers actions to prevent things from going wrong. Finally, the team selects which preventive actions to take from all the ones listed.

The **activity network diagram** graphically shows total completion time, the required sequence of events, tasks that can be done simultaneously, and critical tasks that need monitoring. In this respect, an activity network diagram is similar to the traditional PERT chart used for activity measurement and planning. One of its benefits is that it indicates which items can be done simultaneously. Another benefit is that it makes it clear what set of activities will take the longest and where time efficiencies can be achieved.

## 4 Tools for Continuous Improvement

We all know that quality is everyone's responsibility; however, getting everyone to participate is difficult. People need tools to help them identify quality problems and plan corrective action. Let's review seven tools that are helpful in the quality management process.

The first and simplest tool is the **check sheet**. Use of check sheets is often the first task taught to new work teams because they are simple to use, and they encourage the use of data, rather than impressions, in discussing processes. A check sheet is an easy-to-understand form

used to answer the question, ‘How often are certain events happening?’ Check sheets start the process of translating opinion into facts.

A simple check sheet is shown below. It was used to record reasons for absenteeism among employees in a work group over a period of three weeks.

REASON	WEEK 1	WEEK 2	WEEK 3	TOTAL
Illness	///	//	/	6
Vacation	////	////	///	11
Family Reasons	/	//	//	5
TOTAL	8	8	6	22

The second tool is the **histogram**. It is a helpful to array data so that patterns can be discerned visually. The histogram is a simple statistical tool for this purpose. A histogram is a vertical bar chart representing a tabulation of data arranged according to size. This tabulation of data is commonly known as a frequency distribution. The frequency distribution can take a number of shapes. A ‘normal’ or bell-shaped curve indicates that most of the data collected are centred on an average value. A skewed, or off-centre shape indicates that most data are not centred around an average value, but toward either the high or low limit of the range. Skewed data can result when a machined diameter is running consistently toward the high end of the tolerance. A normal distribution would result when most of the diameter readings are near the centre of the tolerance. The wider the spread of the bar chart, the more variability there is in the characteristic being measured. Wide fluctuations can be indicators that a process is out of control and needs intervention.

The third tool is the **Pareto chart**. A Pareto chart shows how frequently various types of problems occur. The name of this tool comes from an Italian economist, Vilfredo Pareto, who observed that 80% of the wealth in Italy was held by 20% of the population. This Pareto Principle has been found to apply to many physical situations, with most of the defects being caused by a small number of factors. Identification of the 20% of causes that relate to 80% of the defects allows managers to focus on the important quality drivers. A Pareto chart lists the problems discovered along the horizontal axis and the number of occurrences along the vertical axis, with the most frequently-occurring problem listed first, and so on. In a machining operation, a Pareto chart may indicate: Undersize hole (two occurrences), sharp edge (two occurrences), and oversize diameter (18 occurrences). If these are the only reasons for defective parts, then  $18/22 [2+2+18=22] = 81.8\%$  of the defects are caused by oversize diameters. In this case, the oversize diameter problem should receive the highest priority.

The fourth tool is the **cause and effect diagram**, or ‘fishbone’ or ‘Ishikawa’ diagram. The cause and effect diagram consists of a long horizontal arrow with a description of the problem. Causes of the problem are depicted as radial lines from this arrow. Causes for the ‘causes’ are then depicted as horizontal lines from the radial lines. Additional ‘causes for the causes’ are depicted as additional radial lines, and so forth. The completed diagram looks like

a skeleton and so is also referred to as a 'fishbone diagram'. A major use of the CE diagram is in brainstorming to attempt to list all the possible causes related to a particular problem. A problem that could benefit from a cause and effect diagram is a poorly machined finish. Causes could be: 1) worn tool, 2) insufficient coolant, or 3) wrong cutting feed. Causes of the worn tool could be: a) no other tool available, b) insufficient inspection of the part, or c) wrong tool for the application. It is common to attempt to summarize the major causes under a small set of categories, such as the 4 Ps in Quality Management: people; policies; procedures; and plant.

The fifth tool is the **scatter diagram**. A scatter diagram is another graphic representation of the interrelation between variables, typically an 'input' variable and an 'output' variable. The horizontal axis contains values of one variable (independent variable), while the vertical axis shows values of the other variable (dependent variable). The relationship between the two variables is indicated by the slope of the diagram, as follows:

Positive correlation: as one value increases, so does the other.

Possible positive correlation: as one value increases, the other value increases somewhat.

No correlation: the results are completely random.

Possible negative correlation: as one value increases, the other value decreases somewhat.

Negative correlation: as one value increases, the other decreases.

**Note:** Correlation does not necessarily mean causality! The correlation results could be caused by an outside factor.

The sixth tool is the **control chart**. A control chart shows the variability of a process by plotting sample measurements of a key characteristic of the product (such as diameter of a shaft) over time. A control chart includes a central line representing the average value, and lines representing upper and lower control limits. There are two main types of control charts: X-Bar ( $\bar{x}$ ), showing averages of the measurements (centre of the process); and R-Bar ( $\bar{r}$ ), showing ranges of the measurements in a sample (variability about the centre of the process). A manufacturing process is considered under control if recorded readings are within the upper and lower control limits on the chart.

The seventh and last tool is the **flowchart**. A flowchart is a picture or map of a process, showing the steps in sequence, for completion of an operation. Drawing a flowchart is often a useful tool to assist team members in understanding their role in the operation, and the impact on others and on the operation, of their performance. Using well-developed symbols and tools, a flowchart can depict key relationships, decision points, resources and responsibilities of members, and can play a powerful role in understanding, communication, and diagnosis of problems.

## 5 The P-D-C/S-A Cycle

A fundamental element of Total Quality Management is *continuous improvement*, particularly as applied to people, products, processes, services and all related learning. A

quality tool that embodies this concept is the Shewhart Cycle Learning and Improvement, commonly known as the P-D-S-A cycle. Walter Shewhart was a prominent statistician who is considered by many as the 'father' of contemporary quality control. The Bell Telephone Hawthorn Works employed Dr. Shewhart during the 1920s. He is the founder of the SPC control chart and the premise that harnessing and managing process variation will result in favourable economic impact for the customer and for the producer of products and services. Walter Shewhart was a teacher and mentor of Dr. W. Edwards Deming. According to Dr. Deming, Shewhart's second book, entitled *Statistical Method from the Viewpoint of Quality Control*<sup>9</sup>, introduced this renowned quality tool.

In the 1950's Deming proposed that business processes should be analyzed and measured to identify sources of variations that cause products to deviate from customer requirements. He recommended that business processes be placed in a loop of continuous feedback so that managers can identify and change the parts of the process that need improvements. As a teacher, Deming popularized a version of Shewhart's concept in a diagram to illustrate this continuous process, commonly known as the P-D-C-A cycle for Plan, Do, Check, Act:

**PLAN:** Design or revise business process components to improve results

**DO:** Implement the plan and measure its performance

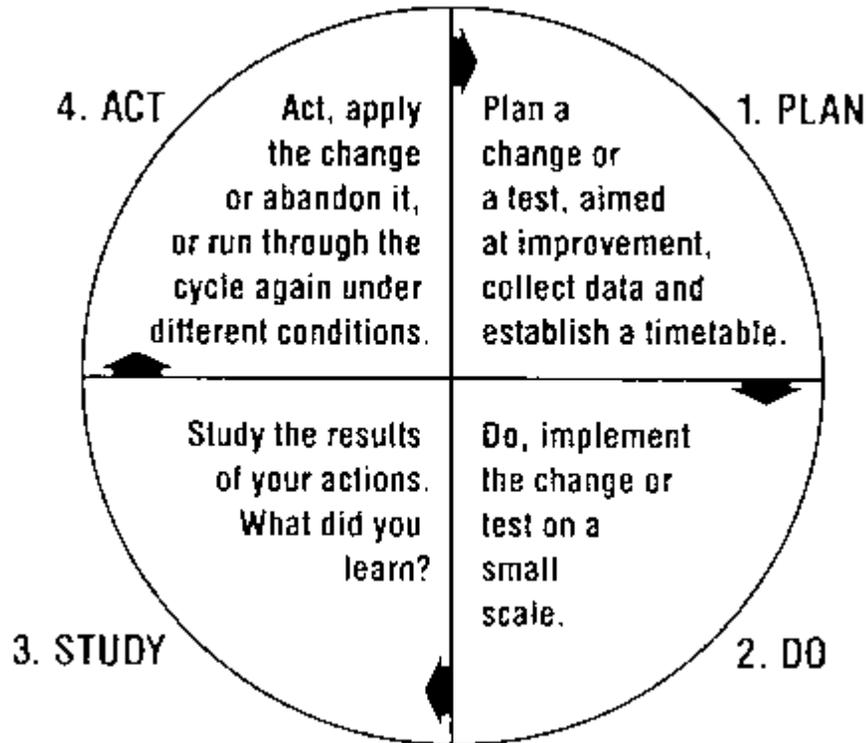
**CHECK/STUDY:** Assess the measurements and report the results to decision makers

**ACT:** Decide on changes needed to improve the process

The original Shewhart Cycle consists of a simple circle or wheel divided into four quadrants; one for each of Plan, Do, Study (or Check), and Act. This is a way to achieve the outcomes you desire through a heightened quality awareness. The complete cycle can be used to determine the details of each quadrant. It is a virtual never-ending process and is key to achieving 'transformation.'

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<sup>9</sup> *Statistical Method from the Viewpoint of Quality Control*, Department of Agriculture, Washington, 1939 and Dover, 1968 page 45



Use of the P-D-C/S-A cycle by quality practitioners will stimulate learning and continuous improvement of techniques, processes, services and systems. The decisions and judgments we make must be supported with facts that are in turn, supported by statistical data (not opinions).

## 6 Six Sigma

Six Sigma refers to a measure of quality that strives for near perfection. Based upon statistical concepts of variability in product characteristics that are related to quality, and on the quality control methodology, a six sigma standard will tolerate no more than 3.4 defective items per one million produced. This number arises out of assumptions that the characteristic being measured has a standard, normal probability distribution, and ‘sigma’ refers to the measure of variability in the characteristic. From the normal distribution, approximately one item in three falls outside one standard deviation (one sigma), and 3.4 items in one million fall outside six standard deviations.

Now, of course, the acceptability or not of a product is a decision that is fundamentally made by the end-user, so the approach is to make improvements in the process, reducing variation, so that sigma becomes so small (and hence six sigma becomes so small) that only a miniscule proportion of products fall outside the six sigma limits. The key here is continuous improvement through the use of what has become called the Six Sigma DMAIC approach. Six Sigma relies on tried-and-true methods that have been around for decades. In fact, Six Sigma discards a great deal of the complexity that characterizes total quality management (TQM). By one expert's count, there are more than 400 TQM tools and techniques. Six

Sigma takes a handful of these methods and trains a small cadre of in-house technical leaders, known as Six Sigma Black Belts, to a high level of proficiency in the application of these techniques. To be sure, some of the methods used by the Black Belts, including up-to-date computer technology, are highly advanced. But the tools are applied within a simple performance-improvement framework known as DMAIC, or define-measure-analyse-improve-control, which is analogous to the Deming model known as plan-do-study-act. The DMAIC framework applies to existing processes that are falling below specification.

For the development of new products or processes at Six Sigma levels, the accepted framework is DMADV, or define-measure-analyse-design-verify.

General Electric, one of the pioneers of Six Sigma (together with Motorola and Allied Signal) began using the Six Sigma approach in 1995, and claimed savings of \$10 billion (U.S. dollars) in the first five years.

## 6.1 The Differences between DMAIC and DMADV

DMAIC and DMADV sound very similar, don't they? The acronyms even share the first three letters. But that's about where the similarities stop.

<b>DMAIC</b>	<b>Define Measure Analyse Improve Control</b>	<ul style="list-style-type: none"> <li>• Define the project goals and customer (internal and external) deliverables</li> <li>• Measure the process to determine current performance</li> <li>• Analyse and determine the root cause(s) of the defects</li> <li>• Improve the process by eliminating defects</li> <li>• Control future process performance</li> </ul>
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When to use DMAIC

The DMAIC methodology, instead of the DMADV methodology, should be used when a product or process is in existence at your company but is not meeting customer specification or is not performing adequately.

<b>DMADV</b>	<b>Define Measure Analyse Design Verify</b>	<ul style="list-style-type: none"> <li>• Define the project goals and customer (internal and external) deliverables</li> <li>• Measure and determine customer needs and specifications</li> </ul>
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- Analyse the process options to meet the customer needs
- Design (detailed) the process to meet the customer needs
- Verify the design performance and ability to meet customer needs

When to use DMADV

The DMADV methodology, instead of the DMAIC methodology, should be used when:

A product or process is not in existence at your company and one needs to be developed.

The existing product or process exists and has been optimised (using either DMAIC or not) and still doesn't meet the level of customer specification or Six Sigma level.

## 7 Summary

This Block has explored a wide range of tools commonly used in quality management in manufacturing and in service organisations. The focus has been placed on ensuring that you, as general managers, rather than as specialists in QM, understand the characteristics of tools and their application. Of course, in any actual situation, you will want to call upon technical specialists (statisticians, operations researchers, Six Sigma Black Belts, \*\*\* etc.) to implement procedures and processes for continuous improvement in quality. Your role as a manager is to understand the language of quality management, to know about the types of tools available, and to know when to call for a technical expert! Once you have called for technical expertise, your role and responsibility is to oversee the activities of the experts, so as to ensure that they work towards the achievement of organisational objectives.

---

### **Self-test**

1. Explain the three categories of tools and techniques for quality management. What tools could be used for planning, data collection and analysis, and for continuous improvement?
2. Why would an organisation use simultaneous engineering?
3. Describe the P-D-C-A cycle.

4. Match the items in the left hand column with the explanations in the right hand column.

- |                             |          |  |
|-----------------------------|----------|--|
| a. Benchmarking             | 1 _____  | Arranged from the most frequent number of occurrences to lowest number of occurrences.       |
| b. QFD                      | 2 _____  | 3.4 defective parts per million products produced.   |
| c. Prioritisation           | 3 _____  | Determines which 20% of causes result in 80% of the problems.                                |
| d. Histogram                | 4 _____  | Comparison to best-in-class organisations.   |
| e. Pareto chart             | 5 _____  | Shows the sequence of processes of an assembly line.   |
| f. Cause and effect diagram | 6 _____  | Post. Draft. Control. Activate.  |
| g. Control chart            | 7 _____  | A tool for determining what the causes of a problem might be, and how these might be solved. |
| h. Flowchart                | 8 _____  | House of quality.  |
| i. PDCA Cycle               | 9 _____  | Helps decision maker select from a number of options based on weighted criteria.             |
| j. Six Sigma methodology    | 10 _____ | Used to help the decision maker determine whether a manufacturing process is under control.  |
|                             | 11 _____ | Plan. Do. Check. Act.  |

**Commonwealth of Learning Executive MBA/MPA**  
**SC4 Quality Management**

**Block Six**

**International Standards Organisation**

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# 1 A Tour of Block Six: Introduction and Objectives

Arguing with an ISO 9000 auditor is like wrestling with a pig in mud . . .  
Sooner or later you realize the pig enjoys it!  
-Unknown

This Block provides an introduction to The International Standards Organisation (ISO) and how an organisation can become ISO certified. ISO is also known as the International Organisation for Standardization. This Block describes the ISO 9000 and the ISO 14000 series of standards and explains how to distinguish between the various elements in the set. ISO certification has both benefits and drawbacks. Some of these are addressed. Finally the Block addresses, in general terms, the steps that can be taken to achieve certification.

## 1.1 Block Six Objectives

After working through this Block, you should be able to:

1. Explain to the personnel in your organisation the meaning of the various subsets that are part of the ISO 9000 standards.
2. Make a decision whether the appropriate certification for your organisation is QS or ISO standards.
3. Help your organisation make a decision, with reference to the strengths and drawbacks of ISO, as to whether or not certification would be advantageous.
4. Guide your organisation through the initial steps in the certification process.
5. Use your knowledge of the 20 points in ISO 9001 to explain to management the broad requirements for certification in your organisation.
6. Know where to obtain additional information and the required standards manuals

## 1.2 An Overview of ISO

First, International Standards certification is both simple and complex. It is simple in that the rules and guidelines for achieving certification are not difficult to understand. It however is extremely complex because those rules and standards have to be applied to the individual organisation or to particular sections of the organisation. A large body of literature has been written on the topic. Most of it is available from ISO itself which uses the funds derived from the sale of these publications to support its activities.

The International Standards Organisation (ISO) has developed standards for a large number of industries. ISO 690, for example, is for electronic parts and shows the type of information

that is available. There are standards for dentistry, for education, research, sales, and many other industries.

In 2002, there were more than 560,000 certifications that had been issued worldwide.

ISO likes to call itself The International Standards Organisation. In practice, however, the ‘The’ is almost always dropped. Its headquarters is in Geneva, Switzerland.

## 2 The History of ISO

ISO was founded in 1947. The initial standards that were adopted were based on the British Standard BS 5750. This had been accepted in Britain in 1979 mostly due to the efforts of British Standards Technical Committee 176. This group felt that there should be minimum standards for how manufacturing companies establish quality control methods, but also for maintaining uniformity and predictability.

Thirty countries (20 active participants and 10 observers) created the quality-system management standards called ISO 9000. The guidelines also incorporated Canadian standard CSA Z299, U.S. ASQC Z1.15 and MIL Q 9858A, and some of the guidelines of the Japanese Union of Scientists and Engineers (JUSE) Deming prize. The standards were to be applicable not just in the military field, but to all manufacturing and service industries.

These were formally issued in 1987. Europe quickly accepted this model, titled it EN 29000 and used it to develop quality standards not only for production operations but also for design and process compliance. At least in theory, the standards are completely voluntary.

The series of standards, which were launched in 1987, aims at ensuring quality consistency in both manufacturing and service organisations. All but Japan of the seven most developed economic powers are represented. The appropriate bodies are:

Canada	Canadian General Standards Board
France	Association Française de Normalisation (AFNOR)
Germany	Deutsches Institute für Normung (DIN)
Italy	Sistema Nazionale de Certiflcazione (SINCERT)
UK	British Standards Institute (BSI)
US	American Standards Institute (ANSI)

ISO 9000 registration is rapidly becoming a must for any company that does business in Europe. Many industrial companies require registration by their own suppliers. There is a growing trend toward universal acceptance of ISO 9000 as an international standard.

## 3 What is ISO and ISO Certification?

According to its own description, The **International Standards Organisation** (ISO) is an ‘international, non-governmental organisation, whose principal goal is to decrease trade

barriers by promoting worldwide product standardization, such as in manufacturing practices, paper sizes and film speeds.’ Presently (September, 2003) it consists of a network of national standards institutes from 145 countries working in partnership with international organisations, governments, industry, business and consumer representatives ([www.iso.org](http://www.iso.org)). Many view it as a bridge between public and private sectors.

What does it mean when an organisation says that it is ISO certified? It means that the company has been successful in becoming registered, after an assessment process. This assessment was carried out by assessors who are ISO-certified. In other words, the organisation has a book of procedures that it is required to follow. In order to keep its ISO certification, an organisation must also maintain appropriate documentation. It is also subject to re-certification periodically. ISO certification does not mean that the organisation provides a quality service or product. It means that it does what it says it is doing.

ISO 9000 gives guidelines for selection and use of quality management and quality assurance standards. There are six sets of such guidelines, that is, detailed groups of documents that cover, to the extent this can be done in general terms, all the operational aspects of a firm. The three main modules are:

ISO-9001 ‘defines all the elements necessary for conformity throughout the whole operating cycle from design through development, production, installation and servicing.’ The 20 detailed sections are given in Table 6-1.

ISO-9002 ‘module for quality assurance in production and installation and is the more common standard for manufacturers. It applies where there is already an established design or specification that constitutes the specified product requirement.’ The module is very similar to ISO-9001 (except for design and design changes).

ISO-9003 ‘applies to firms in a contractual situation that wish to demonstrate capabilities for inspecting and testing products. It covers document control, product identification and marking, control of products that do not pass specified tests, handling and storage systems, control of measuring and test equipment, statistical techniques and training’ ([www.iso.org](http://www.iso.org)).

The remaining three are ISO-9004, ISO-10011, and ISO-10012. An older version (ISO-8402) is also used. ISO 9000 outlines the first step in the process (the guidelines) -- how to decide which of the other standards should be selected. ISO 9000 also clarifies and standardizes terms in the quality management field.

- ISO-9004 ‘guideline for the application of standards in quality management and quality systems’
- ISO-8402 ‘the ‘pre-9000’ module, which includes the vocabulary of quality management and quality assurance.’
- ISO-10012 Guidelines for auditing
- ISO-10012 Quality assurance requirements for measuring instruments.

Two additional sets are worthy of mention:

- ISO3534: Statistics – Vocabulary and Symbols, and the
- 14000 series (environmental issues). First published in 1996.

Lately, there has been a new emphasis on environmental issues. The ISO standards are in the 14000 range. The ISO 14001 EMS (Environmental Management System) has now been completed. The remaining ones are in various stages of development. When completed, in addition to ISO 14001, the set will consist of:

ISO 14004	General Guidelines on Principles, Systems and Supporting Techniques
ISO 14010	Guidelines for Environmental Auditing: General Principles
ISO 14012	Qualification Criteria for Environmental Auditors. (Currently ISO→19011)
ISO 19011	Guidelines for Quality and Environmental Management Systems→Auditing

### **3.1 Relationship Between ISO 9000 and QS 9000**

A confusing part of standards is that there appears to be many different bodies setting these. This is not so. The country units are closely tied to ISO. QS 9000, on the other hand, sets the specific standards that are required in the automotive industry.

ISO provides general standards that are applicable to all types of industries and sectors – including manufacturing and service. These standards, however, were too generic for the automobile industry. To meet their own needs, the Big Three automakers (General Motors, Ford, and Chrysler) each created sets of standards for their own use. Since each company's standards were different, suppliers found them confusing, burdensome, and costly to follow.

In June 1988, representatives from the three companies, together with the Automotive Division of the American Society of Quality Control (ASQC) created a task force – the Supplier Quality Requirements Task Force – to develop a reference manual that would provide a common approach to calibrating measurement equipment, and non-conformance.

In August 1994, the *Quality System Requirements: QS 9000* was released. This document immediately replaced all existing supplier standards. Other companies in the industry also adopted it.

### **3.2 Sections in ISO 9001**

The technical committee of ISO outlined 20 guidelines (and the subsections that accompany these) that set the foundation for generic ISO 9001 standards. These are explained in Table 6.1, and in greater detail in Appendix A.

**Table 6-1 Sections in ISO-9001** (Reprinted from the ISO Web site).

1. Management responsibility

Defines how a company should draw up an organisation chart to identify the responsibilities of all staff who manage, or carry out, work associated with the quality activity.

2. Quality system

Defines how a firm should establish and maintain procedures and instructions for a quality system to assure that products conform to specifications.

3. Contract review

Defines and documents how firms must establish, and maintain current, the requirements for contract review and contract differences between concerned parties.

4. Design control

Defines requirements and procedures to manage and verify product conception and design to ensure that defined specifications are achieved.

5. Document control

Establishes procedures for document control, including approval, availability, logging of manuals and diffusion to concerned parties.

6. Purchasing

Defines procedures to ensure that a purchased product conforms to specifications including evaluation procedures for subcontractors.

7. Purchaser-supplied product

Defines verification procedures for a supplier regarding storage and maintenance of purchased products.

8. Product/service identification

Describes, when appropriate, how a supplier for the purpose of traceability must establish and keep up to date identification procedures based on a product's original design specifications or other appropriate documents in all phases of production, delivery and installation.

9. Process control

Covers documentation of how a process should be carried out, including, where necessary, installation procedures. Written instructions must be given to the employee involved where appropriate and the process must be monitored.

10. Inspection and testing

Covers procedures necessary to assure that the product is neither used, nor put into service, until it has been inspected and tested according to written specifications.

11. Inspection, measuring and testing

Covers requirements for using, standardizing and maintaining in good condition all inspection, measuring and test equipment.

12. Inspection and test status

Covers the status of inspection according to appropriate stamping, ticketing, markings, recording documents, follow-up instruction, and the like.

13. Control of non-conforming

Covers procedures in order to assure that a non-conforming product is not used or inadvertently installed. It covers identification procedures, documentation, and isolation of the non-conformance.

14. Corrective action

Covers procedures for researching why a product does not conform, the corrective action necessary and to eliminate potential problems that might arise because of non-conforming products.

15. Handling, storage, packaging

Covers procedures necessary for product handling to prevent damage, and delivery, the type of storage areas and storage environment to prevent product deterioration or damage. It also includes detailed procedures for types of packaging, the packaging methods and delivery procedures to respect.

16. Quality records

Covers requirements to be established for the identification, collection, indexing, organizing, and filing to keep up to date, or for destroying all records related to quality.

17. Internal quality audits

Covers procedures necessary for carrying out internal quality audits.

18. Training

Covers procedures to identify that appropriate training is available to all those persons who might in some way have an impact on the quality operation of the firm.

19. Servicing

When after-sales service is identified in a contract, this section covers procedures to verify that the after-sales service is according to requirements.

20. Statistical techniques

Where appropriate, this section covers statistical procedures necessary to verify that a product or process is according to specifications.

A more detailed outline is given in Appendix A.

### **3.3 Basic Requirements for Certification**

The ISO Web page goes on to state that the basic requirements for certification are: documentation, performance, verification, and filing.

*Documentation* involves a rigorous development of the required procedures for carrying out each and every activity in the operation. These must be written (usually in a procedures manual).

Documents that are examined in the process of assessment include:

- Administrative procedures
- Audit or inspection procedures at the final audit stage
- Design releases
- Failure or non-compliance reports
- Instrumentation testing
- List of machinery, equipment, and facilities
- Material handling and storage procedures
- Organisational chart with personnel assignments (responsibility matrix)
- Procedures manual
- Purchase orders
- Quality manual
- Work instructions

*Performance* addresses the need to *use* the documentation as working tools and procedures for accomplishing the work that is specified.

*Verification* refers to the fact that the accepted written procedures are respected by all parties concerned. Periodic checks are made to ensure that adherence is occurring.

*Filing* refers to the ISO requirement that all procedures are written down, kept updated, retained, and are available to all personnel who have a need to consult these.

Certification must be carried out by an independent third party.

## **4 Why are the Standards Important?**

Many companies require that their suppliers become ISO certified. Because of this, registered companies find that their market opportunities increase. In addition, a company

that complies with ISO requirements has taken the first step to assure its buyers that it has a sound quality management system.

## 4.1 Benefits and Drawbacks

Every model has its strengths and drawbacks. ISO is no exception. One of the drawbacks is the extremely high cost. ISO reports that it can take up to two years to obtain certification. It is not unusual for the total costs, including outside consultants' help, to be in excess of \$100,000 U.S. In addition to this, there are the annual costs of showing adherence to the procedures.

### Strengths/Why Become Certified

Clarifies the expectations of both buyers and suppliers.

Can help a small company grow.

Gain new, additional business opportunity.

Gives an organisation marketing muscle. When an organisation is ISO-certified, it can display the ISO sign. This suggests that it produces better quality products.

Company with certification is more likely to be selected if all other sources of product or service are unknown.

For the purchaser, reduces the selection time needed to qualify suppliers.

ISO certification is seen as a symbol of commitment. It implies that: Every employee is committed to quality. If there are problems, these will be fixed.

May become necessary for an organisation to survive. There appears to be a great emphasis on ISO-certification at the same time that the number of suppliers is being reduced. In fact, many companies will not buy products from a company that is not ISO certified.

### Weaknesses/Drawbacks

Considered to be a return to the rigidity of Taylorism and bureaucracy. Complete lack of flexibility.

Like a noose around employees' necks.

Although there might be more compelling production problems, the paper work (documentation) must take precedence.

Too much unnecessary paperwork. For example, the story is told that the standard adopted for ISO documentation specified that four copies of a document were required. No check was made as to whether or not all four were required. They were not; the fourth copy was being discarded.

ISO-certification is an impersonal management control tool.

Makes the need for corrective action easy to recognize

Matches the production process to the system that has been designed instead of vice-versa (usually because the system was badly designed).

Generally, there are reductions in customer complaints, operating costs, and increased demand for their products and services.

Requires too high a standard of education, in comparison to the menial tasks that are being done. This is a disadvantage to people who have limited education. It limits their ability to learn and be promoted within the organisation.

Very difficult for owners of small and medium-sized businesses to accept – somewhat of a culture shock. They no longer make all the decisions.

Assessors are a nuisance. Voehl, Jackson, and Ashton (1994) state that they can, 'take up time, frighten the staff, and generally poke their noses into the business' (p. 54).

Too large an emphasis on policing and control. The modern trend is more to normative compliance.

Demotivates people and discourages all individual initiatives.

Extremely high costs.

Kinni (1993) outlined a 23-step process that Bailey Controls Corporation took to successfully achieve ISO 9000 certification. Bailey Controls is a U.S. company that supplies controls, instrumentation, computer systems, and software for process applications in the electric utility, oil, and steel production industries. These steps (with some modifications to better suit the requirements of this course) are:

1. Ensure that commitment at the top-levels of the organisation, including the Board of Directors, exists – a step not mentioned is organisational readiness in general. This commitment generally includes a policy that defines, in general terms, the organisation's commitment to ISO certification.
2. Procure all necessary ISO standards and guidelines. Sources for these are given later in this Block.
3. Establish a planning and implementation team. The first task of this team must be to understand the process and the standards themselves.
4. Determine what is and the structure of the current organisation. First, it is necessary to do an audit of the organisation to determine critical activities, the availability of required resources, the implementation process, and the adequacy of this in terms of current customer needs. This includes a check of the metrology and calibration systems. Additionally, the audit also examines:
  - The system and process involved
  - Contracts that exist

- Methods that are used for design and documentation control
- Examination of products and services that are obtained from suppliers
- Process control
- Measurement, inspection, and testing
- Handling, storage, packaging, and delivery
- Training that employees have had and its effectiveness
- Statistical methods that are used and their adequacy.

Following this, the requirements of ISO certification should be outlined, and the gap between what exists and what is required identified.

5. This should lead to identification of all activities and changes in processes that are required and result in a rollout plan. This rollout plan, of necessity, must be very sensitive to costs. Managers must also ensure that productivity continues while the changeover is occurring.
6. Learn as much as possible from those companies that have achieved certification, or are already in the process of doing this. Other individuals or companies such as industry experts, pioneers, and implementers may also have advice. It is always wise, as well, to work with other organisations that are in a similar phase of the process.
7. Establish the project. An appropriate budget, resources, and authority must be granted. On the part of the project team, mechanisms for tracking milestones and cost are required.
8. Train employees, including the person who has primary responsibility for the improvement and certification process.
9. Revise, develop, or whatever is necessary, the manuals (quality and procedures) that are required. Document control procedures are very important. All changes must be made in the official manuals. In spite of the wide spread use of computers, most companies continue to maintain hard copies of manuals and of a large number of the forms required for documentation.
10. Define new procedures that are needed. The lead assessor, no doubt, will suggest considerable upgrade and change.
11. Implement the new system and let it function for a short time in order that the weaknesses can be identified.
12. Engage an assessor or consultant to do a pre-registration audit. This will identify potential systems and operating weaknesses and help the organisation interpret and adjust any ambiguous standards.
13. Initiate discussion with third-party registrars. Bailey Controls uses five criteria to rank the assessors who were being considered, that is: credibility, knowledge of the industry, ability to work with members of the organisation, proximity to the location, and cost. The auditors also must meet the criteria established by ISO to do the work.

14. Choose the registrar and plan a schedule, including a ‘mock’ audit.
15. Modify the system and processes. Continue to modify these until the desired competencies have been attained. Modify quality and procedures manuals on the bases of the mock audit feedback and other critiques.
16. Maintain documentation, including those regarding non-compliance and what was done to correct these.
17. Obtain Certificate of Registration, preferably on the first try.
18. Celebrate. The employees have earned a reward.

## 5 Manuals and Documentation

The documentation system has three distinct parts: the quality manual, the procedure manual, and the documentation itself.

The *quality manual* specifies the quality policy to which the organisation is committed and the objectives that specify how the ISO 9000 requirements will be attained. This is the bridge between the standard and the actual procedures that are used.

The *procedures manual* outlines all the procedures that have been developed. It, however, is not a ‘how-to’ manual. In other words it does not give instructions to employees regarding the steps that a particular activity requires. Voehl, Jackson, and Ashton (1994) describe the procedures manual as requiring ‘nothing more than a coherent numbering system, a short introduction, and a listing of the procedures contained in the manual.’

Procedures should be mandatory and uniform. They cannot be different for different parts of the organisation.

The issue of manual control may seem like a rather inconsequential issue. But it is of vital importance. First, all personnel should be working from the same document.

Second, the existence of controlled manuals implies authority, that is, the manuals are the ‘bibles’ that the organisation has developed following an agreed procedure. The control of procedures should follow four principles:

- A specific number of copies – probably not more than 3 or 4. The number, however, should be appropriate to the number that is required. One copy should be kept in ‘safekeeping.’
- Only official controlled copies should be used.
- Copies should be up-to-date.
- Copies, however, must be accessible to every person who needs them.

Additionally, it should be clear as to who has responsibility for preparing the revisions, recording controlled change, highlighting these changes, and ensuring that all manuals are upgraded.

*Documentation* starts with the blank forms required by the procedures. It becomes documentation, however, only after the appropriate entries have been made. All documentation should be kept in a safe place.

## 6 Where Can Information Be Obtained?

Information is available in the ISO compendium (ISO 9001:2000), which gives the requirements for a quality management system aimed at helping organisations to achieve customer satisfaction and continual improvement.

***ISO Standards Compendium ISO 9000. Quality management*** (10<sup>th</sup> ed). Geneva, Switzerland: International Standards Organisation.

Available as a paper publication (ISBN 92-67-10381-4), English only (A4 format, 380 pages).

CD-ROM (ISBN 92-67-01142-1), bilingual English and French. The paper and electronic versions are available from ISO national member institutes.

[Includes the 11 International Standards currently making up the ISO 9000 family, which is developed and maintained by ISO technical committee ISO/TC 176].

Also available are standards or technical reports that address:

- project management (ISO 10006:2003)
- configuration management (ISO 10007:2003)
- measurement management systems (ISO 10012:2003)
- quality management system documentation (ISO/TR 10013:2001)
- the economics of quality (ISO/TR 10014:1998)
- training (ISO 10015:1999)
- statistical techniques (ISO/TR 10017:2003)
- and many other aids.

Included in the compendium is the draft ISO/DIS 10018, which gives organisations guidelines on handling complaints.

ISO 9000 orders:

Marketing Services

Website: <http://www.iso.ch>

ISO 14000 orders:

International Organisation for Standardization (ISO)

E-mail [sales@iso.org](mailto:sales@iso.org)

Email: [central@iso.ch](mailto:central@iso.ch)

## 8 Summary

ISO attempts to decrease trade barriers across the world through standardisation. Standards have been developed for a large number of industries including manufacturing, electronic parts, dentistry, education, research, and sales. Presently, more than 500,000 ISO certificates have been issued worldwide.

The three most frequent certifications in the ISO 9000 series are:

- 9001 All elements required for conformity
- 9002 Production and installation in manufacturing
- 9003 Inspection and testing of products

QS9000 is very similar to ISO9000. It, however, has been adapted specifically to automobile industry requirements. Lately, environmental issues are being emphasized (ISO 14004, 14019, 14012, 19011)

ISO9001 has 20 sections, ranging from the technical, design and control issues to purchasing, handling, inspection, training, servicing, and statistical techniques. Proper documentation is a very important issue in certification. A number of procedures and manuals that assure outcomes (performance, verification and filing standards) must be maintained. The documentation has three distinct parts: quality manual, procedures manual, and the documentation itself. A 23-step process for achieving certification is presented in the Block.

Benefits of ISO certification include:

- Clarification of expectations
- Opportunity to gain new business and keep existing customers
- Suppliers are already pre-qualified
- Production and organizational systems are synchronized

The drawbacks to ISO certification include:

- Return to rigidity of the bureaucratic organization
- Elimination of flexibility and initiative
- Paper work dominates
- Impersonal management tool
- Very high standards of education required
- Very difficult for small companies to implement
- ISO assessors are a nuisance
- Too large an emphasis on policing and control
- High cost

- Demotivates employees

...More information can be obtained at: <http://www.iso.org>

### Points to Ponder:

1. What advantages and disadvantages exist for your organisation in becoming ISO certified?
2. Of the 20 points outlined in the first half of the block, and in greater detail in Appendix A, which are most important to your organisation?

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Rothery, Brain (n.d.). A proposal for a 'Third Force.' Retrieved September 9, 2003 from <http://www.isoeasy.org/bmkgrp.htm>

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## 9.1 Web links

Links to the ISO-14000 series are:

<http://www.qsuonline.com/Body%20pages/EMR.html> (monthly journal).

<Http://www.ends.co.uk> (daily and monthly news bulletin concerning the UK).

<http://www.ala.org/alaorg/rtables/srrt/greenotes/greenotes.html>. (Information services and resources to help people be better stewards of resources).

<http://lawinfo.com/law/ca/environmentallaw> (Biweekly newsletter re: implementation, standards, development, and reforms).

<http://www.rec.org> (Newsletter re: environmental issues in Central & Eastern Europe).

<http://www.tc207.org/> (Official ISO/TC 207 website).

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- \* Join the [ISO 9000 Mailing List](#)
- \* Participate in [ISO 9000 Newsgroups](#)
- \* ISO 9000 [Training Resources](#).
- \* Lists of ISO 9000 Registrars.
- \* [ISO 9000 Registrars](#) around the world - Compiled by the Quality Network of UK.
- \* [ISO 9000 Registrars](#) in the USA - Compiled by Quality Digest.
  
- \* The ISO 9000 [Registrar Accreditation Board](#)
- \* Help create a [gallery of Quality Policy](#) statements and a [gallery of Quality Manual](#) examples.
- \* Add to collection of [ISO 9000 Process Documents](#).
- \* The [European Organisation for Conformity Assessment](#)
- \* ISO 9000 related [WWW pages](#).
- \* An [ISO 9000 Bibliography](#) and a list of [on-line book stores](#).
- \* [Document Preparation](#) Services.

**Commonwealth of Learning Executive MBA/MPA**

**SC4 Quality Management**

**Block Seven**

**Change in the Context of Quality Management**

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# 1 A Tour of Block Seven: Objectives and Introduction

There is nothing more difficult to carry out, nor more doubtful of success, nor more dangerous to handle, than to initiate a new order of things. For the reformer has enemies in all those who profit from the old order, and lukewarm defenders in all those who would profit by the new order.

Attributed to Niccoli (The Prince)<sup>1</sup>

Five topics are discussed in this Block. They are:

- The goal of quality change;
- Forces for change;
- The process of change for quality management;
- Orchestrating change;
- Resistance to change and overcoming it.

## 1.1 Block Seven Objectives

After working through this Block, you should be able to:

1. State at least two quality-related goals that organisations attempt to accomplish with each of the following processes: JIT, paradigm shift, training, structural change, and compensation restructuring.
2. Identify the two different types of roles that employees have and why these are important.
3. Explain why assertiveness can aid a unit in the QM process.
4. Show how responsibility charting might be used in reference to QM in your organisation. What items would be on the chart?
5. Identify three instances where 'OB Mod' has been used successfully.
6. Give one example (each) of how positive reinforcement and praise can be utilized to get an employee to be a better contributor of ideas to the QM process.
7. Name four ways that you, as a manager, can develop team cohesiveness.

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<sup>1</sup> The Prince, written in 1513; published in 1532.

8. Choose the conflict management style that most closely approximates your own. Explain when you should use this style and what difficulties you are likely to experience.
9. Identify four ways in which QM can be extended to services (business processes).

## 2 The Goal of Quality Change

Possibly the first task that senior management must do is to heed the advice given to Alice in the fairytale *Alice in Wonderland*, when she was puzzled over which path she should take. The retort was, ‘Where do you want to go?’

The first step in making changes in a QM process is to know the goals that need to be accomplished. There is no single method that is applicable in every country of the world to gain and sustain quality improvement. The right program depends, to a great extent, on a country's culture and its stage of economic and political development. Too often, even in Canada and the U.S., programs that are implemented fail to meet their targets. Some of the reasons for this will be discussed in this Block. The emphasis up to now has been on building into the organisation the criteria identified by Deming (1982) and his colleagues, and exemplified by the Baldrige Award. Achieving this, however, is a long-term effort. Most organisations need results much more quickly. The following progression is usual:

The first question that should be asked is whether the level of quality and QM must change. As pointed out earlier, this can be answered very quickly. If customers are not complaining but rather indicating that parts and/or service are better than adequate, there is no quality problem. If the opposite is true, or if a new customer is indicating that changes are required, quality must be addressed.

Forces for change in the quality processes come from both the external environment (customers, suppliers, government, and other stakeholders) and the internal environment (the internal customers, the pressures internally from other employees who must meet stakeholder demands, and so forth).

These pressures and the need for change mean that measurements must be taken of the quality of products and services that exist, and the quality that customers and clients are expecting. The gap between the two can then be identified. It is this gap that needs to be narrowed.

### 2.2 The Progression of Change

It was pointed out in Block 4 that change could be of an incremental nature or it could be rapid and all encompassing. The truth, however, is that only small entrepreneurial businesses and large organisations with powerful, dynamic, and driven CEOs and executive boards can pursue a reengineering course of action. In the majority of organisations, the financial and

human resources are not available for this. Tom Watson, Sr. of IBM, and Jack Welch of GE, built a support organisation around themselves and were thus able to do this. Another example is Herb Kelleher of Southwest Airlines. Kelleher was able to build a strong culture based on the need to give customers what they want and making work fun. Ben Cohen and Jerry Greenfield (Ben & Jerry's Homemade Ice Cream) did the same thing.

On the other hand, these same personality traits can arouse employees' fear and hatred. Harding Lawrence of Brainiff Airlines, through his inconsistent demands and temper tantrums, was said to have contributed considerably to demotivation.

What is the nature of change on which the medium-sized organisation can focus? Possibly the easiest is to convince suppliers to deliver goods just-in-time (JIT). This is basically a selling job. A next step is a paradigm shift. Moving up the ladder, a company can institute training in a quality mindset and principles (if this has not occurred). When this produces only limited results, the organisation can address structural changes. This generally means establishing a structure parallel to the bureaucratic organisation. A fourth approach goes by many names and programs. It starts with a restructuring of remuneration and often progresses to a program of praise and positive reinforcement, that is, behaviour modification. A final step may be cultural change.

There is no magic order to the steps that have been described. We have tried to think about them in terms of cost. There is nothing to prevent an organisation from beginning at whatever step in the progression, so long as it meets its goals and available resources.

### **2.2.1 Just-in-time**

Just as the words suggest, just-in-time concerns the delivery of goods and services when they are needed by the organisation, thus eliminating the holding of inventory. Basically this is a negotiating strategy, in which the organisation tries to persuade its suppliers to absorb the costs of holding the inventory until needed by the organisation. This is not really a quality issue; it is more concerned with cutting costs and improving space utilization.

### **2.2.2 Paradigm Shift**

Prior to Barber (1992), the majority of organisations had not heard the term *paradigm shift*. Who can forget the image of the red roadster barreling on the wrong side of the road while the driver is yelling 'pig' at the oncoming traffic. Some nerve, the driver of the other car thinks. He is on the wrong side of the road, weaving from side to side, and he has the nerve to call me a pig. As he rounds the curve, however, you guessed it. There is a pig in the middle of the road. Not one individual we have spoken to associated the word *pig* with the physical presence of an animal.

So it is with quality. We get a particular mindset that we believe is the correct and only one. We cannot see beyond our own blinders. A *paradigm* is an accepted example of actual practice. It defines what employees should be thinking and how they should behave. In our context, a *paradigm shift* is a change in the fundamental rules of attaining quality. It is a new way, not only of thinking about quality, but a new way of ensuring that quality is 'number one.' One of those changes, as pointed out earlier, is that quality is built in and not inspected

in. Barker points out that to be successful in today's world, three keys to the future are needed: anticipation, innovation, and excellence.

Anticipation means that the organisation must be able to anticipate the future. The concept, however, does not make *content futurism* a top priority. In fact, Barker argues that the key is *process futurism* – how to think about what may occur. Opportunity identification (such as building a core competency in quality) and problem avoidance become important. Although the author does not extend his arguments to practical applications, others have taken the concept and planned scenarios for *what might be*. On this basis, they have developed disaster plans so the company is prepared. What happens, for example, when there is a coup in a foreign country and the supply of a vital material is interrupted? When government or the legal system mandates new safety requirements that cannot be implemented quickly? When consumer demands for quality change radically?

However, it is not sufficient to merely show a video on paradigms or just to talk about the idea. Instead, Barber talks about establishing a procedure where older people who are moving into different fields, newcomers (particularly those fresh out of training), and mavericks, can take a problem that they know nothing about, and solve it – without receiving the traditional training that is usually given other employees. He also points out that, although a solution does not occur very frequently, it is well worth the effort when it does. This is innovation.

Barker's last point is excellence. He identifies excellence as:

- Everything working right the first time.
- Every employee wants to do better tomorrow than he or she did today.
- Customer needs are constantly met.
- Products not only last longer, but also work better.
- Waste and rework are eliminated.
- Work is fun.

He points out that when this paradigm is in effect, innovation will happen.

On a closing note, he points out that paradigms are dynamic. One that is too closely held leads to *paradigm paralysis*.

### **2.2.3 Training in Quality and Interpersonal Skills**

Moving along the road to a system for quality improvement is a commitment to low-level training. This consists of statistical process control (SPC) and problem solving tools such as Pareto charts, and cause-and-effect diagrams. Employees also need to learn about their roles, being assertive, and interaction and process skills.

### **2.2.4 Roles**

Roles relate to tasks and to relationships. Bales (1950) identified these as:

### Task roles:

Initiating:	Defining the problem, suggesting activities, assigning tasks
Information seeking:	Asking questions, seeking relevant data or views
Information sharing:	Providing data, offering opinions
Summarizing:	Reviewing and integrating others' points, checking for common understanding and readiness for action
Evaluating:	Assessing validity of assumptions, quality of information, and reasonableness of recommendations
Guiding:	Keeping groups on track

### Relationship Roles:

Harmonizing:	Resolving interpersonal conflicts, reducing tension
Encouraging:	Supporting and praising others, showing appreciation of others' contributions; being warm and friendly
Gate keeping:	Assuring equal participation by all group members. Making sure that everyone has a chance to be heard, and that no one person dominates.

### Among dysfunctional roles are:

Dominating:	Monopolizing group time, forcing views on others
Blocking:	Stubbornly obstructing and impeding group work, persistent negativism
Attacking:	Belittling others, creating a hostile or intimidating environment
Distracting:	Engaging in irrelevant behaviours, distracting others' attention; using zingers (quick one-liners that are meant to shift the focus from others to oneself).

## **2.2.5 Assertiveness**

In an organisation where quality improvement is paramount, the input of every employee is important. But that input should be given in an assertive rather than aggressive manner. When employees are not committed to the quality program, or when they are afraid of speaking up, they will acquiesce to others' opinions and wishes.

Assertiveness involves:

- Direct, frank statements of one's own goals and feelings.
- Willingness to address the interests of others in the spirit of mutual quality problem solving.
- Belief that openness is preferable to secretiveness and hidden agendas.

If employees do not feel it is their role to voice their opinion, or if there is fear of doing so, two dysfunctional affects may occur. These have been termed *groupthink* and the *Abilene paradox*. Both result in the organisation (or group) taking the wrong action because no one is willing to state that he or she is not in agreement with the decision being taken. The dire consequences of groupthink on a national and global level (e.g., President Kennedy and the Bay of Pigs involving Cuba) have been well documented. The Abilene Paradox can also result in significant problems. One of the authors had experience with a software company that, in response to customer complaints, poured considerable funds into solving the problems. Every programmer knew how the problem could be solved at almost no cost. None however would (or dared to) tell the **manager** that he was wrong. The company continued to pour resources into the solution – almost to the point of bankruptcy until the manager was changed. After this occurred, the problem was solved in a day or two. Some points for keeping your job (and those of your employees or direct-reports), and avoiding the Abilene paradox, are:

Practice and make sure direct-reports feel free to:

- Take responsibility for what they say without adverse effects. This means saying what they think and using the word 'I'.
- Speak up for what they need, feel or want:
  - Without apology but a straightforward justification of the need for assistance.
  - With directness. In some cultures, this is very difficult. Suggestions for improvement are taken as personal criticisms. In others, such as Japan, where a homogeneous culture exists, a process is in place that provides those affected by the decision an opportunity to provide input. In North America, this lack of directness is often referred to as beating around the bush, hinting at what is needed hoping that others get the message.

In addition,

- Friendships have little to do with quality improvement. The analysis and process should be based on fact.
- *No* is a very important word. It does not involve long justifications, excuses, or lengthy apologies.
- Employees need to feel they can express their own limitations (that might keep a particular quality improvement from occurring) openly.
- And last, acting on what our *inner voice* (gut feeling) tells us is important, and ethical.
- 

### 2.2.6 Interaction and Process Skills

Among process and interaction skills are those relating to communication – that is, listening, providing feedback, accepting feedback, using persuasion, negotiating, managing politicking, and conflict management. It is important, too, for each employee to be able to successfully

manage a group session, to be able to measure and monitor group changes, to understand the process of change, to be able to help others to set realistic goals and objectives, and to know the importance of backup plans.

This initial training also includes overcoming common group problems, such as:

- Not knowing what to do next.
- Guiding dominant and reluctant individuals.
- Helping others to *speak with facts*.
- Keeping the group from rushing to achieve results without proper identification of the problem.
- Avoiding put-downs and discounting of others and their contributions.
- Digressions and tangents (e.g., discussing football/soccer and weekend activity to excess).
- 

## 2.2.7 Responsibility Charting

A very important part of working together is responsibility charting. The idea is that each employee and the person to whom she reports will work out a schedule of task roles and responsibilities that the employee and others assume immediately, or will undertake within a specified period of time. These categories are often something like: Now, In 3 months, In 6 months, and Others' responsibility. A listing of activities is usually given. These generally fall into four broad categories: Concerning the task, boundary liaison, group leadership, and performance management. For example, task activities might include:

	<u>Now</u>	<u>3 Mos.</u>	<u>6 Mos.</u>	<u>Others</u>
Developing quarterly objectives		x		
Developing a daily work plan	x			
Developing a weekly work plan	x			
Solving day-to-day problems	x			
Coordinating work with others	x			
Planning and leading Wednesday's group meeting		x		
Completing time sheets	x			
Scheduling vacations				x
Reviewing and approving work plans			x	
Assigning work on a daily basis		x		

In responsibility charting, it is important that the employee knows

- That she should take every opportunity to grow intellectually, socially, and emotionally.
- The level of participation that is expected of her – authority to decide, authority to recommend, authority to provide input, to be given information on issues that effect her, and no involvement. One employee cannot do everything. As she

matures and has greater experience, provision should be made for her roles and responsibilities to expand.

Other training that should occur involves tools of communication.

### **2.2.8 The System and Structural Changes**

If changes in QM efforts are to be successful, the organisation must be prepared to face certain realities:

QM is a major effort that involves the entire organisation. While pilot studies may be used to experiment with particular quality improvement projects, eventually the quality imperative must permeate the entire organisation.

Senior management must be involved. That involvement must be very immediate and very visible. Senior management should extend the open-door policy to members with quality problems and to attendance at presentations that are made by teams. Quality teams must have the required resources and support. If there is a union, its involvement, although difficult to secure, is also mandatory.

What has just been said threatens two groups of managers – those in the middle, and supervisors, each of which perceive that their work is being done by the QM group. Some organisations solve this problem by terminating the employment of a large number of these two groups. When this is done, a vast array of knowledge also walks out the door (i.e., is lost). It is always preferable to accommodate the individuals who are no longer required in former capacities to new assignments within the organisation.

The structure of the organisation must eventually change and every effort should be made to move toward a flattened, organic entity. The ‘headquarters mentality’ (senior management knows everything and will tell us what to do) cannot continue to exist. In the beginning, parallel structures often work. Parallel structures involve the establishment of a completely separate reporting hierarchy. Crocker, Chiu, and Charney (1984) suggest the following:

- An organisation-wide steering committee that is responsible directly to the most senior operating position within the organisation;
- A facilitator for each 5-6 teams;
- A team leader for each unit (group of employees who are in a team);
- Team members.

Particularly when QM is being implemented in countries other than the home country, care should be taken to avoid the ‘headquarters mentality.’ Typically, leaders in the home country see the world from the vantage point of their own experience and training, i.e., the systems, structures, and behaviours with which they are familiar. They expect everything to be done ‘their way.’ If the organisation is successful, this generally breeds new interest and a new desire to interfere (and make things better). By trying to impose headquarters methods, the success of the new venture can easily be destroyed. What needs to happen is a tearing down of the corporate pyramid.

### 2.2.9 Steps Toward Change

What preliminary steps must be taken to put QM into place? The following five steps have proven to be useful:

- Start with an explanation of what QM is and how it will be implemented. This should be shared with all levels of the organisation.
- Provide appropriate training programs to senior management, to other levels of management, supervisors, facilitators, and others who are likely to be involved;
- Develop procedures for the establishment and functioning of quality teams, for the submission of recommendations, for the implementation of suggestions, and other similar matters.
- Establish an evaluation system.
- The required organisational structure should be put in place. This includes the senior level steering committee, and the facilitators. For the initial venture into QM, it is usually wise to also select and train leaders. The role of the steering committee is to guide the organisation to the establishment of a successful QM system.

Facilitators play particular and important roles within the organisation. These roles encompass the following tasks:

- Advise the steering committee.
- Develop (or recommend purchase) of training materials.
- Set up and oversee training that occurs.
- Attend meetings of the teams, and provide advice.
- Actively promote the QM concept.
- Arrange for interaction between the teams with others teams who are engaged in QM processes, both internal and external to the organisation.
- Coordinate activities of the teams, particularly when there is a need for cross-functional interaction.
- Provide support and assistance as required.

## 2.3 Compensation Restructuring

The issue of proper compensation for services provided is an extremely complicated issue. Baron and Kreps (1999), for example, in a book on strategic human resources, devote 70 pages to the topic and an additional appendix, filled with mathematical formulas. Champy (1995) reports that, 'Compensation has lately become the most controversial of all management processes' (p. 165). *Please see References section for full bibliographic details.*

Champy further goes on to discuss the changes that have been brought about by reengineering. Reengineering advocates insist that people should no longer be paid for the time they put in. Instead, they should be paid for the value they add to the organisation. The same advocates also feel that payment practices should be used 'experimentally, boldly, subtly, as a management tool for change and the reinforcement of change' (p. 165).

Of course, what is needed is a compensation system that will:

- Encourage teamwork without discouraging individual contribution.
- Reward the type and quality of effort.
- Make a determination of what non-economic contribution is worth.
- Resolve the issue of free-riders (under-performers) in the teams.
- Provide for an equitable division of rewards within the group or organisation
- Provide an equitable assessment if pay for performance is used.
- Reward status within the organisation by seniority, skill, knowledge and other credentials.

Milkovich and Wigdor (1991) suggest other issues that need to be considered. Some issues are:

- Complexity of technology
- Certainty or ambiguity of tasks
- Prevailing culture
- Whether work is easy or hard to measure
- The extent to which creativity and innovation are necessary
- The directness of the link between input and outputs
- The importance of motivation
- The extent to which perceptions of inequity in the context of technological complexity should be considered.

The answer for a compensation system which is preferable seems to be one composed of base pay + bonus pay. Base pay is calculated on market conditions and is closely tied to what competitors are paying. Bonus pay consists of additional compensation that employees receive in the form of shares or gain sharing based upon the company's profitability during the previous period. Other companies base the bonus portion on whether the company meets or beats its budget.

The questions that can be asked are many. Champy (1995) suggests the following:

- How better to target values with incentives?
- How to juggle individual-based pay with team-based pay?
- How to define 'team' for pay purposes?

- What's the right proportion of base pay and incentive pay?
- How far can a company depart (up or down) from the market rates for work?
- What are the right pay differentials in a company?
- Right for what? Morale? Morality? The Market?

One thing is certain. If QM is going to be successful, a compensation restructuring is necessary. How this should be done, however, is an unanswered question.

## 2.4 Behaviour Modification (OB Mod, Operant Conditioning, Positive Reinforcement)

In spite of the fact that it has fallen into disrepute within the last few years, organisational behaviour modification (OB Mod) does work, and it works to improve quality (Torinus, 2003; Harrell, 2003; Luthans, 2001; Robbins, 2003; Allen, 2002; Johnson, Redmon, Mawhinney, 2001; Poling & Braatz, 2010; Hantula, 2001). So what is OB Mod? It is the application of behavioural principles to the control of individual behaviour within an organisational setting. It also is known as operant conditioning, positive reinforcement, and behavioural analysis. Its success in educational improvement (Alberto & Troutman, 1986; Becker, 1986), sports (Harris & Harris, 1984; Orlick, 1986a, 1986b), smoking cessation ([http://nlp.snowseed.com/intro\\_habits.htm](http://nlp.snowseed.com/intro_habits.htm)), and weight loss are well documented. One of the earliest examples of success in the business environment was at Emery Air Freight in 1973 (Luthans & Kreitner, 1985).

Basically there are five intervention strategies – positive reinforcement, negative reinforcement, extinction, punishment, and avoidance (some authors omit avoidance) – and combinations of these. At first, continuous schedules of reinforcement are used. As the behaviour is closer to becoming habit, fixed and variable ratios are used. Finally, fixed and variable intervals are utilized. The important rule is that reinforcement must be for **desired behaviour**, not for results. Results can be influenced by too many outside factors. It is important that proper models show the correct behaviour. Shaping is a technique that gradually brings the behaviour of the individual closer to the target.

The steps in the intervention process include:

- Identify persons whose behaviour must be changed, and the performance related behaviours that are desired.
- Measure the frequency of undesired behaviour.
- Identify external factors that are/may be causing the behaviour.
- Remove barriers that prevent or hinder the behaviour that is desired from being exhibited.
- Discuss the behaviour that is desired with the individual, and the reasons for current behaviour. At the same time, ensure that the individual has or sets:
  - Challenging but attainable objectives

- Clear and realistic plans for achieving the objectives
- Clear and acceptable work rules
- Realistic schedules and deadlines
- An understanding of equipment, methods, forms, etc.
- Supportive, helpful supervision that will provide constructive feedback
- including reinforcement
- Develop an intervention strategy and schedules of reinforcement
- Apply the strategy
- Develop a format by which the individual can chart his own behaviour on a daily basis.
- Monitor and change intervention strategy, if necessary.

For more information, see copies of the *Journal of Experimental Analysis of Behaviour*; *Journal of Applied Behavioural Analysis*; *Journal of Organisational Behaviour Management*, Daniels, 1994; Martin & Pear, 1988; and Reynolds, 1968.

### **2.4.1 Praise**

Tied in with behaviour modification is the concept of praise. It has often been said that a little bit of honey goes a long way – but if that honey has a bee with it (is insincere or phony), its value will plummet quickly.

Praise is a tool for accomplishing behaviour that the organisation wants repeated. Its purpose is to let others know, on a frequent and informal basis, that their efforts are being appreciated.

Some keys to giving praise are:

- Praise should be thought through carefully and personalized.
- It should be truthful, sincere, and honest.
- It should focus on specific behaviours and not be general in nature.
- Praise works best when it is:
  - Tied to behaviour that should be repeated
  - Of value to the person who is being praised
  - Appropriate to the behaviour that has been exhibited

Inevitably, praise will fail if it is:

- A way of persuading or tricking others to do a manager's bidding or if it is used to make the person feel that he owes something.
- Reserved for an inner circle of friends.

- Followed by criticism – even if that criticism is constructive.
- Given to one employee at the expense of another.
- Given in such a way that it embarrasses the recipient. In some countries, for example, the religion or culture de-emphasizes individual contributions.

Some guidelines for giving praise include:

- Looking for opportunities to give praise, particularly to hardworking individuals who are usually ignored.
- Choosing appropriate tools, in terms of words, timing, and sensitivity.
- Creating an environment in which team and individual efforts are appreciated – even if the outcomes are not always ideal. This is particularly helpful when many problems and setbacks have occurred.
- Saying ‘thank you’ often has potent meaning.
- Anticipating the results that praise will have. It should not be assumed that this will always be positive.

#### **2.4.2 Advanced Quality Methods**

Additional training will occur in Total Quality Management, six sigma, quality function deployment, Taguchi’s design of experiments, and other methods that meet the quality goals of the organisation.

### **3 Team and Team Building in the Context of QM**

Early in the process of addressing quality issues, training in team and team building needs to have occurred. It is unlikely, however, that teams in the true sense of the word will have developed. A team differs from a group. A group has a designated leader and individual accountability. The group and the organisation have identical work outcomes (goals and objectives). Part of their goal is to discuss, decide, and delegate work to individuals. Efficient meetings are preferred. The effectiveness of the group is based indirectly on the influence that it has on organisational outcomes. If members of a group are not satisfied with the way the group is functioning, they will tend to withdraw – either physically or mentally and emotionally (self-limiting behaviour). Thus, a group is not a team.

A team, on the other hand, is three or more people who interact regularly and coordinate their activities to accomplish a specific goal. The team tends to function in an autonomous manner. Members of a team have a shared vision and mission and a collective responsibility for achieving that mission. Leadership roles are often shared. In fact, leadership may change frequently, as the required expertise changes. Members are not only accountable to the organisation; they are also accountable to each other. Meetings encourage an open sharing of information and ideas. The team's outcomes are measured not only by quantity and quality of products and services, but also by personal satisfaction. In a cohesive team, considerable

effort is made by each member to ensure that fellow employees are committed to the process, that is, they are satisfied with what is occurring. Members work together to ensure that each person feels she is key to the team, and that her opinions and ideas will be sought, and that these will be helpful.

### **3.1 Benefits and Drawbacks**

Teams certainly have benefits, but they also have costs. Among the benefits are: level of effort; social facilitation; member satisfaction; product and service quality, hence customer satisfaction; increased desire for learning; greater flexibility; speed and efficiency in product development, and better decision-making. The members of the team tend to bolster each other, leading to increased effort, and friendly competition. Generally members of a team are cross-trained and can cover each other if one person is away from the job. In the quality environment, because they have pride in the work they do collectively, team members will be more committed to providing the type of service that customers prefer, and will monitor and correct each other's work.

Some of the drawbacks of teams are that power, responsibility, and influence are taken from middle managers, who then opt out of the process or even sabotage it. Often there is high initial turnover; some employees find it difficult to work in a team environment. Also, occasionally a team member will not 'carry his weight,' that is, he will not do his share of the work. Given that there may be many teams working in the typical organisation, coordination among them becomes more difficult and costly. A greater cause for concern is the threat of sanction against the company for attempting to undermine the labour union. The National Labor Relations Board (U.S.) puts out a fact sheet that specifies what it will examine when it receives a complaint. First, it determines if the company's work teams can be categorized as a labor organisation, that is, 'an organisation of any kind, or any agency or employee representation committee or plan, in which employees participate and which exists for the purpose ... of dealing with employers concerning grievances, labor disputes, wages, rates of pay, hours of employment, or conditions of work.' Although there is less danger of this with quality teams, the problem does exist, particularly with self-directed work teams, who assume the responsibility of management, sometimes hire and fire employees, and set their own working conditions.

The topic of teams has been addressed in other courses. Some preliminary and brief information regarding types of teams, characteristics, stages of development, norms and cohesiveness, how to make teams more effective, and role structures follows. Causes of conflict are also addressed.

### **3.2 Types of Teams**

Teams are classified in many different ways. Among them are employee involvement (quality circles, quality improvement), self-directed work teams, cross-functional, virtual, project teams, and other types.

An employee involvement team is a small group of workers who meet on a periodic basis to improve quality within their own unit. Usually the problems on which they work are task specific.

Self-directed work teams (SDWT) assume responsibility for all the functions of the team. They may determine what has to be done, assign team members to the task, evaluate their own work (although SDWT are more common in the manufacturing sector, where quantity and quality are automatically measured), provide training, schedule vacations, and, in some cases, even discipline, hire and fire fellow members. These teams present the greatest challenge to unionised labour.

Cross-functional teams try to solve the problems that occur on an organisational rather than a functional (task) basis. Usually there is one representative from each of the affected units. These teams coordinate the efforts of all teams working on a particular product or service so inconsistencies do not occur and all activities mesh. They also are used to resolve a problem that occurs in one unit but has an impact on other units within the organisation.

Virtual teams exist in cyber space. They use telecommunications technologies to resolve organisational issues. We are not aware of any that concentrate on quality-related problems. Townsend, DeMarie, Henfrickson (1996 & 1998), however, give examples of employee involvement teams that function without meeting face-to-face.

Project teams have a specific one-time activity that must be completed within a specified period of time. They are often used in software development and problem detection (that is, getting an error-free product to market). Once the project is completed, the team disbands.

### **3.3 Characteristics of Teams**

Again, a large number of characteristics describe teams. Within the quality context, however, the characteristics are much more limited.

#### **3.3.1 Size**

Generally, because quality issues are task and unit specific, quality teams tend to be small – generally between six and nine members. If the team membership is too small, an insufficient number of ideas are generated. If the team is too large, some members do not have an opportunity to contribute.

#### **3.3.2 Stages of development**

As in all teams, quality teams go through a forming, storming, norming, performing and adjourning (de-performing and de-norming) stages. In the forming stage, the team meets and begins to function. This is a time of orientation, and for getting to know the other members. It is at this time that ground rules are being developed, and attempts by individuals to become formal and informal leaders, are made. A tremendous amount of ambiguity and uncertainty exists; members have not formalized their own roles.

During the storming stage, individual characteristics and personalities emerge. Members start being assertive in claiming specific roles. The stage is marked by conflict,

disagreement, and lack of consensus regarding the goals and means that will be used. Successful completion of quality activities is almost non-existent. Special 'care and handling' is required at this stage. A skilled facilitator can ease the transition to the norming stage.

As members get to know each other, and the expectations are clarified, they start to work together more closely. Common norms start developing and cohesiveness begins to occur. This is the norming stage.

During the performing stage, quality issues are front and centre, that is, group time is devoted to identifying problems and developing alternatives, analysing these alternatives, and agreeing on probable solutions. Close relationships and allegiances are also being developed.

One of the issues to which organisations pay limited attention is the disbanding of teams. Particularly in those instances where teams are short-lived, for example when a project is concluded, there is a sense of loss of friendship, of dependence and of camaraderie. A gradual termination is often helpful. New teams that form go through the forming – storming – norming – and performing stages again.

### **3.3.3 Team Norms and Cohesiveness**

From a QM point of view, the development of team norms and cohesiveness is extremely important to an organisation. The norms can support the organisation or they can work against the goals and objectives it has. Norms are implicitly accepted standards of behaviour that regulate members' behaviour. Given that successful achievement of quality objectives is usually related to gain sharing or other bonus pay, the norms of quality groups are seldom dysfunctional to the organisation.

The greater the opportunity the team has to work together and be successful, the greater the cohesiveness of the team. Cohesiveness is the extent to which team members are attracted to other members of the team and are motivated to be committed and trusting in the work that is done. Members of cohesive teams tend to remain together longer. Additionally, there is greater cooperation, and willingness on the part of the members to assist each other. After work, social relationships also result. Cohesive teams consistently solve quality problems quicker, and solutions tend to be better (Evans & Dion, 1991). Lawler (1986) points out that there are other additional benefits (somewhat revised):

- Improvement in work methods and procedures often occurs
- Service and product quality generally increase
- Rate of output often improves
- Members are more attracted to each other. This is important because members frequently put considerable pressure on each other to improve quality and contribute suggestions. Praise and acceptance are valued social rewards.
- Staffing flexibility increases, particularly when one or more members is away
- The need for the support of staff and other units tends to decrease
- Less supervision is required

- Decision-making improves (p. 110).

How can team success be ensured? Cheney, Sims, and Manz (1993) summarize the philosophy and activities of Texas Instruments (TI) Malaysia. At the centre are the core values – respect for people, a recognition that every job is valuable; sincerity, honesty, and integrity; and two additional concepts. These values have not been discussed previously: the organisation expects teams to produce what is required, and in its expectations, creates a self-fulfilling prophecy. In other words, when senior managers show confidence in employees to fulfill expectations, members tend to ‘rise to the occasion’ and do this.

In the four corners of the TI model are the mode/desire/dream, the preparation, the perseverance, and the involvement. The *model* specifies the need for clear objectives, a definable path, and measurable and quantifiable check points. In *preparation*, there is training, development of procedures, and the organizing of teams for successful improvement. *Perseverance* demands patience, preparation, and persistence. For *involvement*, three guidelines are given – the most senior level of the organisation is committed and involved; attacking facts, not individuals; and making the team responsible for its own success. Zander (1982), in the context of groups (and other authors) suggest eight actions that will make teams more cohesive. These are:

*Needs satisfaction.* Each member has particular personal needs. Cohesiveness will grow if each person recognizes that the team can satisfy these needs. The opposite technique is also valuable; heightening each member's appeal for the advantages that the team can offer.

*Sacrifices.* Having members make sacrifices for the good of the team heightens cohesiveness. In other words, those members who invest their own resources in the team are more likely to feel a stake in its future.

*Super-ordinate goals and enemies.* The team will blend together quickly when an important, challenging, and unusual quality goal must be resolved. The defeat of super-ordinate threats or enemies (a competitor, for example) also helps a team to solidify.

*Protection.* Team members should be protected from attacks by outsiders. In the alternative, if this cannot be done, they should be helped to succeed in eliminating these attacks.

*Inter-group competition.* Winning adds to team cohesiveness. Even when the final outcome is not favorable, the effort that went into the preparation and the strategies binds the team together. It also improves the quality of the products or services. Many organisations that know they have little chance of winning quality awards, such as the Baldrige, nonetheless encourage employees to work for these.

*Interaction.* The opportunity to interact frequently and positively increases each member's attraction for other members of the team.

*Favourable evaluation.* Favourable evaluation of team efforts enhances cohesiveness. Negative evaluations tend to decrease it and result in conflict and bickering, and new challenges for leadership roles.

*Goals and objectives.* The collaborative development and agreement on goals and objectives also provides the team with milestones to be completed. Effort is then functioned toward those activities.

A useful guide to building cohesiveness among team members is that of Williams (1993).

### **3.4 Conflict**

Conflict within teams and in the QM structure is inevitable. Functional conflict should not be discouraged. What is required is that it is appreciated and managed. Some understanding of its nature is provided under the following topics: definition, types, contents and relationship, reasons why it occurs, functionality, methods for resolving, and styles of conflict resolution

Conflict is the struggle between two or more parties over values and claims to perceived scarce resources, status or opportunities. The aims of the opponents are to neutralize, injure or eliminate their rivals. Some examples include: competition (both friendly and intense), coercion, threat, internal dissension, and diversity of opinion, class conflict, board games, and sports. Conflict can occur at the intrapersonal level (within the individual), interpersonal (between individuals), intra-group (within the group), inter-group (between groups), and international. In QM, three levels are of most importance – interpersonal, intra-group, and inter-group.

Three types of conflict are best known: competitive, aggressive, and problem solving. Teams try to eliminate aggressive conflict, encourage friendly intra-group and inter-group competition, and use problem solving to address issues.

There are two important facets of conflict: the content and the relationship. There is little point on ‘being right,’ that is, winning on content if the relationship between two parties is sacrificed. Within organisations, employees must continue to work together.

Why does conflict occur? It occurs because:

- Resources are scarce and every team wants its share
- There is disagreement about the values of the organisation and what QM can achieve in context of the resources that are available, [period]
- There is disagreement over goals. Often these are multiple, unshared and unclear. Hopefully these are clarified before the quality teams begin to function.
- There is disagreement about the meaning of facts
- There is disagreement over methods and means of arriving at goals
- Of structural reasons – power imbalance, status quo, norms and rules
- There are differences in personality and personal characteristics
- There are communication problems, i.e., lack of a common language. The language being used, in this case, English, is not the first language of each person,

and there may be an assumption that experience and background of all participants are the same, and the different interpretations that are placed on the words themselves. Hayakawa (1994) stated, 'The meaning of words is not in the words; IT IS IN US!' It also occurs because there is insufficient exchange of information, because the receiver of the message does not attribute the same meaning to what she is hearing as the sender intended, and because she ignores the non-verbal cues that accompany the message.

Especially at the beginning, quality teams should be helped to work through these difficulties. Generally, this is both the facilitator's and the team leader's role.

Conflict within the quality context is not necessarily bad. In the context of QM, it can be extremely useful. Conflict is functional when:

- It permits employees to let off steam so the problem does not get out of proportion.
- It provides an opportunity for the team to re-examine its own position.
- It acts as a test of strength so conflicts are kept small.
- New facts, ideas, and innovations are brought out as a result of the conflict. These often lead to new solutions.
- Needed changes in power, prestige, leadership, and goals occur.
- If, as a result, the team gains a better understanding of its own processes and effectiveness.
- Motivation and energy are increased.
- It unifies the group (super ordinate enemy).

It is dysfunctional to the team and QM when:

- It is used to enhance the image or self-concept of individuals working in QM.
- It rigidifies the group.
- It leads to distortions of reality.
- Hard feelings towards opponents are created.
- Sharing of information and feedback becomes less open and defensive.
- Subgroups form and the unit becomes fractionalised.
- If some members psychologically withdraw, become aggressive or hostile.

### **3.4.1 Conflict Resolution**

How can conflict be resolved? Conflict can be resolved in many ways. Pertinent to QM is:

- A show of strength (this is seldom lasting)
- Problem solving

- Creation of a super-ordinate goal or enemy
- Peer pressure
- Establishing a structure that places a premium on collaborative work relationships
- Integration of the individual's goals with those of the organisation through socialisation, incorporating the other party's ideas into the present process, incentives, and cooptation (moving the person in conflict to a situation where she will be required to defend the position to which she is opposed).

Five conflict resolution strategies have been identified that individuals use to manage conflict. They can best be shown as follows:

<b>Concern for Self</b>	High	Competition	Collaboration
	Low	Avoidance	Accommodation
		Low	High
		<b>Concern for Others</b>	

The table shows the following:

- Accommodating employees have a high concern for others and little concern for themselves
- Employees who practice avoidance have little concern for themselves or others
- Collaborators have a high concern for themselves and for others
- Competitive employees are concerned predominantly with their own interests
- Those who compromise have moderate concern for themselves and others. They will try to 'work things out.'

Each style can be useful within the QM framework:

*Accommodation* styles are most useful when an employee realizes he is wrong, or when it is important that other positions be heard, when the issue is very important to others but not important to the individual, to build encouragement and commendation, when continued forcing of the issue would damage the relationship, or to allow others to learn from their own mistakes. Employees who score high on a measure of accommodation style often find that their ideas are ignored. Those who score low have trouble building rapport with others, are regarded as unreasonable, have trouble admitting they are wrong, don't know when to give up, and do not recognize that there are times when there should be legitimate exceptions to the rules.

The *avoidance* styles should be used when the issue is trivial, or other issues are more pressing, when the result can only be a lose-lose result for both parties, when the relationship is in danger of being damaged, to let people cool down, when more information is required, when others can resolve the conflict more effectively, and when the issue is a symptom of a different problem. Employees who score high on avoidance find that others have difficulty making their ideas understood to them (i.e., can't 'get through' to them), are often very cautious ('walk on eggshells') not knowing the employee's position, and that important decisions are made by default or without their input. Employees who scored low often hurt other employees' feelings or make them angry. They also find themselves harried or overwhelmed by the large number of issues.

*Collaborative* styles are most valuable when an integrative solution is preferred, when there does not appear to be a correct answer, when different insights are needed to resolve the problem, when commitment of others is needed, and when it is necessary to overcome or 'work through' hard feelings. Those who score high tend to spend too much time discussing issues in great detail. Those who score low find it difficult to get others to commit to their ideas.

*Competitive* styles should be used when quick decisions are needed, when decisions that will be unpopular have to be made, and to protect the team from people and other units that will take advantage of it. Employees who score high on this style usually find that others are afraid to admit that they do not know or are uncertain. They also find that other employees do not want to disagree with them. Those who score low on competition are more likely to avoid taking a stand, or contributing their ideas.

The *compromise* style is most useful when goals are moderately important but not worth the potential disruption of being more assertive, when two equally influential members of the QM process have 'locked horns,' to achieve a temporary settlement, when a expedient solution is needed because of time pressures, and, as a backup mode when it is not possible to use other styles. Employees who score high are so busy compromising that they lose sight of the principles, values, and long-term objectives that are at stake. They often also find themselves involved in games of bargaining and trading. Those who score low are very sensitive or embarrassed to be effective in teams. They also find it hard to make concessions.<sup>2</sup>

Teams that make it a point to understand their own and members' conflict resolution styles find that examining alternatives and deciding on particular solutions is easier.

## 4 Culture and Cultural Change

The bases of an organisational culture are the values of the people within that organisation. To change culture, values must be changed. But what are values?

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<sup>2</sup> Source: Thomas & Kilmann (n.d.). The Thomas-Kilmann Conflict Mode Instrument (TKI) can be taken online: <http://www.teamtrainingsolutions.com/tki.html>

## 4.1 Values

Values, according to the Thorndike Barnhart Dictionary, are ‘the established ideals of life.’ Webster's New Collegiate Dictionary (1976) defines culture as, ‘the integrated pattern of human behaviour that includes thought, speech, action, and artifacts and depends on man's capacity for learning and transmitting knowledge to succeeding generations (p. 345). A composite of other definitions suggests a common theme: norms by which the organisation operates, soul of the organisation, an invisible force, unspoken rules and assumptions, a system of shared values and beliefs that shape the behaviour of managers and their direct-reports. Given this, it stands to reason that changing culture is a long-term process – perhaps as long as 5 to 10 years. It involves managers viewing their direct reports as their customers.

Organisational success and employee experiences shape culture. Culture exists at three levels – the visible one (how employees act and the symbols, stories, heroes, slogans, ceremonies that make up the history of what the organisation stands for), and the invisible one, which consists of two parts. The first part is the expressed portion, for example The HP Way, Johnson & Johnson's Creed of what is important to the organisation. Thirdly, there are the underlying assumptions and beliefs, such as the trust, loyalty, and commitment to the ideals of the company.

The concept of culture was first introduced by Pettigrew (1979). The idea caught on quickly when Japanese success was credited to its internal culture that stressed human resources, group values, and cooperation. An intensive socialization process ensures that newcomers learn the company way.

The elements that make up culture vary from author to author and organisation to organisation. Peters and Waterman (1982) specified eight principles for excellence, that is:

- A bias for action.
- Learning what the customer wants and providing it.
- Small group structures that permit employees to act independently and creatively.
- Productivity through people. Peters and Waterman argued that employees should be encouraged to give their best efforts. In exchange, they should share in the company's successes.
- Companies should pursue their core businesses.
- They should concentrate on the products that they know best.
- Flat structures are required.
- A dual control should exist with operating issues being loosely structured permitting considerable freedom to employees, but with strategic controls existing at the head office.

Others have pursued the concept of culture. Connors (1994), for example, stated that creating the required culture is not only a desirable alternative but also a necessity, because it leads to competitive advantage. The Hay Group (Rollins, 1993) concluded that culture can impact performance under the following conditions:

- The company produces only quality products or services;
- It will not tolerate poor performance or poor quality;
- Employees have a high level of pride in their company and the work they do;
- They can decide how to do their jobs;
- They feel they are being treated with respect;
- They know that the company will act to correct customer problems;
- Senior managers are knowledgeable and competent (at least, employees perceive that they are).

One organisation that calls itself a learning organisation includes the following:

- The whole is more important than the parts; boundaries among the parts should be minimized
- The culture is egalitarian
- The culture values improvement and adaptation
- There is respect for the individual
- Every employee is a manager
- Everyone participates
- If an employee has an idea, she should try it

Edosomwan (1996) points out some aspects of what he terms is a 'new culture.' This involves:

From a mission and objectives point of view,

- Ethical behaviour
- Climate for continuous improvement
- Balancing of long-term goals and short-term objectives.

Customer and supplier requirements include:

- Using a systematic approach to determine customer requirements
- Building partnerships.

Problem solving should be:

- Participative and involve all employees.

Champy (1995) outlines the types of values that are now desired in today's environment in organisations. These are:

- Perform up to the highest measure of competence, always.
- Take initiatives and risks.

- Adapt to change.
- Make decisions.
- Work cooperatively as a team.
- Be open, especially with information, knowledge, and news of forthcoming or actual 'problems.'
- Trust, and be trustworthy.
- Respect others (customers, suppliers, and colleagues) and oneself.
- Answer for your own actions; accept responsibility.
- Judge and be judged, reward and be rewarded, on the basis of performance. (p. 79).

Ernst & Young (1990) add:

- Employees should feel that their suggestions and insights are welcome.
- They should be able to take whatever steps are necessary to ensure that productivity is occurring.
- People are the most important asset. The organisation has a responsibility to develop them.

Collins and Portas (1995) describe culture as:

- Development of individual capabilities.
- Putting clients first.
- Forming long-term relationships with clients.
- Providing clients with the best quality that is possible.
- Engaging in activities that are dominated by value-adding service to clients.
- Providing more than clients expect.
- Ensuring each employee becomes a generalist, but at the same time has a core competency in at least one specialized area.

The aspiration statement of Robert D. Haas, a direct descendant of Levi Strauss, founder of the jean-manufacturing company by the same name, identifies the culture of that company as:

- 'Directness, openness to influence, commitment to the success of others, and willingness to acknowledge our own contributions to problems.'
- 'A diverse workforce (age, sex, ethnic group, etc.) at all levels of the organisation.'
- 'Greater recognition – both financial and psychic – for individuals and teams that contribute to our success ... those who create and innovate and those who continually support day-to-day business requirements.'

- Clarity ‘about company, unit and individual goals and performance. People must know what is expected of them and receive timely, honest feedback.’
- Greater ‘authority and responsibility of those closest to our products and customers. By actively pushing the responsibility, trust, and recognition into the organisation, we can harness and release the capabilities of all our people.’
- Cultures have been classified in many ways. Sonnenfeld (1988) suggested four types – baseball team, club, academic, and the fortress. The names exemplify the meanings that were intended. Deal and Kennedy (1982) also used four types. These were the tough-guy, macho; work-hard-play-hard; bet your company; and network cultures. Hofrichter (1999) identified his quadrant of four typologies as functional, process, time-based, and network. Poupert and Hobbs (1989) saw five distinct types – father-founder, bureaucratic, participative, professional, and managerial-entrepreneurial. Cameron and Quinn (1999), drawing on work done by previous authors, named their typologies the clan, the adhocracy, the hierarchy, and the market cultures.

As one can readily see there is no shortage of descriptions of culture. This lack of consensus, however, makes it difficult to describe common strategies that could be used to change a culture. It is not that these strategies do not exist. They do. It appears that each consultant has his own suggestions, tools, and techniques.

Given the emphasis on customers, and the need to change to a quality-oriented organisation, it came as a surprise to one of the authors to discover, that of the 52 books and the many more articles examined for this Block, only seven mentioned culture or the need to change it. Changing culture either was not an important issue or it was too fragmented and difficult to understand and explain. Furthermore, within the quality literature, when the word culture is used, it does not address basic life values. Instead, it addresses vision and tactics for achieving a quality-oriented workplace. Hiam (1997) does provide readings and exercises that allegedly change employees' values. And, although Hutton (1994) does not address culture specifically, he does provide many excellent points, that when implemented, will lead to a change in culture.

It appears that to determine the type of cultural change that is needed, a cultural audit is required that asks:

- What kind of culture does the organisation want?
- What kind of culture does it have now?
- What gaps exist and how can these be decreased?

Perhaps not much help to the quality practitioner seeking to take the first steps in cultural change!

## **5 Should Consultants Be Used To Define and**

# Implement Change?

The answer depends on an organisation's internal resources, the level of internal facilitator training and knowledge, and the understanding of quality processes, and how to achieve these. Crocker, Chiu, and Charney (1984) point out that consultants bring a larger number of ideas, options, and alternatives. They are immune to the internal power structure, generally have better access to key leaders, can help employees experiment successfully with new roles and behaviours, provide a support system and a shoulder to cry on, and retain the momentum once it has started.

At the same time, external consultants are expensive, do not do the day-by-day work, are busy people therefore have limited time, and sometimes are very insensitive to the internal relationships and politics, and the situation.

## 5.1 Implementing Change

There are probably as many designs to implementing change as there are change agents and consultants. Kimberley and Quinn (1984) suggest the following nine steps:

- Capitalize on (a) crisis.
- Be bold and aggressive in announcing and implementing a plan.
- Make the hard decisions as quickly as possible in order to cut losses.
- Recognize that executive power derives ultimately from the appointing authority.
- Understand the limits of your resources.
- Develop a multifaceted strategy to preserve and protect the institution during its immediate crisis.
- Seize upon the crisis as an opportunity to analyse the institution both in historical and contemporary terms.
- Interpret the circumstances of the crisis for the media.
- Employ the crisis as an opportunity to restate the mission of the institution (pp. 100-101).

Steps in the change process include (Griffin & Singh, 1999):

- Recognition of need for change
- Establishment of goals for change
- Diagnosis of relevant variables
- Selection of appropriate change techniques
- Planning for implementation of change
- Actual implementation

- Evaluation and follow-up.

## **7.7 Resistance to Change**

Resistance to change occurs for many reasons. These can be classified using four categories: How individuals are affected personally, reaction to the past, lack of adequate communication or understanding, and structural issues.

### **7.7.1 Personal Impact**

Perhaps the greatest personal fear is caused by uncertainty and personal insecurity. Among these reactions are:

- Feeling that personal loss will result. This may be fear of losing a job, money, pride and satisfaction, friends, important contacts, freedom, responsibility, authority, good working conditions, status, and other elements of their work life.
- Feeling that they will be unable to cope.
- More work is being created at a time when the employee cannot keep up with the present workload
- Change will require additional and different types of effort that the employee either is not motivated to give or which may be impossible to do
- Personal circumstances just make the timing of the change a bad one

### **5.1.1 Communication**

Many of the fears, perceptions, and misunderstandings could be corrected by better communication. Lack of communication, or bad communication, also results in:

- Misunderstandings and misinterpretations
- Different perceptions being expressed not openly but through the rumour mill.
- Perceptions that there is no need for change; everything is fine.
- Second-hand information that consists of understatements, exaggerations, and falsehoods

### **5.1.2 The Aftermath: The Carry-Over From Past Experiences**

Past experience (not only in this organisation but in others) may suggest to employees that management is a group of bungling idiots who never do anything right. They may:

- Feel that more harm than good will come from the new direction
- Be tired of change. This is based on the feeling that change has been too frequent, and not of value.
- Lack respect for the change agent.

- Have a negative attitude toward management, the organisation, or fellow workers.
- Feel that personal criticism will result when employees are unable to understand or complete the new requirements.

### 5.1.3 Structural Issues

From a structural point of view the following barriers to quality improvement are often present:

- Differences over strategic priorities, particularly when power, prerequisites, and prestige are involved.
- Lack of credibility in and resistance to the change agent(s).
- A culture that supports manipulation and compliance rather than problem solving.
- Trying too much at one time and not being successful, or the anticipation that it cannot succeed.
- Specialists who have narrow views of their roles in the organisation do not feel the organisation needs to change.
- Bureaucratic structure that does not permit openness. Those who have worked hard to attain their position in the hierarchy want to maintain them.
- If the organisation consists of ‘chimneys’ which operate on their own, with minimal links to the rest of the organisation, a sub optimisation by unit will occur. In other words, the units will achieve their goals and objectives – at the expense of the entire organisation. There is organisational sub optimisation.
- Compensation is geared to paying employees for being at work rather than results achieved
- Dread of numbers and statistics and a fear that quality is about these two things.
- Perceived lack of time to do one's own job and take on quality initiatives as well.
- Feeling that quality is a passing fad.
- Dissatisfaction with the approach that is being used (e.g., had no or very little input).
- May want to challenge authority and see what they can ‘get away with.’ (Petrick & Furr, 1995).

The moral of these listings is that if organisational leaders want employees to accept change, they must do their homework (Bridges, 1991). Being reasonable, of course, is much easier when one is not affected by the change. If severe loss is anticipated, being reasonable becomes much more difficult.

What can be done to lessen the resistance to change? Doing one's homework consists of investigating and knowing the answers to questions such as the following:

- What domino effect will the change probably cause? (Dominoes is a game consisting of a set of small rectangles that are set up in such a way that when the first one falls, it causes the rest to fall in sequential order).
- How will the different phases in the domino chain affect various stakeholders? What will they have to give up? What will they gain?
- How will all employees (and other stakeholders) in the organisation be affected?

Bridges (1991) provides some words of advice to managers:

- Describe the change as specifically and in as much detail as possible.
- Expect overreaction. This will be due, at least in part, to past experience, and previous baggage (aftermath).
- Compensate for losses.
- Acknowledge losses openly and sympathetically, but do say what will be done to lessen the losses.
- Expect and accept signs of grieving: denial, anxiety, sadness, disorientation, and depression. Help the employee cope with these phases.
- Give employees information and keep doing it.
- Be specific about what has been completed and what decisions have not yet been made.
- Mark the endings with some dramatic action. The story is told about René McPherson when he took over leadership of Dana Corporation. The organisation had so many rules and procedures that the manuals in which they were housed could be stacked in a pile that exceeded two feet. McPherson swept the entire pile to the floor and held up a single sheet proclaiming that these were now the new rules.
- Treat the past with respect. Instead talk about the valuable contributions that were made to the present time, how the demands have changed, and the challenges that lie ahead.
- Let people take a piece of the old with them. A rather novel idea occurred when Procter and Gamble closed its northern Michigan (U.S.) plant. Employees put together a yearbook of the years the plant had been in operation. They brought pictures, wrote stories, and, to the extent it was known, pointed out what employees would be doing in the future.
- Show that endings are the start of new beginnings – for both employees and the organisation. The old ways have to be let go so that new ones can take their place. (Bridges)

Bridges (1991) also gives four additional rules for ensuring that the new direction will be a success. He suggests that:

- There should be consistency. If teamwork is desired, for example, individual contribution should not be given maximal reward.
- Steps should be taken to ensure quick successes
- Ways should be found to symbolize the new identity. Small things take on importance. Symbols (names of new teams, jackets, and so forth) give employees a sense of starting something new.
- Successes should be celebrated.

The keys to successful changes are: people, communication, education, participation, commitment to both the process and people, and top management involvement and support. Good sources of information regarding resistance to change can be found in Kirkpatrick (1985) and Hutton (1994).

## **7.8 One Last Comment**

Harrington (1991) points out that:

The production process for an average product accounts for less than 10 percent of the product value, and the service industry that provides most of our jobs is 100 percent business processes. For years we have focused our efforts on measuring, controlling, certifying, and correcting our production processes. As a result, business processes became the major cost factor ...

When businesses began focusing on business processes, they realized other improvements:

- Improved reliability of business processes
- Improved response time
- Decreased cost
- Reduced inventories
- Improved manufacturability
- Increased market share
- Improved customer satisfaction
- Increased employee morale
- Increased profits
- Reduced bureaucracy.

The message is clear. The new area open to change is the service industry – business processes.

## 6 In Conclusion

Perhaps a fitting conclusion to this Block is a look at the writings of a man who lived four hundred years ago.

Musashi [1584 – 1645] grew up in the late 1500s and the early 1600s. This was a period of great upheaval in Japan. His book, *The Book of Five Rings*, is about the *ronin*, the masterless *samurai*, who roamed the country with two swords in their belts. These swords were a symbol of their status. Musashi was born a samurai. He was extremely accomplished – never losing a personal challenge. But he was much more than that – a craftsman, a calligrapher, a painter, as well as a philosopher. In this book he shares this philosophy, which he calls *Heiho*. This is really the relationship of Zen teachings and swordsmanship. *Heiho* is not about swordsmanship; it is about applying the same principles to life – to everything that is done everyday.

This philosophy states that all things are dependent on other things. The *Earth* book sets the foundation for the remaining five chapters. *Emptiness* is last and the final key to understanding. *Water* talks about technique; *Wind* explains the techniques used by other schools and exemplifies, ‘To know thy enemy, know thyself’ *Fire* gives the strategy to be used to combine the knowledge gained in the other two books. Because *Heiho* is based on Zen, an explanation of this philosophy is given (pp. xviii – xxviii).

Musashi provides these words of advice for a winning strategy

- Do not harbour sinister designs.
- Diligently pursue the path of two-swords-as-one.
- Cultivate a wide range of interests in the arts.
- Be knowledgeable in a variety of occupations.
- Be discreet regarding one's commercial dealings.
- Nurture the ability to perceive the truth in all matters.
- Perceive that which cannot be seen with the eye.
- Do not be negligent, even in trifling matters.
- Do not engage in useless activity.

We leave it to the learner to determine the relevance of this passage to change. For those interested in QM and quality improvement, the book is well worth reading – and rereading.

## 7 Summary

This Block outlines the following issues:

The goal of quality change is to determine where the organisation wants to be in the future, and where it is now. To become a 'quality organisation' the gap between the two must be eliminated. A shift towards a higher level of quality occurs in changes to just-in-time delivery, a paradigm shift, training of all employees (starting with top management), in quality and interpersonal skills. Training in interpersonal skills includes recognising and using functional roles, being assertive, speaking with facts (outlined in a different Block), and responsibility charting. Structural changes, generally aimed at making the organisation flatter, also need to be initiated.

Six steps are usually involved in implementing change, namely:

1. Explaining what QM is.
2. Providing appropriate training to employees at all levels of the organisation.
3. Developing and establishing structure and procedures detailing how the quality teams will function.
4. Establishing an evaluation system against which teams can measure themselves.
5. Placing the required structure in place.
6. Ensuring that quality is being achieved.

An important issue in quality management is compensation restructuring. Unfortunately, there is little agreement regarding the most appropriate compensation scheme. Gainsharing is one method that has been widely recognized as having a positive effect on QM success.

Methods used to improve quality also include changing employees' perceptions and attitudes. Behaviour modification (OB Mod) has been used with considerable success. OB Mod is based on operant conditioning. The most prominent advocate has been Burrhus Frederick Skinner. The theory suggests that positive reinforcement should be the dominant mode for changing behaviour.

Organisations use teams to improve quality. A group is not a team. To be a team, members must be well trained, be cohesive, and function as of "one mind." They must share team norms and have common goals and objectives to which each member is committed and which he is willing to work hard to accomplish. Teams become cohesive when activities such as the following are present: member needs are satisfied; members make sacrifices for the good of the team, fend off enemies, protect each other from attacks by outsiders, and win at inter-group competition.

Conflict is not necessarily dysfunctional to the quality organisation. Often motivation and energy are increased, new ideas and innovations surface, and a better understanding of the

problem and process occurs. Five main ways of handling conflict are competition, avoidance, compromise, accommodation, and collaboration.

Too frequently, a QM organisation cannot be established without a change in culture. Unfortunately, there is no agreement about the definition of culture. Generally comments such as 'integrated pattern of human behaviour,' 'existence of shared norms,' and talks of an open or organic organisation are common. While the concept is not well defined, everyone agrees that a culture that is positive towards QM must exist. Definitive steps as to how that is to be accomplished, however, remain a mystery.

This much is known: Employees resist change (including quality management changes) because they fear they will be affected adversely; they have had negative past experiences; there is inadequate communication and/or understanding; and the organisational structure is not conducive to change.

Accomplishing true and lasting change in quality management is challenging.

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### **Points to Ponder**

1. Burrhus Frederick Skinner has been credited as being the father of behaviourism (control of behaviour through reinforcement). He has also been called a saviour and a menace to society. In the context of QM, which is he?
2. Do you think that one particular conflict management style is better than the other four? Why or why not? Is conflict of value when quality issues are involved? Why or why not?
3. Is there such a thing as too much team cohesiveness? One quality manager we know argued that because quality was poor in the organisation, he should develop a plan to encourage more individual rather than teamwork. What do you think of his idea? If the manager is right, how can he break down the cohesiveness that exists within a team? On the other hand, how can he build it? Plan a quality improvement strategy using the team concept that you can share with this manager.

---

### **Self-test**

1. Change is something that everyone talks about but few people can achieve. Changes in QM are equally difficult to accomplish. What is a paradigm shift and what role can it play in bringing about an awareness of the need for quality?
2. Your organisation has decided to begin an employee involvement program to improve quality. What are the steps that you might take in accomplishing this? Comment specifically on the role of (if any):
  - Senior management
  - Facilitators
  - Middle management

- Members of the employee involvement teams
  - Shareholders
  - Customers
3. Explain the importance of teams in QM? Do they have advantages and disadvantages?

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**SC4 Quality Management**

**Learner Guide**

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## **PART ONE – COURSE INTRODUCTION**

# **1 Introduction to the Learner Guide**

This Learner Guide is intended for use by learners of SC4, Quality Management. It is provided to help you understand what to expect in this course, and It has been divided into two parts. Part One, the Course Introduction, begins with an overview of the major topics and issues discussed in the seven Blocks of the course. You will also find general guidelines for the course regarding Assignments and Assessment, in Part One. Part Two, the Learner Guide, is designed to help you navigate through the course content and prepare for assessment, by addressing the components of each Block in detail.

You will find the following information in this Guide:

- Course Outline – a brief outline of the course content (Part One)
- Learner Activities (Part One)
- Assessment scheme (Part One)
- Assignment formats (Part One)
- Block Highlights – a summary of each Block (Part Two)
- Learner Notes – ideas to consider when attempting exercises/activities (Part Two)
- Assignment suggestions (Part Two)
- Information on writing the Final Examination (Parts One and Two).
- Answer Keys to Objective Questions (Part Two)

## **1.1 Course Overview: A Tour of SC4**

Welcome to your course, SC4, Quality Management. The coverage of this course is very broad and is purposely designed for managers, as opposed to quality control professionals or technicians. You will see that, in several places, we refer learners to such professionals for further guidance. Our goal is to make each manager knowledgeable about the topic of Quality Management (QM) so that he or she can participate in managerial discussions about quality and provide serious input to such discussions – not so that he/she can be put in charge of quality efforts in his/her organisation! We want graduates of this course to be entitled to a seat at the discussion table because they know enough to understand the issues and to ask intelligent questions of the professionals.

### **1.1.1 Brief Course Outline**

The following gives you an overview of the kinds of topics you will read about in the seven Blocks of this course. It is not a complete listing of the sections of the course -- for that, you may refer to the Contents sections of each Block.

#### Block 1 Introduction

- The History of the Quality Movement
- Principles of Total Quality
- Types of Quality
- The Baldrige Awards

#### Block 2 Leadership and Strategic Planning

- Demonstrating Quality Values Throughout the Organisation
- The Role of Quality Professionals

#### Block 3 Customer and Market Focus

- Internal and External Customers
- Customers as Partners
- Managing Supplier Relationships

#### Block 4 Quality in Human Resources

- The Nature and Role of HRM
- The House of Quality for Human Resources
- Definitions

## Block 5 Tools and Techniques for Quality Management

- Tools for Data Collection and Interpretation
- Tools for Planning
- Tools for Continuous Improvement
- The P-D-C/S-A Cycle
- Six-Sigma

## Block 6 The ISO 9000 Family of Standards

- An Overview of ISO
- What is ISO and ISO Certification?
- Benefits and Drawbacks of ISO Certification
- Sections in ISO 9001
- Steps in Achieving Certification
- Manuals and Documentation
- Finding Information

## Block 7 Change Management in the Context of Quality

- The Goal of Quality Change
- The Progression of Change
- Teams and Team Building in the Context of QM
- Organisational Culture and Cultural Change
- The Use of Consultants
- Implementing Change

### **1.1 Learner Exercises**

#### **1.2.1 Points to Ponder**

In each Block you will encounter a section called ‘Points to Ponder’. The Points to Ponder have been designed to encourage you to think in depth about the content of the course and how it relates to your own experience and workplaces.

The questions themselves provide you with a means to both acquire skills of analysis, and to gain practice in developing answers that will assist you in your preparation for the final exam. To acquire these benefits it is necessary, therefore, that you prepare responses to all the Points to Ponder, and that you participate in face-to-face discussions.

If there are no face-to-face sessions, your tutor may want you to submit responses in writing on a schedule established by him or her. Another alternative is to discuss your responses with other members of the class.

### **1.2.2 Optional Online Readings & Terms**

The occasional online readings that are given in the text are considered optional. They have been provided for those learners who wish to read more about a specific topic. These readings are located online, and are referred to as 'Web Links.' To access these readings (on the World Wide Web), a connection to the Internet is required.

### **1.2.3 Self-Tests**

Questions that have been developed for each of the Blocks appear at the end of the text. They are designed to be used as a self-test. It is recommended that you write answers to each question. Try to share your responses with another colleague in the class or with members of your own organisation.

## **1.3 Assessment Scheme**

Learners are required to submit two assignments based on activities within the Block text, for a total of 40% of the total grade for the course. You will also write a final examination worth 60% at the end of the course.

<b>Assessment Type</b>	<b>Description of Activity</b>	<b>Assessment weighting</b>
Assignment 1	Research question	20%
Assignment 2	Research question	20%
Final Exam	Closed book	60%
<b>TOTAL</b>		<b>100%</b>

### **1.3.1 Assignment Formats**

Learners are assessed in a variety of ways. You are expected to establish and maintain performance across all assessment areas. The assignments have been designed to measure the clarity of your understanding of course concepts as well as your ability to apply these in practical situations. The final examination also seeks to assess your understanding of theory and concepts as well as their application to management. Your tutor will advise on the particular assignment format and topic(s) – they may be based on course material and/or may require some research on your part.

### 1.3.2 Final Examination

The final exam consists of two parts – Parts A, and B. The rationale for this is set out below:

**Part A** consists of multiple choice and short answer questions designed to test and probe your understanding of concepts used in the course. Most especially, they are configured to challenge a learner to discriminate between similar meanings and choices.

**Part B** requires you to extend your understanding of course concepts and definitions to a further level, and to be able to illustrate that understanding through example. The answers should be in an essay type format and kept to around 300-400 words (or 1-2 pages). The questions are designed to require you to explain the content and relevance of a particular idea or concept, and relate it to an example drawn from your own experience or from information gained from the course. This is most important, as the provision of relevant examples and illustrations serves to demonstrate your understanding of the application or expression of the concept in practice. You can prepare for the exam by taking the self-test that appears at the end of each Block.

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**Note:** The Final Exam is Closed Book, which means that you will NOT be permitted to take text or any other materials with you into the examination.

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# **1 Block One: Introduction to Quality Management**

## **1.1 Block Highlights**

1. Quality is perceived as consisting of eight (8) dimensions, i.e.:
  - Performance: What a customer expects it to do.
  - Features: Desirable characteristics
  - Reliability: Not malfunction or break down
  - Conformance: Meet specified standards
  - Durability: Have a long life
  - Serviceability: Easy and cheap to repair
  - Aesthetics: Look good
  - Perceived quality: Value in the eyes of the customer
2. Quality problems are management and system problems – not worker-caused.
3. Many people have made contributions to the field of quality management. This Block discusses the work of six of these individuals:
  - **Frederick Taylor**: Scientific management; a systematic and analytical approach for improving employees' work
  - **Walter A. Shewhart**: Variation is a fact of life in production. To help control these variations, control charts should be utilized
  - **W. Edwards Deming**: Statistical guru who enunciated the 14 points of quality management
  - **J. M. Juran**: Introduced statistical methods for improving quality
  - **Max Weber**: The ideal organisation
  - **Kaoru Ishikawa**: Known best in North America for his cause-and-effect diagrams
4. Max Weber advocated following the structure of an ideal organisation. This he termed a bureaucracy. The bureaucracy has at least the following elements:
  - Work should be divided into specialized tasks
  - Each task should be performed based on a system of rules

- Authority should flow top down
  - Each member should be accountable to one superior
  - Each member should conduct business in an impersonal, formalistic manner
  - Employees should be hired on the basis of their technical qualifications.
5. Organisations can choose to implement change very rapidly (steamroller approach) or incrementally (slowly).

## 1.2 Point to Ponder

Put on your customer hat and imagine a need you would like to have satisfied – it can be for a good or a service, but try to express it at the highest possible level, rather than at the level of a particular good or service. Write it down. Work with a friend to brainstorm as many solutions that might help him accomplish this. Aim to prepare a list of at least three possible goods or services that might satisfy your stated need (your tutor may ask you to share this list with him or her).

One of the authors' needs might be for a way to convey to his family, which is spread out over the globe, the sights and sounds of the international cities where he spends much of his working life.

His 'solutions' might include a video recorder and computer software to send files, or a new cell phone which captures images and sounds and transmits them wirelessly, or a video recorder and a pile of courier envelopes that can be used to rush discs to faraway places, or a personal cameraperson who follows him around; and records, processes, and transmits materials.

**Learner Note:** Think broadly about expectations and satisfaction. Be as creative as possible. Do not worry if your suggestions are not very practical at this brainstorming stage. You can always eliminate these later. The more important idea is to generate as many suggestions as possible.

## 1.3 Self-test

1. Explain how each of the following relates to quality:
  - Delivery time
  - Time to get the product to market
  - Responsiveness to changes in the marketplace
  - Low cost
2. What is the difference between fitness-to-standard and fitness-to-use?

**Learner Note:** One addresses the specifications of the product; the other the expectations of the customers.

3. What is the quality imperative?

**Learner Note:** Cheaper, immediately up-to-date, better, and zero-quality defect products.

4. Following are a number of terms. Match the left-hand side with the right hand side:

- |                           |        |   |
|---------------------------|--------|---|
| a. Benchmarking           | 1 ____ | A system that produces goods or that meet the needs of the customer                           |
| b. Continuous improvement | 2 ____ | Participation of all employees  |
| c. Deming Prize           | 3 ____ | Given for innovation in statistical and engineering methods                                   |
| d. Employee involvement   | 4 ____ | Establishes a standard for quality  |
| e. Baldrige Award         | 5 ____ | Continually comparing an organisation's processes with those of best-in-class establishments. |
|                           | 6 ____ | Constant improvement of quality in services or products                                       |

## 2 Block Two: Leadership and Strategic Planning

### 2.1 Block Highlights

1. Leaders set a vision, communicate that vision, support individuals in their efforts to achieve results, recognize accomplishments, and behave in an ethical and principled manner.
2. Public responsibility and citizenship is one of the categories that committees examine in naming winners of the Baldrige Awards. This includes respect for the environment, respect for and contribution to the community, and contributions towards strengthening of trade, business and professional organisations to which the establishment is related.
3. The key to quality management is leadership and the leadership system – how leadership is exercised throughout the organisation.
4. Lee and Gharajedaghi list seven leadership functions. These are:
  - Creating a shared vision and mission
  - Designing and managing an interactive organisation

- Managing interaction among people
  - Empowering people
  - Energising every person and part of the organisation
  - Creating a learning organisation
5. The Director of the Baldrige National Quality Awards has stated that the characteristics of excellent leadership are as follows:
- Being visible, committed and knowledgeable
  - Having a missionary zeal
  - Setting aggressive quality targets and goals
  - Ensuring that strong drivers such as zero defects, statistical tools, time lines, cycle time, are established and pursued
  - Being an excellent communicator of values
  - Pushing decision making to the lowest level
  - Being on the forefront of customer contact
6. Eleven types of professional ensure that the management of quality is outstanding. These are people who work in:
- Quality assurance
  - Reliability engineering
  - Quality engineering
  - Supplier quality assurance
  - Quality control
  - Inspection
  - Metrology
  - Internal auditing
  - Administration and record keeping
  - Customer quality
  - Consulting and training
7. Organisations that strategically plan for implementing a quality program are much more likely to be successful. Among the tools that are used is SWOT (strengths, weaknesses, opportunities, and threats), and 4-pairs. 4-pairs is a SWOT diagram that examines strategic actions that can be adopted to take advantage/minimize the effects of:
- Opportunities and strengths
  - Opportunities and weaknesses at the same time

- Threats and strengths
- Threats and weaknesses at the same time

## 2.2 Points to Ponder

Think about situations where you have been in a leadership position (in work, in school, in sports, in your community, in your family) and list three lessons you have learned about effective leadership. Relate these to the Baldrige criteria, and to the reference cited from the CQM Journal, by Lee and Gharajedaghi.

Here's an example: For one of the authors personally, reflecting on his leadership role in a community charity, where he served on the board and chaired the strategic planning committee for three years, he learned:

1. The importance of articulating both an organisational and a personal vision
2. The importance of valuing the unique perspective and contribution of each committee member, and
3. The powerful motivational effect of small compliments and saying (sending) thank you (notes) for tasks completed.

## 2.3 Self-test

1. Name one specific activity that would be performed by professionals in each of the 11 functions described by ASQC (American Society for Quality Control).

**Learner Note:** In a galvanizing steel plant, for example, the inspectors examine the large sheets of metal, which have now been galvanized, to ensure that there are no air pockets (air trapped beneath the zinc coating).

2. Mintzberg's research indicates that there are three categories of roles. These can be described in terms of 10 specific quality roles. Explain these.

**Learner Note:** Look at each of the 10 roles described in Mintzberg's framework. For example, the leader who is also a negotiator in a school district meets with teachers to decide whether exams will be given to students to determine their progress during the year.

3. A number of leadership terms follow: Identify a 'quality' behaviour that describes each of these terms: transactional, transformational, laissez faire, servant leader, symbolic leader.

**Learner Note:** The provost within a university sees herself as a servant leader. She outlines a new course registration procedure. The students themselves, with the provost's encouragement and guidance, developed the procedure that streamlines the system.

4. Explain the following terms in the context of quality management:

- Action plan                      **Learner Note:** See section on terminology
- Champion                        **Learner Note:** See section on terminology
- 4-pairs analysis                **Learner Note:** See Fig. 2-4
- Orchestrator                    **Learner Note:** See section on terminology
- Shared vision                  **Learner Note:** See section on terminology
- Sponsor                         **Learner Note:** See section on terminology

5. Both leaders and managers are needed within organisations. This is also true of the quality process. On the left are 10 roles that those in management/leadership positions practice. Match the term on the left with the example at the right.

- |                                  |         |  |
|----------------------------------|---------|--|
| a. Monitor                       | 1 ____  | Decides to allocate more money to improving the quality processes  |
| b. Disseminator                  | 2 ____  | Gives a speech to ASQC about quality improvements within the organisation  |
| c. Spokesperson                  | 3 ____  | Asks the human resources department to survey employees to determine how satisfied they are with quality efforts within the organisation |
| d. Figurehead                    | 4 ____  | Helps two units reconcile their differences about techniques that should be used to improve the process                                  |
| e. Leader                        | 5 ____  | Provides information about costs of quality to employees   |
| f. Liaison between various units | 6 ____  | Examines how well the organisation is progressing toward meeting its zero-defect goal  |
| g. Entrepreneur                  | 7 ____  | Represents the organisation at a government-sponsored meeting on national quality issues   |
| h. Disturbance handler           | 8 ____  | Explains to a meeting of the board of directors the organisation's strategic policy regarding quality improvement                        |
| i. Resource allocator            | 9 ____  | Cuts the ribbon at a ceremony to open a new addition to the plant  |
| j. Negotiator                    | 10 ____ | Sets up links within the organisation to ensure that quality is practiced at every level and every function                              |
|                                  | 11 ____ | Decides on a risky but innovative new direction  |
|                                  | 12 ____ | Attempts to purchase supplies at a more reasonable price   |

## 3 Block Three: Customer and Market Focus

### 3.1 Block Highlights

1. A customer is any establishment or person to whom the organisation provides products or services.
2. An organisation achieves quality only if it addresses the quality of goods and services provided by and to each customer. This occurs when the distinction between internal and external customers is eliminated.
3. An internal (indirect) customer is a unit within our own organisation. The unit cannot function properly unless supporting functions are properly performed.
4. An external customer exists in the environment outside our organisation. The most important customer is the one who eventually pays for a good or service (end-user).
5. Sometimes organisations inadvertently have false customers. False customers use the resources of an organisation without adding anything to the value of a good or service.
6. All organisations need to segment their customers by variables that describe the market in which they function. Segmentation could be on the basis of geography, age, gender, socio-economic status, purchasing habits or potential, and many other factors. The organisation should then meet the quality needs of its particular segment groups. All decisions should be based on reliable and dependable information.
7. Tools that can be used to gather information about customers include: surveys, suggestion boxes, comment cards or sheets, focus groups, personal contact, analysis of complaints, and monitoring of Internet chat groups. Customer feedback is mandatory. Excellent companies track customer satisfaction over long periods of time.
8. Dr Noriaki Kano divides customer expectations into three groups – dissatisfiers, satisfiers, and delighters. A product or service that starts as a delighter could, if no innovation or differentiation occurs, become a satisfier and even a dissatisfier.
9. CRM (customer relationship management) involves building a special relationship of trust and loyalty with a customer. Images that are merely smoke screens are easily detecting. CRM requires differentiating among customers and interacting with each customer according to the company's expectation. The rewards of managing the relationships honestly and wisely are increased customer satisfaction, high customer retention rates, increased sales, and increased opportunities to learn from loyal and committed customers.
10. One way of managing relationships with customers is to form either a formal or informal partnership. The Baldrige Award criteria suggest that this should include:

- Incorporation of performance requirements into supplier contracts
  - Monitoring and assessing performance requirements
  - Minimization of costs and delays caused by inspection and testing of goods received
  - Prompt payment for goods and services
  - Assistance and incentives to suppliers, to help them improve
  - Continuous improvement of the relationship and buyer processes
11. The supplier who is the lowest bidder may not necessarily be the cheapest provider in the long run. The modern trend is to have fewer, but higher quality, suppliers.

### 3.2 Points to Ponder

1. ‘CRM is not just smile training!’ This expression appears regularly in advertising by consultants offering to develop and deliver CRM training to organisations. The origin for this admonition lies in a perception that good customer relationships are simply about being ‘nice’ to customers. Reflect on your own experience as a customer and, if relevant, as a provider of customer service to others, and describe the important characteristics of quality customer relationship management which extend beyond being ‘nice’. Try to differentiate between things that make the customer feel good at the time and things that make the customer come back repeatedly.

**Learner Note:** In responding to this question, demonstrate that you understand that retention of important customers requires an active and committed program of activities, including such things as regular communication, active anticipation of customer needs and expectations, and the nurturing of a true partnership. This type of partnership must include the willingness to not sell something to the customer if the item will not ultimately be satisfactory – even if the customer, because of trust, is willing to purchase it! Detailed responses will show that you have this knowledge.

2. What mechanisms does your organisation have in place to receive feedback from customers?

**Learner Note:** A good way to learn about these techniques is to ask members of the sales and production departments. The issue is discussed in Block 3, Sections 2.2 (Understanding Customer Needs) and 2.3 (Collecting and Interpreting Customer Information).

3. Is there a risk involved if an organisation gets too ‘close’ to its suppliers through partnerships and alliances, to the extent that closeness makes it more difficult to manage the relationships? Discuss the pros and cons of close relationships in an industry with which you are familiar. Be sure to describe the industry sufficiently to allow the reader to understand the degree of ‘upstream’ and ‘downstream’ integration common in the industry.

**Learner Note:** A good approach to responding to this question is to discuss the challenges involved in managing such relationships, especially in industries (such as automobile manufacture or fabrication) where integration is widespread. Another approach might be to discuss the advantages of such integration in industries where it is not common. Still another approach might be to discuss issues of supplier and customer relationship management in contexts where government is the customer or supplier.

### 3.3 Self-test

1. Explain the difference between an internal and an external customer. Does each group have a different perspective and expectation of what constitutes quality? Should these be treated differently? In what way?

**Learner Note:** See Block 3 Section 2, Internal and External Customers.

2. What are the different categories of expectations? How can the organisation meet the needs in each category?

**Learner Note:** See Block 3, 2.2

3. What is CRM (customer relationship management)? Why is the concept important to two different organisations – one that is a purchaser and the second, a supplier of services?

**Learner Note:** See Block 3, Section 3.2. Think how both the purchaser and the supplier can be a partner to the organisation. Partnership means that some advantage accrues to all three parties.

4. What assistance can a company expect from its partners?

**Learner Note:** The question is asking you to think in terms of such issues as innovation or continuous improvement in lowering costs and improve quality. The Block mentions these types of issues in Section 3.1 (Types of Partnerships and Alliances; and 3.2 (Benefits of Customer-Supplier Partnerships and Alliances).

## 4 Block Four: Quality in Human Resources

### 4.1 Block Highlights

1. A house of quality, as defined by quality advocates, consists of 4 cornerstones, the foundation, the four pillars, the roof, and the mortar that holds the house together. The cornerstones for the HR house of quality, described in this Block, are vision and mission, the organisational culture, the national culture, and servant leadership. The foundation, on which everything else is built, is the human resources department's internal customers. The pillars are continuous improvement, product and process

- quality processes, employee development, and decision-making using facts and measurements. The roof forms the constraints, and the mortar (respect for the individual, the ethical and moral behaviour of all employees, and respect for authority) hold the house together.
2. HR has two roles: To support the organisation in its quality efforts, and to develop its own people to provide high quality services.
  3. The HR house of quality is built on four cornerstones – the vision and mission, the organisational culture, the national culture, and the concept of servant leadership.
    - The **vision and mission** specify what the organisation is and what it wants to have achieved at some time in the future.
    - The **organisational culture** is the set of unwritten rules that exist within the organisation. They are based on the values, norms and mores of all employees. Culture however strongly reflects the owner's and senior management's philosophies.
    - The usual model of **national culture** that is cited is the Hofstede Model. The model specifies four dominant characteristics:
      - Masculinity/femininity
      - Uncertainty avoidance
      - Individualism/collectivism
      - Power distance

*Masculinity/femininity* addresses those values that stress achievement, heroism, assertiveness, and importance of work (masculinity) as opposed to relationships, cooperation, group decision-making, and quality of life (femininity).

*Uncertainty avoidance* addresses the degree of risk that individuals within the country are willing to take.

*Individualism/collectivism* addresses the extent to which individuals are expected to take care of themselves. In individualistic societies, the individual is expected to look after himself and his immediate family. In collective societies, on the other hand, there is a preference for a social framework in which families look after each other.

*Power distance* addresses the inequality of relationships that citizens are willing to accept – not only at the personal level but also among institutions.

*Servant leadership* encompasses the idea of working to help one's fellow peers.

The characteristics of a good **servant leader** are:

- Knows how to listen and understands
- Has empathy for others
- Has foresight and intuition

- Has a keen perception of what is happening
  - Has highly developed powers of persuasion
  - Is a good communicator
  - Has a healing influence on others within the organisation
  - Knows how to build a community of practice (groups that think and act alike)
  - Contemplates what is happening
  - Is willing to change
4. The foundation is the CUSTOMER. This aspect of quality has been discussed in Block 3.
5. The four pillars are: continuous improvement, product and processes, employee development, and measurement.
- ❖ *Continuous improvement* is the process of making something better and doing this over an extended period of time.
  - ❖ *Processes* describe what is happening. A good way to think about this concept is as the middle part of the transformation cycle. Inputs (raw materials, for example) are taken into the organisation. They are ‘transformed’ and become outputs and outcomes. The transforming (transformation) includes the processes that the various inputs are subjected to in their journey to becoming outcomes.
  - ❖ Through *people development*, employees learn about the organisation and their roles and expectations. Training also helps employees build the necessary skills, and attitudes. To HR, development includes the psychological contract, changes in attitude toward quality, problem solving skills, and team building.
    - Both the organisation and employees have a mental vision of what will be given to the organisation and what will be received (the psychological contract). These visions, however, are different. It is the job of HR to ensure that the two views are in alignment.
    - Changes in attitude usually start with a flatter organisation and the expectation of participation and decision making on the part of the employees. Usually this requires a team approach and employees must be trained to function as part of a team. They also need to learn problem-solving skills.
  - ❖ The fourth pillar is measurement and basing decisions on facts rather than opinion or conjecture. Facts, however, are of many types, ranging from hard data to soft data such as creativity and innovation, leadership, and self-esteem and self-efficacy. Measurement requires that values obtained be quantifiable, credible, reliable, and easy to understand.

6. The roof of the HR house of quality defines the constraints that prevent HR from accomplishing what it would like to accomplish. They are company strategy, rules and procedures, the systems, processes and structure, and the environmental constraints.
7. Finally the mortar holds the HR house of quality together. The mortar has three components – respect for the individual, ethics and moral behaviour, and respect for authority.

When there is **respect for the individual**, employees are likely to:

- Contribute new ideas and innovations
- Foster collaboration and mutual support
- Improve work performance
- Learn new interaction and communication skills
- Search for the best solutions
- Take personal responsibility and assume accountability
- Pursue continuous improvement
- Engage in self-improvement
- Make every attempt to learn about personal biases and prejudices.

In reference to **ethics**, an important distinction is between managerial ethics and quality ethics management. Managerial ethics sets the standards that are required. Quality ethics, on the other hand, addresses the degree of possible non-conformance that will be permitted. In discussing ethics, particularly in reference to quality, a number of terms are used, that is, intensity, concentration of effect, magnitude of consequences, probability of effect, proximity of effect, social consensus, and temporal immediacy.

- Intensity is the degree of concern within the organisation about how ethically the organisation is functioning
- Concentration of effect is the degree to which an act affects the average person
- Magnitude describes the total benefit or harm derived from a decision
- Probability is the estimated likelihood that a specific action will occur
- Proximity describes the subjective distance that separates a decision maker from the effects of a decision
- Social consensus is the degree to which the behaviour is acceptable by society at large
- Temporal immediacy describes the time between the occurrence of an event and its subsequent consequences.

Authors have classified ethics on many different kinds of scale. Outlined in this Block, is one of these scales with a 12-point range. At the low end are hedonistic and might-equals-right values. In the middle are utilitarian principles (whatever one needs to do to accomplish the goal), and professional ethics. At the top end is the golden rule – Do unto others as you would want done unto you.

Finally, **respect for authority** addresses the kinds of positions of power that each person in the organisation possesses. One author has classified these as exdominus (the hawk), indominus (the dove), exemplar (the rule follower), eccentric (the ideas person), and mimetic (the person who allows everyone else to take authority for particular kinds of roles).

8. The Block finishes with a definition of terms used.

## 4.2 Points to Ponder

1. In the latter part of this Block, there are many ways of looking at ethics. Which of these most closely represents the view of the different groups in your organisation?
2. How well is the HR unit within your organisation meeting the demands that are placed on it? In view of what was said in the Block, what improvements could be made?

**Learner Note:** One approach to answering this question might be to make a list of all the activities and behaviours of the HR department with which you are familiar. A second approach might be to ask fellow members to participate in a little study that asks what each person perceives that the HR department is doing. A third approach might be to talk to members of HR. In all three cases, a comparison can be made with the activities outlined in the House of Quality. You might also want to share the House of Quality with members of that department. In doing so, however, remember that what has been presented is an ideal picture. It is doubtful that very many HR departments can meet more than a few of the ideals suggested. They however are goals for which the organisation can strive.

## 4.3 Self-test

1. Name the five parts of the house of quality. What constitutes each of these five parts?

**Learner Note:** The five parts are cornerstones, foundation, pillar, roof, and mortar. What constitutes each of these is described throughout the Block.

2. HR has a somewhat unique set of terminology. Explain each of the following:
  - Delphi technique
  - Ishikawa diagram
  - Nominal group technique

- Pareto law
- Process
- System

**Learner Note:** These terms are explained in Section 3.3.3 (Definitions)

3. Review the definition of servant leadership. Rate yourself on a scale of 1 (low) to 5 (high). What actions can you take to raise your own level/ would this be appropriate behaviour for your country? Why or why not?

**Learner Note:** The characteristics of servant leadership are described in Block 4, Section 3.1.4 (Servant Leadership)

4. Using a service organisation, give three examples of critical success factors. For example, in responding to customer telephone calls, the greeting is a critical success factor. If the receptionist is rude, the customer will become hostile immediately. If he or she lacks knowledge, again the customer will be irritated.

**Learner Note:** Also see Section 3.3.5 (Critical Success Factors).

5. The Block outlines four aspects of employee development, that is:
  - The psychological contract
  - Change in attitude toward quality, its importance, and how it can be achieved
  - Problem solving skills, and
  - Employee involvement and team building

Take each of these in turn; explain what it means, and why it is important to quality management. Now outline three recommendations that you will make to senior management on what should be done to achieve each of these outcomes.

**Learner Note:** These four elements constitute Pillar 3. They are outlined in 3.3.7 to 3.3.11.

6. To many organisations, just-in-time delivery of materials and supplies is extremely important. Your company is a supplier to one of these JIT organisations. Does this create quality management problems for your organisation? How does it impact HR specifically?

**Learner Note:** A partial answer to this question, in the context of organisations generally, is given in Section 3.4.1.

7. Where are you personally on the ethical chain? At what level do you feel your direct-reports (subordinates) would place you? What actions can you take to close this gap and raise the ethical and moral level at which you function? Would it be wise to close this gap and to escalate on the ethics chain? What benefits and disadvantages do you see?

**Learner Note:** This question asks you to be introspective and determine the extent to which the environment forces/allows you to be more or less ethical.

8. Match the words on the left with the explanation on the right:

- |  |         |   |
|--|---------|---|
| a. critical point  | 1 ____  | Preference for achievement and heroism.   |
| b. mortar  | 2 ____  | Previously, when the telephone company was contacted regarding a problem, it was necessary to talk to 5-7 people to resolve the issue. When work was changed, the customer can explain the problem to only one person and it is solved. |
| c. culture   | 3 ____  | In a manufacturing process, the coming together of products from two assembly lines that have to match perfectly.   |
| d. reengineering work                                    | 4 ____  | A willingness to help others.   |
| e. feminine aspect of national culture                   | 5 ____  | A perception of where the organisation would like to be at some future date.  |
| f. psychological contract                                | 6 ____  | Type of culture required for exceptional quality management.  |
| g. continuous improvement                                | 7 ____  | Ethical standards within the organisation.  |
| h. bottleneck  | 8 ____  | High values placed on relationships, cooperation, group decision making and quality of life.  |
| i. clear mission, consistency, involvement, adaptability | 9 ____  | The expectations that the employee and the organisation have regarding what they will provide the other party and what they will gain from the relationship.  |
| j. vision  | 10 ____ | A desire to work together rather than individually.   |
|  | 11 ____ | Gradual quality improvement over an extensive period of time.   |
|  | 12 ____ | Set of values, norms, beliefs, assumptions, and unwritten rules.  |
|  | 13 ____ | A stop or holdup in the production process.   |

# 5 Block Five: Tools and Techniques for Quality Management

## 5.1 Block Highlights

1. The organisation can carry out a large number of activities to have the data needed to ensure quality management. Five categories are: keeping accurate customer records, recording and studying customer complaints, conducting surveys, benchmarking, and keeping transaction databases.
2. Complaints help organisations to improve. They therefore look for innovative ways to capture these days. Some of the ideas mentioned in the Block are to install kiosks in airports, post-service calls, and have customer cards or check sheets that customers can complete. These organisations ensure that staffs who work at complaint desks are well trained in customer relationships, data collection and summarisation.
3. Benchmarking is the process of examining very narrow operations in best-of-class companies. It is not necessary for these organisations to be in the same industry, but the activity studied should be similar to that which the organisation wishes to improve.
4. Benchmarking involves:
  - Identifying the specify process that needs to be examined
  - Determining how the process is measured, and the problems that are being experienced
  - Getting the go-ahead and the resources to continue with the project
  - Identifying benchmarking partners and receiving permission to benchmark
  - Collecting data
  - Comparing procedures used in one's own organisation with those used in best-of-class operations
  - Making recommendations and implementing the ideas
  - Bulleted points (now off) are in too far. Locks in the entire typing and makes it impossible for me to change copy or type in it.
5. Tools for planning include quality function deployment, simultaneous engineering, diagram, inter-relationship digraph, tree diagram, prioritisation matrix, matrix diagram, process decision program chart, and an activity network diagram.
6. In quality function deployment (QFD), a cross-functional team creates and analyses a matrix that links customer wants and needs to a set of product and service design metrics. The idea is to seek out both spoken and unspoken customer requirements and to maximize positive qualities of the product or service that create value. The characteristics of QFD:

- Uses customer needs, the concept of value, and how customers determine quality together with systems thinking.
  - Uses ‘good knowledge,’ that is, how can the needs of the customer can be met, how are decisions are made regarding what features to include, and what is the appropriate level of performance?
  - Maximizes positive quality that adds value. It stresses spoken and unspoken requirements and translates these into technical requirements, with the idea of maximizing those features that will result in greatest competitive advantage.
  - Aims at satisfying the customer throughout the entire development and business processes.
7. Simultaneous engineering refers to the systematic approach to synchronize all processes needed to manufacture, sell, and receive payment for the product. Involved is an integration of methodologies, processes, human beings, tools, and methods. To do this, cross-functional teams must share information and focus simultaneously on the required different phases, throughout the development process. A strong level of communication among all participating stakeholders is mandatory.
  8. One type of affinity diagram is brainstorming, that is, it is used to generate ideas and to organize these ideas in a logical manner.
  9. The inter-relationship digraph permits teams to examine cause-and-effect relationships between pairs of elements. The idea is to take two elements at a time and determine if one causes the other. A tree diagram explores the various options available to solve the problem. The trunk of the tree is the problem; the branches are the major options for solving the problem, or completing the task. Twigs are the options that exist. Leaves are the means to accomplish the options.
  10. In the prioritisation matrix, a series of options is evaluated based on pre-specified and pre-weighted criteria. Many types of matrix diagrams exist. These are usually used to show relationships, or to evaluate which of a number of decisions would be most advantageous.
  11. The process decision program chart is a contingency planning tool that helps teams to identify what can go wrong, so corrective action can be planned in advance.
  12. Finally, the activity network diagram is a PERT (Program Evaluation Review Technique) diagram. It shows the activities, the required sequence of events, the critical tasks that need monitoring, and the total completion time. It is an excellent tool to help the decision maker determine which activities will take the longest and hence those critical events that require additional attention or resources.
  13. The four tools for continuous improvement include the check sheet, histogram, Pareto chart, and the cause-and-effect diagram. The check sheet answers the questions regarding how often events occur. The histogram is a statistical tool that arranges data according to frequency or size. The most frequently occurring or largest element (e.g.,

- number of defects) is always placed first. Other elements follow according to their relative size or frequency.
14. The Pareto chart uses the concept that 80% of the defects are attributable to 20% of the causes. It helps the decision maker(s) to determine which defect (for example) should be corrected first.
  15. The cause-and-effect diagram (also called fishbone or Ishikawa diagram). It resembles the skeleton of a fish, the head being the problem and the skeleton being the various causes that could be contributing to the problem. Branching from the main skeleton are the actions that might be taken to resolve the problem. Following the determination of the frequency of occurrence of each of the causes, the most viable actions are analysed. The end result is the selection of the action(s) that have the greatest probability of resolving the problem.
  16. A scatter diagram shows the relationship between an input and the output.
  17. A control chart shows the variability of a process. The measurements from samples are plotted on the basis of some other variable (usually time). A determination is made as to whether the process is under control or not. In manufacturing processes, for example, the process is under control, if recorded readings are within the upper and lower controls limits on the chart.
  18. A flowchart is a map of the process, showing the steps in sequence, for the completion of an operation.
  19. Another tool that is used is the Plan, Do, Check, Act (P-D-C/S-A) Cycle (also written PDCA cycle). The four steps are:
    - Plan – Plan a change, collect data, and establish a timetable
    - Do – Implement the change or test on a small scale
    - Study (or Check) -- the results. What was learned?
    - Act – apply the change, abandon it, or run through the cycle again.
  19. Currently, Six Sigma methodology has received considerable prominence. Six Sigma refers to the spread of defects, given a normal distribution. A company that uses Six Sigma as its quality objective strives for near perfection. At that level, only 3.4 defective items can occur per one million items of the products produced.

## 5.2 Point to Ponder

A recent Internet discussion forum saw several postings on the question of whether or not VOC is killing off innovation because paying such close attention to the Voice of the Customer (VOC) prevents a company from being more creative than its customers. Do you think that VOC is killing off innovation? In your consideration of this question, try to think of organisations (and the innovations that they have developed) that made the leap beyond customers' expectations.

## 5.3 Self-test

1. Explain the three categories of tools and techniques for quality management. What tools could be used for planning, data collection and analysis, and for continuous improvement?

**Learner Note:** Planning tools are Quality Functional Deployment and simultaneous engineering. Data collection and analysis tools include Six Sigma. Tools used in continuous improvement are check sheet, histogram, Pareto chart, cause and effect diagram, scatter diagram, control chart, and flowchart

2. Why would an organisation use simultaneous engineering?

**Learner Note:** See 3.2 Simultaneous (Concurrent) Engineering

3. Describe the P-D-C-A cycle

**Learner Note:** See Plan – Do – Check/Study – Act

4. Match the items in the left hand column with the explanations in the right hand column.
- |                             |         |  |
|-----------------------------|---------|--|
| a. Benchmarking             | 1 ____  | Arranged from the most frequent number of occurrences to lowest number of occurrences.       |
| b. QFD                      | 2 ____  | 3.4 defective parts per million products produced.   |
| c. Prioritization           | 3 ____  | Determines which 20% of causes result in 80% of the problems.                                |
| d. Histogram                | 4 ____  | Comparison to best-in-class organisations.   |
| e. Pareto chart             | 5 ____  | Shows the sequence of processes of an assembly line.   |
| f. Cause and effect diagram | 6 ____  | Post. Draft. Control. Activate.  |
| g. Control chart            | 7 ____  | A tool for determining what the causes of a problem might be, and how these might be solved. |
| h. Flowchart                | 8 ____  | House of quality.  |
| i. PDCA Cycle               | 9 ____  | Helps decision maker select from a number of options based on weighted criteria.             |
| j. Six sigma methodology    | 10 ____ | Used to help the decision maker determine whether a manufacturing process is under control.  |
|                             | 11 ____ | Plan. Do. Check. Act.  |

## 6 Block Six: The ISO 9000 Family of Standards

### 6.1 Block Highlights

This is a very straightforward Block that explains ISO. Certification is a very complicated process that requires a tailoring of the rules and regulations to the processes within the organisation. For this reason, these are not addressed. The Block explains:

1. What ISO means and how organisations can become certified under one of the many designations.
2. The relationship between ISO 9000 and QS 9000. QS 9000 was developed specifically for the automobile industry.
3. ISO's 20 requirements are described generally, and in the appendix, in more detail.
4. Documents that may be examined in the process of assessment include:
  - Administrative procedures
  - Audit or inspection procedures at the final audit stage
  - Design releases
  - Failure or non-compliance reports
  - Instrumentation testing
  - List of machinery, equipment, facilities
  - Material handling and storage procedures
  - Organisational chart with responsibility assignments
  - Procedures manual
  - Purchase orders
  - Quality manual
  - Work instructions
5. A Quality Manual specifies the quality policy to which the organisation is committed. The procedures manual outlines the procedures. It, however, is not a 'how-to' manual.
6. Care must be taken in controlling the number of manuals in circulation. Generally, the fewer the better. Employees, however, do require access to these and the two issues should be carefully balanced. An official copy should be designated and this should be kept in safekeeping.

## 6.2 Point to Ponder

1. What advantages and disadvantages exist for your organisation in becoming ISO certified?

**Learner Note:** These are described in Block 6, Section 4.1 (Benefits and Drawbacks)

2. Of the 20 ISO requirements outlined in the first half of the Block, and in greater detail in Appendix A, which are most important to your organisation?

**Learner Note:** The requirements are given in Table 6.1 and Appendix A.

## 6.3 Self-test

1. What is meant by ISO standards and whom do they apply to?

**Learner Note:** Explained in Section 1.2.

2. Explain ISO 9001, 9002, 9003, and 9004. To what group do the ISO 14000 series of standards apply?

**Learner Note:** Explained in Section 1.2.

3. Is ISO certification essential for your organisation? What benefits and drawbacks does it have? Which of the many types of certifications available is the one your organisation might choose?

**Learner Note:** A good start is to re-examine Sections 3 and 4. The production department in your organisation may also have ideas about the topic.

# 7 Block Seven: Change Management in the Context of Quality

## 7.1 Block Highlights

1. Before embarking on a quality change program, management should have a clear idea of what it wants to achieve. A quality vision, goals, and objectives are extremely important.
2. Generally a paradigm shift by the employees within the organisation will be required. A paradigm shift refers to a way of thinking about issues. A quality paradigm shift usually involves looking at the organisation from an excellence viewpoint. This might be:
  - Everything working right the first time
  - Every employee wants to do better today than she did yesterday
  - Customer needs are constantly met
  - Products not only last longer, but also work better
  - Waste and rework are eliminated
  - Work is fun
3. Training for all employees is needed in interpersonal skills. These include task, relationship, and dysfunctional roles.
4. Members of teams need to learn to be assertive – not aggressive and not submissive.

5. The organisation should develop a responsibility chart. This assigns roles and responsibilities and shows employees how their learning will be progressing over time.
6. Quality change requires a different organisation. It should include a steering committee, a facilitator, a team leader for each team, and team members. Remuneration should be tied to the new tasks required.
7. A technique that has been used successfully in changing individual and group behaviour is behaviour modification. The technique is based on operant conditioning. Praise is an important aspect of this.
8. Teams have benefits but they also have drawbacks.
9. The Block continues by discussing types of teams, and the characteristics of effective teams. This includes size, stages of development, norms, and cohesiveness. Team cohesiveness can be increased by:
  - Satisfying the needs of the individuals within the team
  - Encouraging members to invest their own resources (e.g., time) in the team
  - Creating super ordinate goals and enemies
  - Protecting members from attack by outsiders
  - Inter-group competition
  - Frequent interaction among members
  - Favourable evaluation
  - Establishing challenging but attainable goals that are understood and accepted
10. Conflict within teams is inevitable. Conflict can be competitive, aggressive, and problem solving. Managers should develop a problem solving mode of conflict.
11. Conflict occurs because of:
  - Scarce resources
  - Lack of goal agreement
  - The meaning of facts
  - Over methods to be used and means of achieving goals
  - Structural reasons such as power imbalances, status quo, norms, and rules
  - Personality and personal characteristics
  - Communication problems
12. Five conflict resolution strategies are frequently cited. These are: competition, collaboration, compromise, avoidance, and accommodation. **Learner Note:** A Web link is given for accessing a conflict management style questionnaire online.

13. Culture refers to the established ideals of life. It is the integrated pattern of human behaviour that includes thought, speech, action, and artifacts. Other definitions include norms, soul of the organisation, invisible force, unspoken rules and assumptions, and shared values.
14. Changing culture is a very slow process, often taking 5 to 10 years.
15. Although there is lack of agreement regarding how to change culture, there is agreement regarding some steps in the process. Fairly typical are these:
  - Recognition of need for change
  - Establishment of goals for change
  - Diagnosis of relevant variables
  - Determination of gap between what exists and what is desired
  - Selection of appropriate change techniques (and consultant, if desired)
  - Implementation of change
  - Evaluation and follow-up

Such a listing, however, is not particularly helpful. At every step, there are many pitfalls.

16. Employees resist change because:
  - They are personally threatened
  - Communication has been inadequate
  - They remember past unfavourable experiences
  - The structure of the organisation is not conducive to change

## 7.2 Points to Ponder

1. Burrhus Frederick Skinner has been credited as being the father of behaviourism (control of behaviour through reinforcement). He has also been called a saviour and a menace to society. In the context of QM, which is he?

**Learner Note:** The issue that this question wants learners to address is whether or not employees can be conditioned to pay attention to quality.

2. Do you think that one particular conflict management style is better than the other four? Why or why not? Is conflict of functional value when quality issues are involved? Why or why not?

**Learner Note:** The 5 types of conflict management styles are classified according to concern for self and concern for task. They are: competition, collaboration, compromise, avoidance, and accommodation. As pointed out, each style is valuable under specific conditions. Additionally, each style, even collaboration, can be the

wrong one under different circumstances. For quality, as in any other area, conflict is functional because, among other benefits, it brings out new ideas and innovations. It is dysfunctional if it detracts from quality issues.

3. Without looking back at the five styles of conflict management, develop a table that has four columns: Style of management; When best to use; Problems if high in this style; Problems if low in this style. Think of examples, from a quality point of view, when you have used, or seen used, each of the five styles. Think also of the situation in which the conflict management style was used. How appropriate was the use of this style within the situation that it was used. Now check how well you understood each of the five styles of conflict management.

**Learner Note:** To gain the full benefit of this question, the questionnaire and comments given in <http://www.teamtrainingsolutions.com/tki.html> are most helpful.

4. Is there such a thing as too much team cohesiveness? One quality manager we know argued that because quality was poor in the organisation, he should develop a plan to encourage more individual rather than teamwork. What do you think of his idea? If the manager is right, how can he break down the cohesiveness that exists within a team? On the other hand, how can he build it? Plan a quality improvement strategy using the team concept that you can share with this manager.

**Learner Note:** See Sections.3.1, 3.3.

### 7.3 Self-test

1. What is meant by JIT and paradigm shift? How do these affect QM?

**Learner Note:** See Section 2.2.1.

3. You function as an organisational trainer. Management has decided that employees need training in their roles within the organisation. Using Bales (1950) typology, what two roles would you stress? How can each of these roles be recognized and which behaviours are functional and dysfunctional?

**Learner Note:** Bales typology outlining these activities is given in Section 2.2.4.

5. Responsibility charting is a very interesting concept. Look at the responsibilities that you will be required to assume during this school term. Now assign time periods to each activity. The time period should correspond to those that are important to you.

**Learner Note:** See Sections 2.2.5, 2.2.7.

7. Plan a behaviour modification strategy to change the behaviour of someone who has bad habits or who annoys you in some way. Discuss reinforcement strategies and schedules you will use to accomplish this.

**Learner Note:** Behaviour modification is described in Section 2.4.

9. How can team cohesiveness be developed? Is cohesiveness always a good thing?

**Learner Note:** See the full section of 3.

10. **Multiple Choice Questions.** Please select the best answer.

1. The goal of quality change is to:
  - a. Make sure that Alice knows where she is going
  - b. Win the Baldrige Award
  - c. Give the organisation a sense of direction
  - d. Decrease external pressures that are acting on the organisation
2. Groupthink:
  - a. Is a good thing
  - b. Closes participants' minds to what could go wrong
  - c. Is the same thing as Abilene Paradox
  - d. Depends on employees following the rules of the organisation.
3. Facilitators have all but one of the following roles:
  - a. Advise the steering committee
  - b. Attend meetings of teams and provide advice
  - c. Set up and oversee training that occurs
  - d. Help employees with personal problems
4. If an organisation wants employees to become committed to quality, it must ensure that it is rewarding that behaviour. Desirable behaviour is rewarded by all but one of the following methods:
  - a. Weekly salary that is based on time worked
  - b. Gainsharing
  - c. Praise
  - d. Bonus for suggestions and continuous improvement
5. A virtual team:
  - a. Works in different countries
  - b. From a quality point of view, exists only in the countries that were known as the Communist Bloc
  - c. Communicates predominantly using the Internet
  - d. Is the same thing as a matrix structure
6. A team goes through a number of stages before it starts to work together well. The order of these stages is:
  - a. Norming, performing, storming, forming
  - b. Forming, storming, norming, performing
  - c. Forming, storming, performing, norming
  - d. Forming, performing, norming, storming
7. More cohesive teams can be built by ensuring that all but one of the following occur:

- a. A superordinate goal exists
  - b. Members make sacrifices for the good of the team
  - c. Team fails to accomplish what it was trying to do
  - d. Members of the team interact frequently
8. Conflict among team members can be very functional because:
- a. It rigidifies the team
  - b. Employees retain the information and feedback that they have without sharing it
  - c. Forces the team to look at new alternatives
  - d. Fractionalizes the unit
9. Culture can impact performance under all but one of the following conditions:
- a. Employees have a high level of pride in their organisation and the work they do
  - b. Employees feel they are being treated with respect
  - c. One person takes a very dominant role and directs others in what they should be doing
  - d. Employees know that quality problems will be corrected
10. All of the following are descriptions of types of cultures, except one:
- a. baseball team, club, academic, fortress
  - b. tough-guy, macho, work-hardsplay-hard, bet the company, network
  - c. functional, process, time-based, network
  - d. paternal, maternal, cousin, outsider

## 8 Answer Key for Objective Questions

Answers are provided for each set of Objective Questions associated with Blocks 1 through 7 respectively. Page numbers corresponding to this Learner Guide are provided.

**Block 1** (Self-test #4, page 8 of this Learner Guide)

[a – 5; b – 6; c – 3; d – 2; e – 4]

**Block 2** (Self-test #5, page 11)

[a – 6; b – 5; c – 8; d – 9; e – 3; f – 10; g – 11; h – 4; i – 1; j – 12]

**Block 4** (Self-test #8, page 20)

[a – 3; b – 7; c – 12; d – 2; e – 8; f – 9; g – 11; h – 13; i – 6; j – 5]

**Block 5** (Self-test #4, page 24)

[a – 4; b – 8; c – 9; d – 1; e – 3; f – 7; g – 10; h – 5; i – 11; j – 2]

**Block 7** (Self-test #10, page 31)

[1 – c; 2 – b; 3 – d; 4 – a; 5 – c; 6 – b; 7 – c; 8 – c; 9 – c; 10 – d]