Total quality management in north eastern companies: identification of key success factors

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ABSTRACT

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The principles of Total Quality Management have been the subject of much critical comment in the press in recent years suggesting that the concept is not delivering the promises claimed for it. The work attempts to gather evidence about the way in which Total Quality Management is being practiced in companies in the North of England and, from this, to form a view of the success or otherwise of the concept.

The work attempts to describe the key characteristics of companies who have gained success from the use of Total Quality Management practices within their own businesses.

A brief overview of the history of the major milestones in the development of management techniques is given to support the view that current TQM practices are part of the evolutionary development of management techniques.

The practice of TQM in local companies is described in depth demonstrating the benefits which some companies have gained from the philosophy.
A survey of the companies in the North of England was carried out and the results are described in detail. The overall conclusion from the study is that TQM is being widely practised in companies but it is in the early stages of development and most companies are still using it only as an internal tool to improve efficiency with comparatively few seeking to involve their customers more deeply in their businesses.

This survey is compared with one carried out in Scotland in 1990 and it is shown that attitudes towards TQM have developed in the time between the two surveys.

Finally the data gathered in the North of England survey is analysed to develop a model of the key characteristics of a company gaining benefits from the adoption of TQM principles.

TOTAL QUALITY MANAGEMENT IN NORTH EASTERN COMPANIES: IDENTIFICATION OF KEY SUCCESS FACTORS

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DECLARATION

No part of this material has been submitted for a degree in this or any other university.

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CHAPTER ONE

TQM- MANAGEMENT MYTH OR MIDAS TOUCH?

The markets in which most companies operate today are characterised by a constant increase in competitiveness as industrial activity develops across the world and the number of producers in each industrial segment increases. Japan's rise to its current position of dominance in many sectors of business has put such pressure on old established Western companies that many have been unable to compete and have either ceased trading or have been taken over by their Japanese competitors. Such traumatic events have served to increase the need for Western managers to improve the performance of their companies dramatically and they have looked for tools and techniques which might help them do this.

Much study and research has gone into devising better methods of management and some will be touched on briefly later in the text. None of the various techniques defined and described in management texts appear to have been significant enough to ensure that they were universally adopted, although many may have held out such a hope to practising managers.
An example of one of the techniques which appeared to have much in its favour but still failed to become the universally accepted answer to management problems was "Managing by Objectives ". Kazmier (1) describes this process as " a hierarchy of compatible objectives within the organisation." This was aimed at aligning the goals of individual departments with the corporate goals. The concept works by attempting to

ensure that the objectives of separate departments are compatible with each other and together combine to form the overall objective of the business.

This is a difficult thing to achieve in practice as the objectives of different departments may well be diametrically opposed. Handy (2) illustrates this using the sales/production dilemma. Sales group is driven by the need to satisfy customers through satisfying their needs better than competitors while production is driven by the need to contain cost and is likely to operate to manufacturing and delivery schedules which deliver this. The departmental goals are correct in themselves and in part contribute to the overall objective of increasing sales and holding down costs but they will cause constant friction between the departments thus diverting effort from the task of fighting competitors.

Managing by Objectives therefore does not provide a process which can easily reconcile the internal and external conflicts which organisations face. It is also more likely to create inflexibility in management systems (3)

The concept of marketing ought to have provided a suitable frame work for growth. Kotler (4) defines marketing as the " business function that identifies unfulfilled needs and wants, defines and measures their magnitude, determines which target markets the organisation can best serve,decides on appropriate products, services and programmes to serve these markets,and calls on everyone in the organisation to "think and serve the customer" ." The concept is clearly based on making the customer's needs the sole objective of every employee and yet it does not seem to have been universally accepted. Witcher(5) suggests that companies continue to adopt policies which are contrary to the core concept of marketing. He cites a focus on production , a concentration on current products and a belief that selling is the principle

promotion activity. Christopher, Majaro and MacDonald (6) suggest that the lack of enthusiasm for marketing is related to the fact that the boards of UK companies are focussed on financial aspects of the business rather than marketing ones. Whatever the reason there is agreement that companies did not appear to recognise the marketing concept as a long term solution but simply reduced marketing to the level of advertising and sales promotion activities .

Many books claiming to have discovered the answer found their way onto corporate book shelves and the author has personal experience of a variety of different "new approaches to management" being introduced and then failing during the late 70's and early 80's.

During the 1980's a belief began to take hold amongst Western managers that the techniques used in Japanese companies might have some value. Books such as "Quality is Free " by Philip B. Crosby (7) which, in a racy and readable style, defined some simple steps which could be taken to improve performance, helped to encourage the view that there might be an alternative approach to operating a business which merited attention.

Driven, the author suspects, as much by the aggressive selling approach which Crosby's consultancy adopted in the USA and Europe the senior managers of major companies began to think that this new approach based on reducing costs by a greater involvement of all employees in contributing to product improvement, could be a way of, at worst, surviving the commercial pressures and, at best, a route to improved profitability.

Total devotion to Quality in all of its aspects is now believed to be the only way in which companies will survive and today Western companies are in the

midst of a Quality revolution of which the philosophy called Total Quality Management has assumed major importance.

Total Quality Management, or TQM as it has inevitably been shortened to,is seen as giving management "the Midas Touch " and many of its sponsors believe that TQM is the only way in which Western Companies can step change their management style sufficiently to compete effectively with the Japanese and the newly emerging industrialised countries of the Pacific Basin. The change to the way in which companies are currently organised and managed is seen by its exponents to be as radical and far reaching as the Industrial Revolution itself.

The evidence in support of such claims appears compelling. Major international companies such as ICI, Rank Xerox, Digital and Phillips for example, believe in the concept enough to allocate large amounts of time and money to the development of their own Quality Improvement Processes. Significant claims are made for the success of such programmes and prestigious Quality awards have been developed in the USA and in Europe to encourage all companies to strive towards the new standards. The concept of Quality now goes far beyond any simplistic definition of "goodness" and has developed into a complete business philosophy. The European Quality Award (8) in particular takes a holistic view of a company looking at nine key elements for business success ranging from Leadership to the impact of the company on society.

Some commentators ,however, have suggested that the Quality Revolution is fundamentally flawed and is failing to produce the improvements which its exponents have claimed for it. Many articles have taken the view that TQM is not capable of sustaining the revolution required for companies to compete on world markets.

A survey in 1991,for example, (9) by Coulson-Thomas suggested that TQM was not as effective as it might be. He found that
"...confining the 'quality focus' to the product may limit a company to the role of a commodity supplier. Broader and more comprehensive approaches to quality have been pioneered, but they appear to have been rarely used."

O'Brien and Voss (10) in a survey of 42 UK organisations suggest that " Indeed the concept (Total Quality Management) may suffer from too high a profile and runs the risk of being flavour of the month."

K Albrecht (11) writing in the The TQM Magazine in 1992 goes even further predicting that " TQM will be out of vogue and unwanted in three years time" He contends that "one corporate TQM programme after another fizzles ,founders, runs aground or grinds to a halt " He cites a commentary in The Wall Street Journal called "Quality Programmes bring Shoddy Results " which says that
" many of the ambitious Quality programmes launched by businesses have involved too great an investment for too little a result."

Witcher (12) claims that " .. a focus on process and product can make a company more,and not less, marketing myopic. A focus on the internal customer might not necessarily follow through to the external customer.."

These articles suggest that there might be grounds for believing that TQM is no more likely to be successful than any other management techniques. They raise questions and doubts in the minds of managers who are looking for ways to improve the competitive position of their companies. Assuming that TQM does indeed deliver the benefits its supporters claim, it would be useful to

understand why companies seem to find the degree of problems with it which are reported in the press.

These issues can be simplified into three key questions.

1 Is Total Quality Management the Midas Touch which managers crave for in their search for success in business or is it, as critics would claim, simply another management fad of little more substance and lasting import than all those which have gone before?

2 What evidence is there that TQM offers a route by which companies can make sustainable improvements?

3 What are the key indicators, if any, which could be used to define the progress of Total Quality Management in an organisation?

These are the questions which prompted the work discussed in the following pages. The work attempts to answer them in a practical manner in the belief that this could be of immediate use to organisations struggling to address the challenge of increased competition.

Chapter One References

1 Kazmier L. J. (1969) Principles of Management, New York; McGraw-Hill pp49-52

2 Handy C. (1993) Understanding Organisations, London; Penguin p301

3 Peters T. (1988) Thriving on Chaos, London; MacMillan p500

4 Kotler P (1988) Marketing Management, New Jersey; Prentice-Hall p xvii

5 Witcher B.J. (1990) Total Marketing: Total Quality and the Marketing Concept, The Quarterly Review of Marketing, Winter p 1-6

6 Christopher M, Majaro S, McDonald M, (1987) Strategy Search, Aldershot, Gower p 4.

7 Crosby P.B. (1979) Quality is Free;The Art of Making Quality Certain, New York: McGraw-Hill

8 Total Quality Management; The European Model For self Appraisal 1992, Guide-lines for Identifying and Addressing Total Quality Issues; Eindhoven, The European Foundation for Quality Management.

9 Coulson-Thomas C (1992) _Surveying The Scene, The TQM Magazine, February, pp25-31

10 O'Brien R. Cruise. Voss C.A. (1992) In search of Quality,An Assessment of 42 British Organisations Using the Criteria of the Baldrige Quality Award, London Business School Operations Management Paper 92/02

11 Albrecht K (1992) No Eulogies for TQM, **The TQM Magazine** October 1992 p271

12 Witcher op cit.

CHAPTER TWO

An Overview of the Approach and Methodology

Answers to the questions posed in the introduction will come from study in two main areas. In order to be able to answer the first question and assess whether TQM is really a new approach to organisation management or merely a fad created and promoted by consultants it is necessary to look briefly at the history of management theory and practice in an attempt to discover if the key principles do come naturally together in the philosophy we know in the West as TQM.

Establishing that TQM is indeed a logical progression in the techniques of management in itself, of course, does not mean that the philosophy is necessarily able to achieve significant benefits for those companies who adopt it. It may be that the cost of such a cultural change far out weighs any possible benefits which flow from it and therefore the major part of the work is an investigation into the practical effects of the concept in UK industry in an attempt to answer the second question.

The data gathered from this work should help to define the current state of Total Quality Management in UK business and identify the key issues which affect both the implementation and progression of the concept.

It was also hoped that the data would be able to provide the answer to the third question and define the key steps which companies intending to adopt TQM should take.

The research work for the project was designed in three parts.

Initially background information was obtained from some of the key agencies through which Government industrial policy is disseminated, in order to gain some idea of the official attitude to the concept and to discover what policies, if any , these agencies had to encourage the adoption of Total Quality Management within their domains.

This was done in a series of in-depth interviews with agencies who have been charged with the task of business improvement. Face to face interviews were carried out with the DTI in Newcastle, the Northern Development Company and the Scottish Development Agency.
The interviews sought to identify the approach which each of these agencies had taken to concepts such as Total Quality Management and the use, if any, which they had made of TQM in carrying out their own function of business development.

In the second stage of the investigation the author sought to gather in-depth information from companies who had experience of implementing Total Quality Management. The objective of this stage was to gather a range of views and experiences from a variety of different organisations at various stages of TQM adoption.

The interviews also sought to assess the value of the techniques to the long term development of the businesses and to look for similarities in approach which could be used to form the basis for recommendations to other companies wishing to change their management practices. The companies interviewed were all in the North of England and were drawn from both the manufacturing and service industries. They ranged in size from 50 - 300 employees.

Interviews were granted by either the Managing Directors of the companies or by the executive in charge of the Quality Programme.

The third stage of the investigation was to carry out a postal survey of as many companies as possible in the North of England to gather data for analysis and for comparison with data gathered in a previous Scottish survey.
It was hoped to use the information to derive some definitive conclusions about the benefits, or otherwise, which the adoption of the principles of Total Quality Management had brought to companies as well as to identify differences in the response of companies at different levels of TQM experience. It was hoped that the data might highlight the key parameters which determine the success or failure of a quality initiative in an organisation and thus provide managers with a practical guide to the initial steps in the process.

The companies for the postal survey were all located in the North of England in an area bounded by the Scottish Border in the North and a line from Humberside to Cheshire in the South.
In order that comparisons could be made with previously recorded experience the questionnaire was based on the one used in Scotland in 1990, by the then Scottish Development Agency, as part of its drive to improve the productive capacity of Scottish manufacturing companies.
The SDA gave permission for their survey to be used and for comparisons to be drawn, as far as was possible, between the two sets of results to discover if there were any major differences between company attitudes to TQM in 1990 and 1992.
The survey sought to gather information on the operation of TQM in a company, the company's level of involvement with its customers and a self assessment by the company of its ranking against some key quality parameters. Respondents were also asked to list the most difficult areas in the

implementation of TQM as well as the key benefits which they believed that they had gained from it.

The raw data from the Scottish survey was not available for detailed comparative analysis.

The data gathered in the survey carried out for this work in the North of England was further analysed to enable a detailed picture to be built up of the state of Total Quality Management in UK industry today; its level of adoption ,the benefits which it has conferred on companies and the issues which they face in implementing it.

The results are presented and comparisons and conclusions drawn.

CHAPTER THREE

TQM- A Brief History

Early Concepts

Management, if it is defined in its simplest terms as controlling the work of others to achieve a common objective, has been practised from the first moment at which two people worked together. The precise moment when this first happened is impossible to define, but it is safe to claim that from the beginning of recorded history there is evidence of people controlling the work of others to achieve something. Control of the work of others has taken many forms, from the brutal methods of slave masters to the subtle persuasions of bribery and all stages in between , but whatever the methods the objective was the completion of some kind of task.

One of the early observations was made by Machiavelli, the Renaissance theorist of the modern state. He spent time observing the management skills of princes in maintaining the security and prosperity of their kingdoms and their personal power and concluded that there were three key elements for success Judgement, Leadership and Strategy (1).

For a long time changes in society occurred at a slow pace and there was little need to alter the habits and traditions which had served well throughout the centuries. Goods were produced by craftsmen who had a personal relationship with their customers and knew instantly when the products which they had made failed to satisfy (2). A swordsmith whose weapons broke in combat would probably not live long enough to improve the quality of his production process! Product development would also have been a more intimate affair

with direct inputs from the end user in the short chain from maker to consumer.

The Step Change of The Industrial Revolution

The Industrial Revolution altered the fabric of society in fundamental ways. It began to concentrate production in factories thus removing the close contact between the person who made the product and the person who bought and used the product, as well as de-skilling the production process itself. Whilst some products ,such as cloth manufacture, benefited quickly from industrialisation others , such as engineering products, hitherto made individually by craftsmen, found it more difficult.

Garvin (3) cites the adoption of jigs and gauges ,under pressure from the military to produce reliable weapons at affordable prices, as the major breakthrough which allowed manufacturing to exploit the effects of scale and still retain part of the craftsman's ability to produce a reliable product. Thus the first steps in Quality Assurance were taken with weapons which had fully interchangeable parts. The emphasis was still on the operator to ensure that products were made to the laid down specification(4) .

Some industries, such as cotton spinning, did lend themselves to mechanisation and the reduction in the reliance on craftsman skill, but concentrating production in large factories led to problems other than simply product quality. It was no longer possible for one man to co-ordinate the work of these large groups of people and systems and structures had to be devised to achieve this. Someone had to have the overall responsibility for the success or failure of a production unit on behalf of the owners or shareholders (5) and thus the role of managers was first defined.

In general both managers and owners adopted an approach which regarded the labour force as another of the inputs required by an organisation to perform its allotted tasks. The principle that monetary reward was the only motivation for human endeavour in a free society was widely held and the division between the responsibilities of management and labour was firmly drawn. The sole debate between the two groups was about the division of the surplus money created as a result of the organisation's activity. This basic philosophy of business was later to be seen by Taylor (6) as the major barrier to business development.

Management's key task was then, and in some organisations today still is, simply to ensure the smooth running of the operation by efficient administration. The systems and processes for such efficient administration being founded in the command structure of armies down the centuries. It still lingers even today when the most senior manager in an organisation is called the Chief Executive *Officer* and the premier business qualification is called Master of Business *Administration.*

Although it is probably true to say that the new breed of factory owner and manager working in newly industrialised Britain in the 17th and 18th centuries saw the workforce as no more than a resource to be exploited there were a few notable exceptions. The most famous of these was David Dale and his successor Robert Owen in his cotton mills at New Lanark in Scotland. Dale (7) believed that the better the conditions in which his employees were housed the better would be their efforts in the mill. Robert Owen, who bought the business from Dale in 1799, believed that real commercial benefits would flow if he improved the physical and mental conditions of his workforce. He wrote (8) " All the houses in the village form parts of the establishment, all united and working together as one machine , proceeding day by day with the

regularity of clockwork." He introduced his "silent monitor" a four sided piece of wood coloured differently on each side which hung above each work station. The colour displayed reflected the performance of the worker the previous day Black for bad ,Blue for indifferent,Yellow for good and White for excellent. Owen wrote (9) " I merely look at the person and then at the colour.... I could at once see by the expression of countenance what was the colour that was shown."

The principle which Owen adopted of taking as much care of his workforce as he did of his machinery helped Owen to develop a growing and thriving business. Owen's philosophy did not prevail throughout the industrial world and,for the greater part of the nineteenth century, managers and owners regarded their employees as expendable raw material. Reforming legislation such as banning children from working in mines and recognition of workers rights came only slowly and usually in the face of severe opposition and was never linked to the productivity of business. Indeed the owners probably believed that the exact opposite was true. It was to be nearly one hundred years before the Hawthorne experiments demonstrated that the social aspects of work played a critical part in workers performance.

People as Machines

The rise in consumer demand and the rapid increase in competition as the Industrial Revolution spread during the late nineteenth and early twentieth centuries forced companies to look closely at the ways in which they operated. Factory systems began to change as organisations searched for ways to reduce cost and thus secure more business. The move towards the modern large scale factory offered opportunities for cost reduction through mass production.

An example from the motor car industry in the early part of the twentieth century illustrates the changes which were taking place both in methods of industrial production and employee relations. (10)

The introduction of the assembly line by the Ford motor company in 1913 in their Highland Park plant in Detroit enabled the company to slash the time it took to build a model T from twelve and one half man hours to just one and one half man hours(11). Henry Ford exploited this huge reduction in costs by reducing his prices and ,by 1914 the Ford Motor Company was producing nearly half of the cars in the USA compared with less than ten percent some six years previously.

The result of this was to turn the labour force into human robots and to force Ford to train nine hundred and sixty three workers for every hundred workers who would stay on the assembly lines. In an attempt to encourage more workers to stay, (12) Fords doubled their wage from $2.50 per day to a flat rate of $5 per day. The effect of this was to dramatically reduce the rate of absenteeism and to create amongst the workers a real sense of pride in their company. An interesting foretaste perhaps,of the relationship between management and worker which now characterises the Japanese owned motor car industry in both the UK and the USA. It is an interesting, if idle, speculation to wonder what would have happened if the managers of the American auto industry had not been corrupted by ".....capitalism, greed the dirty hunger for dollars. Take away the capitalist and you will sweep war from the earth" (13) Ironically it was Henry Ford himself who spoke those words during his abortive peace mission to Europe in 1915.

At around the same time as these changes were taking place in industry work was being done by academics to attempt to identify the key principles which

governed industrial activity. In America F W Taylor(14) who developed the theory of Scientific Management reported to a Special Committee of The House of Representatives in 1912 that " a complete mental revolution was required to overcome the conflict which existed between manager and worker". He suggested that the conflict between management and worker was not an inevitable result of the industrial work place, but the outcome of a particular set of attitudes of management and worker. This attitude focussed all of management's attention on reducing costs by cutting the wages of workers and concentrated the efforts of workers in a constant fight to obtain a larger share of the available money.

The real revolution which had to take place was to so change the mental attitude of both management and workers that they could begin to understand that energy expended on the battle to divide the surplus between the two groups could, if directed effectively, so expand the surplus that it would become sufficiently large to satisfy the needs of all.

Taylor believed that the application of scientific methods of working would enable companies to achieve the improvement in output and profits. He sought to separate the planning of tasks from the doing of tasks and insisted that planning had to be based on observation and scientific analysis of higher producing workers. He believed that the methods which the most productive workers used to do work could be copied and then optimised and all workers trained to operate in this way. Taylor also believed that a wage incentive scheme was the prime motivator of workers and that there were optimum physical conditions under which work would be done most efficiently . Taylor's work helped to formalise the structure of foreman and inspector in factory process production.

The Human Side of Work

Something quite unexpected was discovered when researchers began a series of studies based on the teachings of Taylor, into the relationships between physical working conditions and work output at the Hawthorne Plant of the Western Electric Company in the late 1920's and early 1930's. The Western Electric Company was the manufacturing arm of the Bell telephone Company.

The Hawthorne studies (15) showed clearly that there is a social dimension to any organisation and that the social dimension probably played a more important part in productivity than the physical conditions which they were studying.

Nearly thirty years later Douglas McGregor ,an American management scientist, writing in 1957 encapsulated the differences between these two approaches in his X and Y Theory of management (16). A broader description of the theory is given in the appendix but it is worth summarising it at this point.
McGregor proposed that there are two ways in which organisations can be viewed. One is based on the fact that work is not a natural activity for people and therefore they have to be coerced into doing it by some form of discipline and authority. A Theory X organisation is therefore authoritarian and work centred. Power comes from the position which people hold in the organisation. Theory Y on the other hand postulates that work is equally as pleasurable to humans any other form of activity and that people will accept authority through persuasion and participation thus achieving effective work towards achieving an organisation's goals.
McGregor's theory suggested that employees need to be released rather than restrained if they are to give of their best in an organisation, and he argued for an enabling philosophy rather than a controlling one. This theory suggests

that the effect which Mayo (17) saw was the result of altering the organisation structure, albeit temporarily, from an authoritarian one to a participatory one. Other developments however were taking place which were to have a more immediate effect on industry. The benefits of listening to employees were not to be recognised until the developments in Japan after the Second World War.

The Power of Statistics

Around the same time as the Hawthorne experiments were being carried on, W.A. Shewhart at Bell Telephone Laboratories developed concepts of the application of statistics to processes in order to prevent variation between items on the production line. These discoveries form the basis for the process control charts (18) which are used to monitor industrial processes across the world today. Shewhart perceived that each process has an inherent variability built into it and that this variability is outwith the power of the operator to control.

His greatest disciple, Dr J Edwards Deming, wrote of him in his book Out of the Crisis (19) " Shewhart (about 1925) recognised the fact that good management consists of making one mistake now and then and the other one now and then. What was needed, he saw, is rules that can be put into practice by which to achieve minimum net economic loss from both mistakes. To this end he contrived the 3 sigma control limits. They provide under a wide range of unknowable circumstances ,future and past, a rational and economic guide to minimise economic loss from both mistakes" .

Thus the next step in the evolution of Total Quality Management was to recognise that all processes are inherently variable and that this variability is

random (20). To reduce the width of the random variation band requires the process itself to be redesigned and improved. Nothing the operator can do can overcome the random variation. As long as the variation stays within the limits which can be calculated as random, the process is in as much control as the operator could ever expect and little can be gained from attempting to trace the source of the variation. Variations which are outside these limits have a specific cause however and it is those variations which management can profitably investigate and eliminate the root cause.

Much of Shewhart's teaching was put into practice by Deming and others during the Second World War in a programme aimed at teaching engineers and inspectors in companies engaged in war work the principles of Statistical Quality Control (21).

The boom experienced by the post war American economy ensured that every item made found a buyer. The drive was for production to meet demand and the techniques which Deming had taught during the War years became subordinated to end of line inspection.
Quality as understood by manufacturing units referred only to the ability of product to meet a production line specification and the techniques and controls were seen as belonging entirely in the hands of engineers and production managers. By 1949 Deming believed that there was nothing left of the philosophy which he and others had developed. Deming came to believe that the main reason was that there was no pressure from management for quality and that, until there was nothing would change (22)

The evolution of Total Quality Management now divides into two distinct branches. One branch based in America and adhered to by Western

manufacturing organisations, the other in Japan struggling in the aftermath of their defeat in World War Two to rebuild their shattered economy.

The Western Quality Experience

Quality Control in American and Western European business used statistical process control and end of line inspection (23) to ensure that sub-standard articles stayed in the factory. The Quality Inspector and inspection and testing facilities became an integral part of Western production plants along with an acceptance of the scrap and re-work levels associated with this type of production system. Organisations such as The American Society for Quality Control focussed statistician's and engineer's attentions on methods to advance the statistical theory upon which most inspection systems were based.

Concepts such as Reliability Engineering were developed to help minimise variability but all were founded in the basic precepts of statistics and the use of measurement and control statistics to minimise the number of defective products which left the factory. This mechanistic, inspection driven approach merely served to continue the belief amongst workers that the quality of the product produced in their factory was not their responsibility. Responsibility for quality clearly lay in the hands of the process design engineers and the Quality Inspectors.

There were two significant developments in American Quality thinking. In 1951 Feigenbaum postulated the theory of Total Quality Control (24). He argued that it was not possible for existing management structures to realise the real benefits which the use of statistical techniques could deliver and believed that until companies created a cross functional structure which allowed action to be taken on the results produced by the use of SPC little progress would be

made in the development of product quality. He defined the impact of his concept as (25) " Total quality Control's organisation-wide impact involves the managerial and technical implementation of consumer-orientated quality activities as a prime responsibility of general management....."
In other words he saw clearly that nothing would change significantly until management understood that quality was not only an end of the line activity, and the responsibility solely of the quality control department, but was also a powerful tool which would ensure that the customer always gained total satisfaction from a company's products. True Quality therefore, was customer driven and not a collection of technical control processes bolted on during the production process.
His views were enthusiastically received by the Japanese and formed the basis for a major step change in their approach to quality.

The other development in Quality thinking in the USA came with the concept of Zero Defects. The Martin company was involved in the construction of Pershing missiles for the US Government and the concept arose out of a commitment the company had given to deliver the first production missile free from any defect. The time schedule set was so tight that there was no time to carry out the normal inspection and defect correction programmes and the company therefore had to change its normal mode of operating. It urged its employees to co-operate in building the missile with no defects ; right first time.
The project succeeded and a defect free missile was delivered. The company concluded that the reason why this had not happened before was simply that in the past management had not been prepared to expect perfection (26). From an analysis of the factors involved the company set out a programme "to promote a constant , conscious desire to do a job (any job) right the first time" They called the programme Zero Defects.

Philip Crosby, who worked at Martins in the 1960's, adopted many of the principles which he had learned and used them as the basis of his Quality programmes. His book Quality is Free helped to raise awareness of the wider aspects of quality in American Industry. (27)

In the UK as in America inspecting in quality continued to be the accepted route for quality control, thus keeping the focus inside the factory and on the production lines. The British Standards Institute sought to define quality in the standard BS 4778. (28) "The totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs " The published standard BS 5750 became the base from which other countries developed Quality standards and these became the international standard ISO 9000 published in 1987. The standard seeks to produce a framework for the process of Quality Assurance, that is the range of activities which are used to ensure that each article produced is identical to the next one. The current definition is "BS 5750 looks at it (quality) in the fitness for purpose and safe in use sense "(29) This has often been mistakenly perceived by industry as describing the quality of the product itself rather than the existence of a Quality Assurance system in an organisation.

This may in part, have been due to the fact that the British Standards Institution had been principally known as an independent laboratory which tested a wide range of manufactured products and laid down physical standards to which these products must conform. Products which did were awarded the BSI Kitemark to indicate to potential purchasers the physical standards which the particular product had. It was ,and is, a "quality" measurement in the sense that it defined the attributes of the product against the expectations of the user.

The period from 1950 to 1980 was one in which the products of Western companies came under increasing pressure from those produced in Japan. Articles written in the early eighties indicate how serious the problem had become and that, at last, the importance of the subject was being recognised. Harvey (30) in an article describing the steps Rolls Royce were taking to improve their quality control claimed that British goods were no longer the envy of the world with respect to their excellence. He suggested that the decline in quality was due to poor relationships between management and workers.

Lee (31) highlighted the problems of European and US car makers struggling to emulate their Japanese rivals and claimed that experience at Ford's Merseyside plant showed that great care was needed when change was implemented. Arbose (32) described the success of joint venture between GEC and Hitachi in Wales which had achieved increases in product quality and profits from the Welsh factory by concentrating on quality control.

There were other examples of UK companies looking for solutions to competitive pressures, Wilkinson et al (33) describe the introduction of Quality circles into Black and Decker in 1980 following a trip to Japan in search of a solution to the growing problem of competitive market pressures from international competitors. They were not alone in asking the question what do the Japanese do that Western companies do not ? To understand the answer to that question we must go back to the immediate aftermath of the Second World War and the occupation of Japan by American forces.

The Japanese Quality Experience

The initial intention of the Americans was to keep Japan as a subsistence economy dependent on the USA for its continued existence (34) but the ability

of the occupying forces to communicate was crucial to the process of governing what was left of Japan and this gave the Americans their first major problem. The telephone system in Japan was utterly unreliable (35) due mainly to the poor quality of the equipment and the unreliability of the spare parts supplied by the Japanese manufacturers.

American engineers were called in to find solutions. The key members of the team all had experience of working in the Bell Telephones Laboratories or in Western Electric and so were well versed in the concept of using statistics in improving the quality of products. An engineer named Magil was probably the first man to introduce the concept of statistical control into Japan (36) lecturing there in 1945 and applying the techniques to the NEC plant in 1946.

After the first few years of occupation of Japan the emergence of Communism was seen by the Americans as a sufficiently serious threat to make them change their view of the future role of Japan and to decide to create a strong Japanese economy as a bulwark against this new world evil.
The work done by the Americans now moved to include the giving of advice to the new breed of Japanese business leaders and in 1949 the Civil Communications Section of the Allied command in Japan ran a series of seminars aimed at improving the ability of Japan's new business managers. These seminars had as their main theme the principles of Scientific management and concentrated effort on improving factory systems and production techniques with a major emphasis on Quality.

The lectures also included references to key leadership issues and encouraged participation at all levels. Some of the words used have a familiar ring even today. Speaking of the workforce the course material said (38)

" any initiative and interest they may have in trying to do a job is often destroyed by the interference and meddling of higher management" Addressing itself to management it said " If we who are paying these people for working with us could foster that desire to participate, what a profitable undertaking it would be."

In 1948 (39) the Japanese Union of Scientists and Engineers established a study group to look at American Statistical Quality Control. It believed that the only way in which Japan would be able to be able to afford to import the food and materials which it needed, being poor in natural resources, was to export goods of high quality at low prices and that Quality was the key to achieving this objective. This group invited Dr W Edwards Deming to lecture to them in 1950 and again in 1951 and 1952. He preached his rigorous approach to quality of using the power of statistical theory to improve processes and reduce variation amongst product.

He also talked about a systematic approach to problem solving based on a four stage cycle of- Plan Do Check Action. The cycle repeated again and but each time using the newly accumulated knowledge to improve the solution to the problem. The concept is drawn from concepts pioneered in the work of Shewhart, a fact which Deming himself acknowledges in his book "Out of the Crisis"(40), but it has passed into Japanese and world Quality folklore as the Deming Cycle.

Throughout the 1950's the progress of Quality Control education in Japan was relentless and the training progressed ever lower in the organisation. That the issue was taken extremely seriously by everyone is exemplified by the use of radio broadcasts in 1956 to introduce Quality Control to group leaders in the workplace and the publication of "standard" textbooks on quality aimed at

foremen. The intense pressure to teach complex statistical methods to all of the workforce led to complaints that the concept was too difficult. This resentment emerged at all levels and there are records of industrial disputes (41) about the introduction of QC methods into organisations. In an effort to make the use of QC methods more acceptable the Quality Control Research Group modified the educational programme to ensure that only the appropriate techniques were taught to each level in the workforce.
The Japanese researchers identified some major flaws in the system (42) ;

1 Inspectors were seen as superfluous personnel bringing down the productivity rate in a company.

2 Statistical sampling is not appropriate when products have a defect level target of .001% or less.

3 When defects are discovered often the only result is an increase in the rate of scrap.

Thus Japanese companies took Inspection Orientated QA and developed it with Deming's teaching, into Process Control QA, but even this level and efficiency of Quality control does not ensure products which will be satisfactory if the basic design is poor. This lesson was to be brought home to Japanese industrialists when they sought to sell in the increasingly sophisticated markets of the West.
Two other major difficulties which arose are described eloquently by Professor Kaoru Ishikawa one of the founding members of the JUSE's Quality Control Research Group(43) ;

".....many standards and rules were established. But they were often not fully applied and became merely formal standards, resulting in merely formal

QC. This same problem can be seen today in many countries where QC is being forcibly thrust on the workers."
(He is referring here to the Japanese Industrial Standards (JIS) administered by the Ministry of International Trade and Industry.)
He continues "QC was confined to the factory. Neither top management nor people in administrative, sales or design divisions showed much interest in QC ".

The Quality Control research group looked for ways to improve the situation and invited Dr J.M Juran to Japan (44). He had a less statistical approach to the problem of quality than that of Dr Deming and widened the Japanese managers perspective of the quality issues by talking about the roles of senior and middle management in the quality process.
Around the same time Armand V Feigenbaum (45) with his experience as head of Quality at General Electric was invited to explain his concepts of Quality as a business philosophy rather than simply a method of production control and improvement.

Together these new ideas drove the next stage in the evolution of Quality in Japan and the concept of "quality assurance during new product development "(46) was born. This concept required Quality to be built into the design of the product with the views of the customer being taken into account from the earliest stages of product development. It took several years of work for the major Japanese companies to develop the techniques which were to enable them to produce products which met customer expectations better than their Western competitors as well as being considerably cheaper. The effects of this third phase of quality in Japan became felt in world markets in the late 60's and more forcefully during the 1970's with devastating effects on Western companies. Ishikawa (47) identifies this stage of Quality in Japan as

Company Wide Quality Control and describes it as being characterised by four distinct activities.

Firstly the involvement of all of the departments in a company. Cross functional activity is seen as the only way to design out potential quality problems.

Secondly all employees are expected to contribute to problem solving through the extension of Quality Circles from their original role of education. Employees are expected to take responsibility for the quality of their own work and to seek ways of improving it.

Thirdly the whole company is imbued with a philosophy of Continuous Improvement constantly striving for improvement in everything which they do.

Fourthly and perhaps most importantly of all, is the constant attempt to involve the customer in the whole process of product design ,production and improvement. This process, called Quality Function Deployment, translates the needs of the customer into criteria for product design and production thus ensuring that the product is much more likely to satisfy the customer's perception of quality.

The Japanese approach to Quality is encapsulated in the following quotation from Ishikawa (48) "It is through such accumulation of experience that the capabilities of company staff have been enriched, allowing Japanese companies to make quality products at low cost and with high productivity."

One must not however make the assumption that all of Japanese industry operates in this fashion. Hughes et al (49) point out that Japanese industry is

not typified by the well known Corporations with their CWQA practices but is extremely complex and hierarchical with widely varying management practices.

Despite this there is no doubt that the best practice of Japanese management has significantly contributed to the creation of companies which have come to dominate the world particularly in consumer goods and have caused the demise of many poorly managed Western companies. It is also true that these techniques appear to work equally as well when "exported" and westernised in Japanese owned companies such as Nissan (50) and Komatsu where the core values of involvement, training and team work have resulted in a high level of production from the workforce.

What Can be Learned from the Japanese Experience?

The success of Japanese companies in world trade prompted a flow of Western managers and industry leaders to visit Japan with the objective of learning the secrets of their industrial success. In 1989 for example the Scottish Development Agency led a study tour (51) and concluded that a key element was the focus on continuous improvement which they defined as "a capacity to learn within an organisation".

The visitors believed that a key element of the success of the Japanese companies which they visited was due to flexibility and commitment. They commented on the fact that training and investment in staff skills were significantly higher in Japan than in the UK and concluded " They (the Japanese) have learned to put their effort into doing things better than they did them yesterday."

Some workers (52) have suggested that it is inappropriate to attempt to copy Japanese practice without understanding at least a little about the other factors

which have had an effect on the success of Japanese companies. They describe a dual economy with large corporations working in one sector with all of the leading edge approach which is associated with Japanese business while their sub-contractors work in the second sector which has much less security and can practice management techniques far removed from those associated with Total Quality Management (53). Gow (54) also believes that the level of education of the average Japanese worker is better than his Western counterpart and that this makes it easier for Japanese companies to use effectively measurement techniques such as histograms, cause and effect analysis and concepts such as Pareto's 80/20 rule.

While this may well be so there is little doubt that the application of the principles of Quality as demonstrated by the leading international Japanese companies have had major successes both in Japan itself and in Japanese owned factories across the world.

Does TQM Work Outside Japan?

That Quality principles work has been demonstrated in many non Japanese companies. The experience at Jaguar (55) where Sir John Egan used Quality Techniques to turn round the loss making luxury car plant, is a good example of the principles being able to have a major effect in an industry more noted for its demarcation and poor labour relations than the adoption of leading edge management techniques. Egan created task forces to tackle problems and improve the relationship between employees and the company and used product quality problems and customer complaints as the base on which to build a new relationship between Jaguar and its employees and suppliers.

Rank Xerox is another example of a company which responded to intense competition from the Japanese copier industry by introducing Quality as its

basic business principle (56) and using employee involvement groups to focus energy on achieving company goals.

These are just two examples from the large body of practical experience which suggests that companies have much to gain from the adoption of Quality principles and much to learn from the methods developed by the Japanese who have become leaders in this field.

Management Evolution to Quality

The principles of quality are a logical evolution in the process of managing organisations. In the initial stages of the Industrial Revolution there was little experience except that of commanding armies and thus early management structures were command based. As the social and economic developments which have taken place since then have changed the world in which companies operate so the process of management has had to change and develop. Many people have contributed to the process but it was left to the Japanese, driven by the particular circumstance of starting afresh with their economy (57) and the particular nature and organisation of their society to refine the processes developed by American workers such as Deming ,Juran and Feigenbaum and to provide such a convincing demonstration that not only are these techniques capable of creating one of the strongest economies in the world from the ashes of defeat but the techniques are also capable of creating high performing companies when they are internationalised and exported to other countries.

The basic concepts of TQM are well proven in most of the industrial economies in the world and the view that TQM is simply another "flavour of the month" has no basis in fact. It is also clear that the development of TQM in an organisation is a long term activity and there is a real danger that managements of companies in difficulties may believe that TQM is an instant solution to

their problems. The experience of companies who have been successful in the implementation of TQM confirms that this view is wrong and that it is likely that those companies who view TQM as a short term activity will fail to achieve any of the benefits. It is probable that, in their frustration, they will seek to blame TQM for their failure and not the lack of skill and understanding and leadership on their part.

References Chapter Three

1 Clutterbuck D Crainer S (1990) Makers of Management, London: McMillan

2 Feigenbaum A.V. (1991) Total Quality Control (Third Edition revised) New York:McGraw-Hill

3 Garvin D.A. (1988) Managing Quality, New York:The Free Press,

4 Feigenbaum A.V. op cit

5 Sisk H.L. (1969) Principles of Management, Cincinnati:South-Western Publishing Company

6 op cit, p34

7 McLaren D.J. (1983) David Dale of New Lanark, Milngavie:Heather Press.

8 Allen N (1986) David Dale, Robert Owen and The Story of New Lanark, Edinburgh:Moubray House Publishing,p14

9 op cit, p17

10 Feigenbaum A.V op cit

11 Collier P,Horrowitz D (1987) The Fords,London:Collins

12 op cit

13 op cit

14 Sisk H.L ibid

15 ibid

16 Clutterbuck et al op cit

17 Mayo E (1945) The Social Problems of an Industrial Civilisation, Boston, Harvard.

18 Feigenbaum A.V.op cit

19 Deming W.E (1982) Out of the Crisis, Cambridge, Cambridge University Press,p319

20 op cit

21 Walton M (1989) The Deming Management Method, London:Mercury

22 op cit

23 Feigenbaum A.V op cit

24 Feigenbaum A.V. (1951) (1st edition) Total Quality Control, New York:McGraw-Hill

25 Feigenbaum A.V. (1991) (Third edition revised) Total Quality Control, New York:McGraw-Hill p13

26 Garvin D.A op cit

27 Crosby P B (1979) Quality is Free, The Art of Making Quality Certain, New York:McGraw-Hill

28 Oakland J.S. (1989) Total Quality Management, Oxford: Butterworth-Heinemann Ltd. p3

29 BSI BS 5750/ISO 9000:1987 A Positive contribution to better business. An executive's guide to the use of the UK National Standard and International Standard for Quality Systems, London,BSI Quality Assurance

30 Harvey D (1980) Quality Control Represents a Challenge to Everyone, Chief Executive(UK) (November)

31 Lee M (1982) Danger: Men at Work: Why Don't They Ask?, Management Today (UK) (May) pp 50-53

32 Arbose Jules R (1981) Japanese Technology Saves a Welsh Factory, International management (UK) (June)

33 Wilkinson A, Snape E, Allen P (1990) Total Customer Service, Total Quality Management (October) pp291

34 Hughes M.D., Gow I.T.M., Helinska-Hughes Ewa M (1991) Japanese Business in the Context of the New East-West Economic Order personal extract and communication with Professor Gow(1992)

35 Garvin D.A op cit

36 op cit

37 Hughes M.D.etal op cit

38 Garvin D.A.op cit p 181

39 Gow I.T.M. personal communication

40 Deming W.E. op cit

41 Gow I.T.M. personal communication

42 Ishikawa K.(1984) How Quality Control Started and Developed in Japan, Sumitomo Quarterly Spring 1984 p4-7

43 Ishikawa K. op cit p5

44 ibid

45 Garvin D.A op cit

46 Ishikawa K op cit

47 op cit

48 op cit

49 Hughes M.D et al op cit

50 Smith B.(1989)Company Experience Nissan Motor Manufacturing (UK) Ltd, Paper presented at 1989 British Deming Association Annual Conference, Salisbury,British Deming Association

51 Naden J.& Bremner A (1991) A Guide to Total Quality Management, Glasgow: Scottish Enterprise.p24.

52 Bolwijn P.T., Brinkman S. (1987) Japanese Manufacturing:Strategy and Practice, Long Range Planning Vol 20 No.1, pp25-34

53 Gow I T.M (1989) Japanese Management Practices and Their Transferability to Europe, Working the Japanese Way Japanese Employment Practices at Home and Abroad Brussels,Sept 25-26 1989 pp51-56 plus personal communication.

54 Gow I M T. op cit

55 Hancock. G. (1984) Quality Brings Sales Dividends at Jaguar, Quality Progress Vol 17 no.1 May pp30-34

56 Upton R. (1987) Xerox Copies the Message on Quality, Personnel Management, Vol 19 no.4 pp34-37

57 Gow I M T op cit.

CHAPTER FOUR

Background to Quality in the UK

The history of Quality development in Japan shows that there was a national consensus of opinion driven by both government and employers to improve the commercial abilities of companies and that the Quality Control research group within the Japanese Union of Scientists and Engineers (1) was the major driving force which helped Japanese industry to develop and refine the Japanese approach to Quality which has been one of the major contributors to the country's international business success. Together with government it encouraged education, research and continuous improvement of business processes in its quest to help Japanese companies become the most cost effective ,yet highest quality producers in the World.

The existence of this concentrated level of support to industry in Japan made it important to investigate the approach which had been taken by the UK government to motivate UK companies to move towards a Quality approach. Was there, for example, a co-ordinated approach to the problem of increasing industry competitiveness or was this left up to companies themselves to decide the best way? Was there any formal method of helping companies to assess their needs?

Who, if anyone , had the responsibility for helping industry to achieve results at the speed required to sustain a healthy and competitive UK manufacturing industry? Not surprisingly perhaps the structure of industrial support is different in England and Scotland as are the approaches to the issue of quality.

In England the DTI is responsible for the development of Industry through the promotion of best practice through public meetings and publications.
Agencies such as the Northern Development Agency and Teesside Development Corporation have the specific responsibility for funding inward investment to the area. This differs from the situation which pertained in Scotland up until 1992 where the Scottish Development Agency had both the responsibility for improving business performance and for attracting inward investment within its own control. Since 1992 the SDA has become Scottish Enterprise and the vehicle for direct support to industry are the newly set up Local Enterprise Companies.

The English Approach.

The Department of Trade and Industry in Newcastle is the Regional centre for the North East. Like all the DTI regions it has a degree of freedom in the way in which it uses the mechanisms available to it to implement the overall DTI policy of encouraging Best Practice Management in Industry.
The DTI in Newcastle sees TQM as a key part of the philosophy which it hopes will help to develop a prosperous industrial base in the North. It promotes TQM as one part of four key areas in which it seeks to promote skills;

1 Total quality Management

2 Production Management

3 Purchasing and Supply Management

4 Product Design and Development

The DTI became convinced in the early eighties that there was a need to look at management from a holistic point of view as approaches based on individual

aspects of management could lead to less effective progress. Managing into the 90's was the vehicle which was created to encourage this to happen in industry. As part of the launch of this process seminars on TQM were run by Professor John Oakland.

The seminars attracted interest and encouraged action in local areas; the Quality North programme run by the Northern Development Company for example,was a direct result of one of these seminars. During these seminars companies were encouraged to use the Enterprise Initiative Scheme to get consultant assistance to improve their business efficiency. Soon the Quality Initiative was taking up the majority of the money expended on grant aid. Unfortunately the consultancy efforts were directed to the attainment of BS 5750 rather than working to change the fundamentals of business management skills, with the result that companies came to associate Quality with BS 5750 (2) and be disappointed with the results on two counts. Firstly the attainment of the award itself brought no rush of customers to the door nor did companies achieve any automatic price increases. Secondly many companies became disenchanted by the bureaucracy and sheer effort and cost required to keep the system up to date. They were mirroring the Japanese experience of the mid fifties.

The role of the DTI has now been changed and the responsibility for advice and consultancy help has moved to Training and Enterprise Councils with the DTI taking the role of monitoring the progress of TECs towards their business objectives from April 1993 . Co-incident with this the Government has decided to put its weight behind a scheme called Investors in People which it hopes will increase the skill level of UK employees and the commitment of employers to training. The encouraging aspect of IIP is that it has more of

the core framework of Mission Statement and employee involvement at its core than BS 5750 and thus might be a catalyst to spread the TQM philosophy despite the dangers associated with the mechanistic approach which attaining the standard demands. .

The DTI has to work through other agencies in order to achieve the objectives set for it by Government. One of the most successful of these agencies in the UK is the Northern Development Company which has, as its principle objective, the encouragement of inward investment to the North Of England. It also sees a role for itself in the development of existing business in the Region.

Involvement with Total Quality Management began for the NDC at their Great North conference in 1989 at which NDC managers were challenged to introduce the concept of TQM into the Region. A survey was commissioned (3) which suggested that, although a large number of companies expressed interest in BS 5750 and the principles of Quality management, little was being done in practice.

This prompted NDC to launch its Quality North campaign with a series of Quality Roadshows, organised jointly with the DTI, which attracted 1000 organisations to come and learn something about Quality. A board, formed from the leading business and public sector managers was formed to decide on the policy and guide the programme.

NDC attempted to interest the TECs in the formation of some type of company training register but with limited success and instead NDC has introduced its own Quality Forum at which companies meet and share their successes and failures in introducing TQM and have the opportunity to be updated on the progress of the Quality North Campaign.

It has launched an Improvement Group Exchange Programme which aims to establish a network of companies who all are motivated to change the way in which they manage themselves and wish to meet together to learn from each other's experiences. This scheme was launched in the Autumn of 1992.

The NDC sees Quality as the cornerstone of its policy to attract industry to the region and uses the word to cover everything from the scenery of the Region to the way in which companies are managed. There is no doubt that it has raised the profile of Quality in the region and encouraged industry to see it as a prime objective.

The Scottish Approach

Government support for industry was, prior to 1991, channelled through the Scottish Development Agency which combined most of the functions which are carried out in England by DTI, Regional Development Agencies and the Training and Enterprise Councils. Compared to their counterparts in England the SDA ought to have found it easier to achieve their objectives given that they were Government funded, had a direct link to Government policy makers and little in the way of other agencies in Scotland to compete with for industry support. Since 1991 the SDA has been transformed into Scottish Enterprise and the structure of industrial support in Scotland altered . This paper is concerned with the effects of Quality Initiatives on industry up to 1992 and thus the work of the SDA is most relevant.

The SDA began its involvement with TQM in May 1989 with a conference in Glasgow called "Beyond BS 5750 equals TQM" which was attended by 250 industrialists.
The SDA ran a series of one day workshops at which executives were introduced to the concept. This was followed by a five day TQM Audit funded by the SDA for those companies who wished to move to adopt the principles. A large proportion (4) of the companies attending the workshops took advantage of the Audit.
Visits were made to Japan and the USA with Scottish businessmen to see for themselves the benefits of using Quality as the basis for their future success.

Companies across Scotland were encouraged to set up their own local Quality Forums. Each Quality Forum is designed to provide a focussed opportunity for local businessmen to meet on a regular basis and share their experiences and skills in implementing TQM. Each area group is autonomous with its own management committee and its own programme of events aimed at tapping local skills and addressing local needs.

Initially ten were formed with a combined membership of over 800 companies and an average attendance at meetings of 70%. The target was to have over 1000 companies participating in the monthly meetings of their local Quality forum by the end of 1992 and it appears that this has been achieved (5).
The local forums are linked into the Scottish Quality Network which acts as an umbrella organisation for all bodies with an interest in Quality in Scotland. It provides a focus for development activities and the exchange point for information and ideas sent to all member organisations in a monthly newsletter.

The change in the method of industrial support which has taken place in Scotland since 1991 has meant that the overall influence of the SDA has been

reduced and Local Enterprise companies have been set up to encourage industrial investment and growth. The SDA has become Scottish Enterprise and now has an advisory and funding allocation role. Despite these substantial changes the Quality network continues to grow but there is an underlying concern that the links to the newly formed LECs may be difficult to forge and maintain.

The Two Approaches- The Results Compared

The methods of aiding industry in England and Scotland are clearly different even although they are both ultimately funded by the Department of Trade and Industry in London. In Scotland the SDA, as was, had a sharply focussed view of what it had to do and the methods needed to achieve these objectives. The Total Quality programme was implemented quickly from its inception in 1989 and the message of change was spread rapidly through Scotland in the form of local Quality Associations. The only pump priming which the SDA offered to the local Quality Associations was a small sum of money to fund the initial meetings and some help with management until the association had become fully established.

The fact that the SDA controlled the allocation of grant money to fund consultancy work allowed it to add impetus to the interest which Scottish business showed in the Total Quality concept.

In the North of England , on the other hand, the links between the various agencies have to depend on goodwill and co-operation. It may be seen as a

strength that agencies such as the NDC are independent of other Government bodies but it is also a weakness when some new initiative is to be launched with industry and each agency perceives a slightly different role for itself.

In the case of TQM, despite starting with a conference in 1989 at which the idea of TQM was received with enthusiasm by the businessmen in the audience, it was not until 1992 , some two years behind the SDA, that any network was set up to help the message of change spread through the Region. Part of the reason for this is undoubtedly the fact that the NDC has inward investment as its priority and the development of improved business efficiency of established businesses can only be a secondary, albeit important , activity. The NDC has established a series of groups of like minded companies who are beginning to visit each other and talk together about quality. The NDC attempts to link their efforts by organising a series of awards to recognise individual excellence but it has to rely entirely on donations and subscriptions from local companies to fund these activities unlike the Scottish experience where the Quality forums are self funding.

The instruments to aid the change were also less clearly focussed in England with the DTI being constrained to funding only the existing range of Enterprise Initiative consultancies whilst the SDA were able to offer funding targeted at making change happen. The net result of this suggests that companies in England are adopting TQM later than their Scottish counterparts and with a more confused support system. Neither is there any formal, self funding system, such as the Quality Forums in Scotland which keeps companies actively involved in meeting together. More importantly the information is shared across the country through regular news letters and it is possible that this emphasis on Continuous Improvement may have contributed, even in some small way, to delay Scotland's slide into recession compared with the rest of the UK.

In the final analysis, however, the success or failure of any initiative to improve business performance across a geographic area and in a variety of businesses and organisations appears to depend on Drucker's concept of a "megalomaniac with a mission "(6). In Scotland the torch for quality was carried by one committed individual in the SDA, Jim Naden, who made Quality his personal crusade. In the North of England David Williams emerged as Quality champion from the Northern Development Company and has been the driving force behind the Quality Initiatives in the region. He has had the harder task in some ways as his programmes must always rely on the generosity of companies to fund projects and has no direct influence over the efforts of the various Government funded bodies such as Training and Enterprise Councils.

On a Nationwide scale it is clear that nothing exists in the UK which is in any way comparable with the infrastructure which helped to drive Japanese industry to achieve the performance levels at which it operates today. The closest comparable organisation was the now defunct Scottish Development Agency and even here it had many more issues to tax the time of its executives than mere business techniques. When one of its employees did take up the cause the effects were far reaching and are still in evidence today. In the same way the NDC has much more to interest itself with than Quality but again a champion has emerged and progress is at last being made.
In both cases however the champions were mainly concerned to have current techniques implemented rather than to encourage work to be done to find ways to develop new techniques to help British businesses to become world class. The Japanese experience suggests that the simple adoption of existing techniques is not enough and that a closer link between industry and

researchers will be required to allow industry to survive in the face of the new wave of competition emerging from the Pacific rim countries.

References for Chapter Four

1 Ishikawa K (1984) op cit

2 Armstrong J (1991) DTI Personal communication

3 Williams D. (1991) NDC Personal communication

4 Bremner A. (1991) SDA Personal communication

5 Conduit C. (1992) Chairman Ayrshire Quality Association Personal communication

6 Drucker P.E. (1955) The Practice of Management, London; Heinemann

CHAPTER FIVE

Where are we now? Gathering the Facts

Champions alone are not enough, the idea itself must have substance and be of value to organisations in strictly commercial terms if it is to survive for any length of time. To help establish the validity in UK business of TQM there is a need to understand the experiences of companies who have managed this change process effectively. The second phase of the research therefore describes the benefits of adopting the principles of TQM as seen by companies operating in a variety of commercial activities.

A series of face to face interviews were carried out with companies who had adopted TQM and claimed to have achieved some degree of success with it. The interviews had two objectives. The first was to discover what motivated these companies to move towards the adoption of Quality Principles and the second was to attempt to discover whether TQM as practised, had any resemblance to the TQM as professed by the "gurus" and consultants.

The companies were selected at random from a list drawn up by the Durham Training and Enterprise Council who had part funded some of the change training programmes which the companies had used to introduce Total Quality Management.

The companies interviewed were a mix of manufacturing and service and they demonstrate two distinct stages in the Total Quality process. The first group of interviews are with companies who have adopted the TQM philosophy and operated to it for a number of years. They are examples of current best practice.

The second group consists of companies who have taken the initial steps into TQM and have just begun to discover both the benefits and the pitfalls inherent in the concept. The companies are described in terms of their history and reasons for attempting to adopt TQM , the processes used to introduce TQM and the benefits which have been derived from the programmes.

COMPANIES WITH A WELL DEVELOPED TQM SYSTEM.

3M Newton Aycliffe

3M is an international manufacturing group making a wide range of products from "Post It" note pads to sophisticated electric connectors. The factory at Newton Aycliffe has a small research facility and manufactures face masks for sale through 3M marketing companies across Europe. 3M is an innovative company encouraging its employees to spend a proportion of their time looking for new ideas to develop into profitable products.

Quality formally began in 1980 with the decision of 3M in the USA to adopt the principles advocated by Philip Crosby *. The common language of Quality as created by Crosby (1) was used to create a unified approach to principles which had been in use, but not overtly described , in 3M for a long period of time. It was the first time that everyone from the chief executive downwards had undergone the same Quality training.

Initially it was seen as a manufacturing drive and the workforce received it well. Objectives still filtered down from the top and TQM was perceived as a yet another Corporate Target Programme. The problem which 3M discovered with the Crosby approach (2) was that the process has no automatic loop back

* A description of the better known quality gurus and an outline of their various approaches to quality appears in Appendix B

to the start and once the cycle has been completed with the training, setting up and operation of Quality Improvement Teams it was often difficult to find ways of ensuring that the process moved on to the critical stage of Continuous Improvement. Quality Circles were a particular disappointment as they failed to get employees to take over the leadership of the circles. Those circles which were successful usually had foremen in charge and had specific objectives to achieve.

The company then instigated what they called the J35 scheme. The objectives of J 35 were simple and gave the programme its name; a 35% reduction in the Cost of Quality; a 35% improvement in Product Quality and a 35% reduction in cycle time. The programme had a five year time scale with active involvement of the workforce and unions at every stage using Corrective Action Teams as the vehicle for the achievement of the individual targets which made up the J35 programme.

The J35 scheme drove the company for a number of years through a matrix of Quality Improvement Teams all with ultimate links to the Quality Director through Quality Forums and is typical of the type of management initiatives which have helped to keep the business performance of 3M consistently high.

Encouraging Change

In 1990 3M's senior managers decided that its quality initiatives required more focus if the company was to stay ahead of competitors. They also recognised that as the company was operating in a Global marketplace, this extension of the Total Quality programme had to be designed to be applied across the world operations of the company.

The programme which resulted was called Q90.

It was launched with the slogan "Q90s Uncompromising commitment to customer satisfaction"

Uncompromising was the key word designed to provoke discussion about the level of commitment to the project especially when budgets were being cut and resources trimmed. Company wide training was carried out with the aim of encouraging all employees to become involved in the debate and to find solutions to the problem.
Every 3M company was asked to look at itself against seven key areas based on the Baldrige Award criteria.

The Seven Key Areas

Leadership
Human Resource Utilisation
Information and analysis
Strategic Quality Planning
Quality Assurance of Products and Services
Quality Results
Customer Satisfaction

Self assessment is the key to the success of the programme which aims to raise every person in every company to 90% achievement in each of the seven areas before the end of the 1990s hence the name Q90. The programme has given a common language across countries as well as between departments in every 3M company. It is designed to allow cross learning to take place between companies in the 3M group. The first stage of the programme is to benchmark activities at each site and then to put effort into raising the standard in the poorest areas to that of the best.

Quality as a Company Culture

3M is a multi-national company which has a reputation for continuous improvement and innovation. It has sustained this attitude to continuous change throughout its existence and encourages every employee to devote a proportion of his or her time to thinking about new product developments. The company prides itself on an uncompromising commitment to customer satisfaction and attempts to keep all employees customer focused.

The view of local management was that peer group pressure was a key motivator in the success of the Quality programmes and that one of the results of the progress made down the Quality route had been a reduction over the years in the layers of management required to run the company. Despite the long history of continuous improvement and customer focus the company does not believe that it has managed to get all of its employees completely involved in the process of delighting customers.

DERWENT VALLEY FOOD GROUP CONSETT

The company was formed in 1981 by four of the existing directors with the objective of exploiting a niche in the market which they had identified for adult snack food. As ex employees of a major snack food manufacturer the founding directors were aware of the non quality way in which these

competitor businesses were run and believed that there was a better way to operate.

Quality was one of the founding principles of the business both in the product itself and in the way in which the company was operated. The Phileas Fogg brand, for example, was positioned from its inception to be a premium brand adult snack and the company set itself the target of becoming a supplier to Marks and Spencer. A major consequence of this objective was the need to set up systems to monitor and assure quality to the standards required by Marks and Spencer.

At the same time the founders decided that inspecting in quality , as the mainline competitors did, was both wasteful and costly and the founders therefore set out initially with the philosophy that each person in the company was responsible for building in his or her own quality into the particular process for which they were responsible.

Quality is therefore, built into the system by giving each line employee the right to stop production if the required standards are not being met. Each shift has a Quality controller who is charged with the task of performing any analysis which is required and of facilitating problem solving by line staff.

The standards to which the product is produced are directly determined by the preferences of the customer and are identified in a series of six monthly brand tracking studies. Customer complaints are the subject of a note to the board each week and are expected to be dealt with by the manager responsible for the product line. The company has achieved BS 5750 accreditation.

Quality and the Management Structure

The company has a Mission statement which aptly summarises its objectives.

"We will become the best UK adult snack company through a dedication to quality, the bold use of new ideas, and the determination to succeed.
As we strive to achieve this goal it is important that we maintain an environment of friendship, co-operation and respect."
The company is run through five cost centre managers each responding to the board. From the inception of the company the Directors have operated a open style of management and attempt to walk around the plant as often as possible. Their key objective is to encourage staff to talk about the business and become involved in every aspect of it. An interesting characteristic, which may well be a consequence of this open management approach, is the apparent ease with which the organisation copes with constant change as plans are altered frequently to take advantage of new opportunities or to counter threats.

The company has a specific policy for Innovation owned by one of the board members. There is a formal set of multi discipline groups who have the task of evaluating and progressing new ideas. Employees are encouraged to become Idea Champions if they wish to and have the ability. The experience of Derwent to date is that the most prolific source of ideas are junior and middle managers.

It is the constant effort to involve all staff in the business which appears to be the key to the success of Derwent Valley Foods. Involvement is helped by each member of the work force being a member of one of a number of teams organised around each shift. Each team has a team leader who is responsible for the career development of his team members as well as the business goals which the team is set. There is therefore no personnel function in the company. People issues are firmly the responsibility of line managers. Training is an important part of the success of the company and much emphasis is put on training which develops team work.

The Benefits of TQM on a Greenfield Site

Derwent valley foods is an interesting example of the way in which the advantages which an organisation starting from a green field site has, can be used to develop a very successful business. In this case there was no slavish following of techniques or systems; the founders simply identified the best management practices around and adapted the underlying principles to suit the culture of the company which they were creating.

At its core Derwent Valley is driven by the needs of its customers and has devoted substantial resources to ensuring that the voice of the customer is heard not only at the most senior levels of decision making, but also at every stage in the process.

It is particularly interesting that the company has a Director responsible for Innovation and operates in a way which not only encourages ideas but also allows employees to become product champions and see their ideas through to fruition.

BRITISH VISQUEEN STOCKTON ON TEES

British Visqueen had its beginnings in the films business of ICI in Welyn Garden City. In the early sixties it moved to the present site near Stockton on Tees to take advantage of the new technology then becoming available for the manufacture of heavy duty polythene film. The sacks were for use in the

fertiliser business particularly ICI's whose major plants were located in Billingham.

The business continued to produce fertiliser bags on the same site for nearly thirty years. The majority of the production went to serve the needs of ICI's own plants but British Visqueen was encouraged to seek other customers both in and outside the fertiliser industry. The profitability of the plant declined and by the mid eighties it was clear that its future was uncertain and that a major cultural change was needed if the plant was to survive.

The TQM Solution

In 1985 the company, inspired by the ideas of Philip Crosby (3) which were being discussed elsewhere in ICI, decided to embark on a Total Quality Programme using Crosby's materials and techniques.

The programme began with the commitment of senior managers to the principles of Total Quality and then spread throughout the work force in a series of Education programmes aimed at ensuring that every member of the company understood these principles and was able to apply the techniques in his or her own area of operation. From the outset the effort of senior managers was aimed at ensuring that TQM would become a permanent part of the culture and not just a flavour of the month. Ensuring that the training of employees was done by line managers and not outside consultants helped to add weight to the message of commitment.

The education stage was quickly followed by projects within and across departments. These projects were designed to resolve the recurring issues which cause time to be wasted at every stage in the process. The company estimates that results were beginning to show within two years of the education process being completed. The shop floor operators were by this stage convinced that the process was worthwhile as the level of *'hassle'* in their daily tasks was being reduced.

TQM as a Continuous Survival Tool

In 1988 just as the benefits of TQM education were beginning to flow through, ICI decided to sell the business to another plastics company in pursuit of an ICI Corporate policy of concentrating on core businesses. After the sale was completed the new larger company became British Polythene Industries.

It was now clear to management that the techniques and systems which had so far characterised their change management process, required an even sharper focus if the effort which had been expended was to achieve meaningful results and the new company was to achieve its ambitions for growth.
The attainment of BS 5750 registration gave the added impetus required to the Quality programme. Registration was achieved in eighteen months. Initially the company has elected to have three monthly visits from the BSI Inspector as a method of self discipline. The next , more difficult stage will be to attempt to introduce some of the Quality concepts which have worked for British Visqueen into the rest of British Polythene Industries.

TQM as a Means of Survival

This company demonstrates the use of TQM principles as a basis for changing entrenched attitudes and improving the efficiency of the business. It shows that the window of opportunity which occurs when an organisation faces a

crisis can be used to effect massive cultural change which employees will commit to. The converse of this is probably that management has only one opportunity to use the unity of purpose created by such a crisis to change culture and practice. Getting it wrong probably condemns the organisation to a very difficult future and makes any further culture change attempts much more difficult to carry through.

The managers at British Visqueen believe that the process made the transition to the new owners significantly easier than it would otherwise have been by enthusiasm commitment and understanding which the TQM education programme had helped to foster in the workforce. They believe that much of the success for this lies in the project work which is part of the Crosby system(4).

There were manpower reductions and job changes as a direct result of the change in company ownership, but managers believe that these were able to be made against a background of rational judgement rather than employee suspicion of hidden agendas thus ensuring the success of the new project.

A direct result of the adoption of the TQM philosophy of putting responsibility as far down the operational chain as possible has been the elimination of one layer of management. Currently there is no role for traditional supervisors as the tasks which they used to perform have now been taken over by line operators themselves. The company has been able to either retrain the affected staff or to handle the required reduction by voluntary redundancy.

HYDRO POLYMERS NEWTON AYCLIFFE

The site on which Hydro Polymers operate has been in industrial use since the 1939-45 war. Polymer and plastic production was begun there in 1945 and has continued until the present day through a series of owners until the site was taken over by the Norsk Hydro group along with two other similar plants in the UK.

In the 1980's competition for polymer and other plastic base products became intense and only those plants which operated from a low cost base and produced consistently high quality product were likely to survive. The plant at Newton Aycliffe had a history of clear job demarcation and of strong unionisation with a management structure typical of that which existed in many other UK chemical companies. Multi-layered and organised into departmental function groups the result was effort being directed inwards to inter-departmental strife rather than outwards to fight the competitors who were attacking the marketplace. Added to this, old established working practices and division between craft and process operators made for inflexibility in plant operation and left little scope for reducing costs.

The catalyst for change occurred in 1984 with the need to gain the parent company's approval for a major capital spend to upgrade the plant and secure its future.

The primary need was to make the major changes in working practices and renumeration systems required without the use of major cash inducements. The use of extra payments as a solution to this problem had been attempted by other companies in the chemical industry with no significant results, apart from an increase in overhead costs. Hydro management therefore, set themselves

the task of creating a new culture in which demarcation was removed and the ability to perform a job became the sole criteria of employee reward. This approach placed great emphasis on the training and flexibility of employees with the ultimate aim being to achieve a one status plant. Early in the process the company gave a firm commitment to all employees to move as rapidly as possible to this goal but everyone was aware that the process would be a long one. The final step into a single status site in fact, only took place in 1991 with the harmonisation of hours across all employees.

Managing the Change Process

The process of removing barriers to job flexibility began in 1984 in parallel with work to gain BS 5750 registration. A variety of approaches were assessed by management. After careful study Dr Deming's * (5) technique of Statistical Process Control was considered to have most to offer the company and this technique was used to make improvements to plant process performance.

A management reorganisation in 1989 provided the second catalyst for change. The results from SPC had been satisfactory but management found the remainder of Deming's philosophy held little to excite them and they began to look elsewhere for fresh inspiration.

They found it in the work of Dr Juran *(6) and, fuelled by this new approach, the company sought to use it to gain product quality and cost improvements and make them permanent. Goals for continuous improvement were set across the

* A description of the better known quality gurus and an outline of their various approaches to quality appears in Appendix B

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organisation and training programmes were begun to enable staff to take more control of their own jobs.

Alongside this a consultant was used to run a workshop for senior management to ensure their total commitment to the project as without support at this level the entire project would have been at serious risk. As well as gaining commitment to the philosophy senior managers were given training in the tools and techniques required to make the TQM initiative successful. Project teams were set up to address issues across most areas of administration and production and first line managers were encouraged to become involved in projects affecting their own areas of work.

Today the Quality Improvement process in Hydro Polymers is overseen by the Business Improvement Council which controls the entire process by authorising projects and allocating resources judged against a background of the overall company objectives and strategy. Functional Steering groups act as the first screen for all project ideas and, once the idea is approved, have the responsibility to ensure that each project is adequately resourced. Communication is seen as a key issue in the success of the programme and great efforts are made to keep staff informed of successes and of new initiatives.

Quality as an Agent for Evolution

The TQM process at Hydro Polymers has been used to drive a process of gradual evolution rather than as a short term fix for a crisis. It is based firmly on total commitment from the top level of management and constant communication to everyone in the company. It began as a process improvement activity in 1984 with some long term goals and it has taken nearly seven years to evolve into the structured approach in place today. The entire

activity has been driven from within the organisation by its own vision of the future and not by exhortations from external sources to achieve a formal registration of quality.

The view of the senior managers is that the process of winning hearts and minds is not complete,and perhaps never will be, but the effect on the culture and performance of the company has been immense and has enabled Hydro Polymers to survive and prosper in an industry where many of its competitors have failed.

COMPANIES IN THE EARLY STAGES OF TQM

TREES PARK VILLAGE NURSING HOME

Trees Park village is a residential nursing home but, measured by the criteria of patient and staff numbers (132 full time staff, 30 "bank" nurses and 340 care assistants) it is the equivalent of a medium sized District Hospital. It has continued to expand since it was founded in 1980 with the objective of offering high quality residential care in single room accommodation with full medical and nursing support for each resident.

It operates within a conventional staff hierarchy of Matron, Sister, Staff Nurse, Qualified nurse and Care Assistant.

TQM as a Route to Product Differentiation

The nursing home has to offer a unique product if it is to survive in an increasingly competitive environment. In the case of Treespark the unique product is the consistently high level of care and personal attention given to residents. Maintaining this across the large number of staff required to run the home focused the attention of the Matron on ways of ensuring that the maintenance of standards became part of the ethos of being a Treespark employee thus ensuring that the home maintained its position of providing the best care possible for its clients. She came to the conclusion that the best method of achieving her objectives was through a programme of staff training. The process began with a review of the standards which Trees Park was prepared to be judged on. These were translated into physical specifications for the home itself and into standards to which the staff would operate. It was decided that as a first stage all nursing staff should possess a formal nationally recognised qualification in care of the elderly. Those staff who did not have such a qualification were trained in an arrangement with the local Polytechnic in a programme designed to have all staff qualified within eighteen months. Skill training for care assistants was now defined and a training programme put in place.

Development into TQM

The training programmes had ensured that Trees Park would have a high technical standard but it was now clear to the Matron and managers that more than technical excellence would be required.

Discussions with Durham TEC suggested that the TQM approach to running an organisation might be the sensible next step and so in 1990 a TQM training

programme was begun with a grant from Durham Training and Enterprise Company.

The matron was concerned to ensure that all staff were fully aware of the reasons for the programme and was at pains to ensure that the communication about the exercise was well done. She decided that the only way to do this was to talk individually to each staff member to explain the programme and answer any questions which they might have. This method of communication was extremely costly in terms of her own time but it has been amply repaid by the co-operative atmosphere which it generated amongst the staff.

Training was as interactive as possible and attempts were made to ensure that it was not seen as some kind of an imposition on staff. After the initial training period teams were formed to find solutions to problems which had been identified by staff.

The programme is still, in TQM terms, in its early stages but there have been encouraging results to date. Information flow has been improved for example through the introduction of a technical memo system to keep staff up to date with important technical information which affects their jobs.

A training programme on telephone technique for all staff has seen better internal communication and has improved the image which the home presents to outside callers.

Teams are forming in each work area and all staff have begun to participate in measuring and monitoring their work. The feeling of belonging in a successful team is being developed and it seems clear that the target of improving patient care whilst holding costs down below comparable levels in the NHS will be achieved.

TINSLEY TRAILERS

The company builds and repairs trailer units for heavy goods vehicles. All of the parts required to build each trailer are purchased from outside sources and are assembled by a workforce of welders, fitters and painters. In all sixty people are employed in the company.

Tinsley Trailers had been run from its inception on conventional lines, with a clear division between management and shop floor labour. The appointment of a new General Manager coincided with the decision to implement TQM in the parent group (DSRM) and a TQM programme was introduced into Tinsley Trailers with the objective of transforming the management style and thus the performance of the company.

TQM Implementation.

Not surprisingly for an engineering company the implementation of the programme followed a fairly formal and disciplined route . The six senior managers who ran the operation spent a weekend away with consultants to discover for themselves the principles of TQM and the process which was to be used to implement it into the company. The weekend also served to generate commitment for the project amongst the group.

A second week end programme was conducted for supervisors and people in key positions; again with the objective of creating an understanding of the principles of TQM and generating commitment to the process.

Training of the rest of the Tinsley Trailers team was carried out by some of the staff who had attended the initial weekends and had been trained as TQM trainers.

Training was spread over nine weeks at one day per week and was done in cross functional groups to increase communication and to ensure that everyone realised both that they were not alone in having problems and that their actions could cause problems for other people.

As the training process progressed Quality Improvement Teams were set up to address issues which staff had raised and a Quality Steering group was set up to oversee the process. Each of the Quality Improvement Teams responded to the Steering Group through their chairman.

Maximum publicity was given to every success to encourage others.

Has TQM delivered any Benefits?

Despite the early stage of the TQM process in Tinsley Trailers it is possible to see indications of changes taking place in the business. The initial reaction of the workforce varied from "another seven day wonder" to "this is a way to dismantle the suggestion scheme and get ideas for nothing from the workforce" but this slowly changed and they are now whole-heartedly behind the concept.

Evidence of success comes form the delighted reactions of customers who find the finish of their trailers far exceeding their expectations. Potential customers , for example, are now encouraged to walk along the production line and sell themselves a Tinsley Trailer by talking to the workforce. It is interesting to reflect that, at the time at which this visit was made, another trailer manufacturer had just been declared bankrupt claiming that the tough

trading conditions and low prices had been the reason for the failure. The contrast with the team at Tinsley was quite dramatic.

DARLINGTON SIMPSON ROLLING MILLS (DSRM)

This is the parent company of Tinsley Trailers. The business of iron founding or metal casting has been carried out on this site for well over a century. The present company was formed in 1935 and manufactures rolled steel sections in standard sizes as well as to customer order.

During the last decade the workforce has shrunk by around two thirds to the present total of 400. Despite the need for change of some sort the business continued to be run along traditional lines with clear demarcation of functional roles and a hierarchical management structure. The old habits of tough, traditional, heavy industry appeared to be impossible to shift.

The Beginnings of Change

A new Managing Director was appointed in 1989. He had a clear vision that the business had to change from a production led to a market led focus with the efforts of every employee being directed at satisfying the customer's needs.

The process began with a survey of the company both internally and externally to provide a benchmark to measure future progress. The survey revealed disturbing things not only about the way in which the company operated internally but also about the way in which the company was perceived by its customers. The senior management group was involved in the debate around

the results of the survey which led to the decision to introduce Total Quality Management to the organisation.

The consultants who carried out the survey were retained to implement the TQM programme beginning with training in the principles of Quality for all of the senior managers in the company. The Quality Initiative was based on the philosophy of Dr Deming * (7) and sought to gain agreement in three key areas;

1 Total Commitment to the Process

2 Total belief in TQM

3 A determination to improve

Apart from the training given to senior and middle management all of the TQM training in DSRM was done by DSRM staff selected and trained by the consultants.

Workforce training was designed to allow shop floor staff to raise the problems and issues which worried them. The problems were then collated into common cause groups. The aim was to switch " blame " for any problem onto the system and away from the individual. In this way solutions could be found in an atmosphere of co-operation rather than one of confrontation.

Quality Improvement Teams were set up to tackle the problems identified through this process.

* A description of the better known quality "gurus" and an outline of their various approaches to quality appears in Appendix B

The Outcome of the Process.

It took a considerable amount of time and effort to overcome the initial suspicion of staff that TQM was a quick fix and not a long term activity and indeed one year into the process there remain many areas of suspicion and cynicism at all levels in the organisation. An often voiced criticism was that TQM was a device which management were using to transfer their responsibilities to the workforce without any extra financial reward. Despite the success which have been achieved and the strenuous efforts which have been made to communicate these there is disappointment that TQM has not yet become the natural operating philosophy of the company.

There have however been some steps forward; self inspection on the production line has been established and there is a greater awareness of the needs of the customer than there was before. The major obstacle yet to be overcome, remains those attitudes of the workforce which are the result of long years of tradition. Management believes that only constant effort over a long period of time will moderate these entrenched views.

DOES TQM OFFER A REAL WAY FORWARD FOR ALL?

Any evaluation of a management technique must revolve around the benefits which it can offer to an organisation. The criteria used to identify such benefits are often difficult to set and this is particularly true for techniques such as Total Quality Management which are not restricted to just one area of activity such as sales or production but attempt to offer a holistic approach to the problems of management.

The group of companies surveyed offer an interesting variety of answers.
The first point to note is that it is not simply that these companies have now decided that they must produce quality products, none of them would ever argue in support of or believe that they had, a policy of producing poor quality goods. Poor quality, even at the lowest price, is not a good foundation upon which to build long term business.

The simple need to survive, or turn a loss into a profit clearly were motivators for some of the companies, but many single purpose techniques of cost reduction or efficiency improvement can deliver short term profits with less effort than Total Quality Management demands. Indeed all of the companies interviewed would claim that TQM, in the short term, has cost them money to introduce and demands much management time to look critically at systems and manage the ideas for change which are passed to them from their Quality Teams.

So what has made these companies feel that the effort which they have put into the process is worthwhile and has persuaded them of the need to wait for a considerable period of time before they can see the results of their efforts reflected in their balance sheets?
The common theme which emerged from the interviews was a realisation that the markets in which all of the companies were operating were characterised by constant and continuing change and that those companies who wished to stay in business had to be able to adapt to this change and to use it for their own good. There was also a feeling that the present way of operating was not good enough to cope with the organisational pressures of continuous change.
In some cases the recognition of the need to change was sharply focussed by an impending crisis or some other external pressure. Hydro was faced with the need to attract parent company funding or be closed; Derwent Valley had to

adopt the stringent quality codes of Marks and Spencer or fail to achieve the business growth which the founders had hoped for; British Visqueen was faced with the need to improve efficiency to be attractive to some potential buyer in order to secure a future; DSRM were shocked by the results of their customer survey. Only 3M which has been into Quality and customer satisfaction almost from its inception had no need of a crisis to spur the drive for Continuous Improvement. It is a good example of a Western Company which has developed its management techniques and ideas on a par with the Japanese and demonstrates that TQM has had its followers and successes outside Japan.

The speed of success evidenced in the various cases is interesting. Those in which the attention of the entire workforce was concentrated on survival such as British Visqueen moved relatively rapidly in the space of three to four years to a point where the initiative was clearly seen as successful both by management and workforce alike. Hydro Polymers had a long term goal of uniform terms for all employees which helped to give the workforce a target to aim for. In these companies both groups appear to have gained; the workforces have more responsibility for and involvement in, their future and the managers have gained an increased freedom to develop future strategy based on customer satisfaction and market development without having to divert energy to fight internal battles.

Both of these companies have been heavily involved in the process of Continuous Improvement for around five years or more. Their success record is impressive whether it is measured in productivity, profit or growth terms but most of all in the recognition of the contribution which every employee can make.

Some organisations in the sample group moved towards TQM as a direct result of the belief of senior management that change was needed.

Here the barriers to success are greater, after all what inbuilt motivation can there be to change when things appear to be completely satisfactory as they are?

The success which these organisations have had appears to be characterised by strong and active leadership. The Matron at Treespark devoting long hours to talk personally to all staff to explain the thinking behind the new initiative. The Managing Director at DSRM being prepared to commit resources to a detailed survey of the company's achievements and performance, as viewed both by their customers and workers, to provide a benchmark from which he could challenge his managers to improve.

As yet both of these organisations are in the early stages of the process but they believe that they are already benefiting from the discipline which the process of Total Quality imposes on individuals.

It would appear therefore that companies will choose to adopt Total Quality Management because of a deeply held belief that the organisation requires to change its operating methods and increase its flexibility of response to changing market demands. It is seen as more than just a cosmetic cultural change with a recognition that the philosophy of Total Quality demands its followers to set ever more challenging targets and then develop ways to achieve them. It is also clear that the successful implementation of Total Quality Management in an organisation will be most likely to happen when it is founded on a common recognition across an organisation of the need to change current practice, a clearly demonstrated commitment from senior management to lead the change and patient and continuous communication with everyone at every stage in the process. Success is measured by the level of understanding and commitment by all employees in an organisation to look for ways to improve customer satisfaction through doing their jobs in a better way.

This part of the work suggests that TQM is the way forward for organisations which wish to grow and develop in today's changing markets. Some hard financial evidence about the benefits of working to TQM principles comes from two of the companies interviewed. Derwent Valley Foods has gone from an organisation founded in 1982 employing 16 people to one which employs over two hundred in 1992 and has been sold (late 1992) to United Biscuits for #24M. British Visqueen which has moved from a loss of #3M in its last year of ICI ownership to a profit of #3M in its second year of private ownership without a significant reduction in employees.

Apart from these two companies direct comparative financial evidence is not available. All of the companies interviewed, however are convinced of the benefits which the adoption of TQM either has or will bring and have enormous faith in the process. Hydro Polymers for example , while not presenting any financial data, is adamant that without the changes brought about by their adoption of Quality principles the business would not have expanded and indeed may well have closed down.

It would not be correct, of course, to use the data from companies alone either as evidence that TQM is successful or is being widely adopted. The results are flawed in that ,although the sample is drawn at random, the list from which it was taken is not. It consisted of names of companies who had all benefited from Durham Training and Enterprise Council's grant assistance to make changes happen in the way in which the companies were managed. It was therefore decided to undertake a survey of companies in the North of England to attempt to gather quantitative data on the level of adoption of Total Quality Management and the degree of success or otherwise which companies using it have found.

References Chapter Five

1 Crosby P B (1979) Quality is Free, The Art of Making Quality Certain, New York: McGraw-Hill

2 Crosby P B (1985) Quality Improvement through Defect Prevention, Winter park Florida, Philip Crosby Associates.

3 Crosby P B (1979) Quality is Free, The Art of making Quality Certain, New York: McGraw-Hill.

4 Crosby P B (1985) Quality Improvement through Defect Prevention, Winter Park Florida , Philip Crosby Associates

5 Deming W E (1982) Out of The Crisis, Cambridge, Cambridge University Press

6 Juran J M (1951) ed Quality Control Book, New York: McGraw-Hill, 1st Edition.

7 Deming W E op.cit.

CHAPTER SIX

The North of England TQM Survey

In order to investigate the extent to which the principles of Total Quality Management discussed in the previous chapter have been adopted in industry and to attempt to identify the key change processes which are likely to result in benefits being gained from TQM it was decided to conduct a postal survey of companies in the North of England. A similar survey had been carried out in Scotland in 1990 by the then Scottish Development Agency and it was decided to use the same questionnaire in England because it was felt that it offered an opportunity to see if any change in approach to Quality could be discerned from a comparison of the two sets of answers. There was also a wish to repeat the same survey again in Scotland in 1993 as part of a data gathering project at the Centre for Quality and Organisation Change at Durham Business School. The survey questions are shown in Appendix A.1

The original survey sought to gain information on a variety of key issues which reflected a Total Quality Management Approach in an organisation's management philosophy. A small number of the questions were not of direct interest to the current study but to ensure some form of continuity it was decided to repeat the original survey verbatim, with two additional questions. One concerned the involvement of marketing departments in the process and the second asked the respondents to rate the value of the benefits gained from TQM on a scale from 1-10.

The original Scottish survey was sent to companies who were members of the Scottish Quality Groups and covered a cross section of company size and type. The need to contain the costs of the North of England survey and still obtain sufficient data to be meaningful dictated that the target "market" had to be companies most likely to have considered using TQM as a means to improve company performance. Discussion with the DTI suggested that these companies were more likely to be large and engaged in manufacturing operations of some kind. The mailing list was thus restricted to companies who employed more than 300 employees and were classified as commercial organisations ie; engaged in manufacturing or in providing a service. No public bodies were included in the database.

Again as a method of containing the size of the sample companies had to have their base somewhere between the rivers Humber and Tweed on the East coast and the rivers Mersey and Solway on the West coast. A database of around 1500 companies was generated and the questionnaire sent out in April 1992 to the Chief Executive Officers of these companies. The returns were made either the CEO or by the person in charge of the TQM initiative in the company.

General Background Findings

There is no data available to allow a comparison of the response with the breakdown between manufacturing and service companies in the original target list for mailing. This makes it difficult to claim that the data is a valid representation of the North of England industrial scene ,however it is probable that, given the history of manufacturing which exists in the North the majority of the companies on the list would be engaged in manufacturing rather than in one of the service industries.

The analysis therefore, while accurately reflecting the characteristics and issues raised by the sample, can only be taken as an indicator of the overall experience of TQM.

A response rate of 14% was obtained with 209 companies completing the form for analysis. The majority of the replies (63%) were from companies claiming to be engaged in manufacturing with 29% of the replies from companies claiming to be service industries and 8% from companies who classified themselves in other categories for example they were engaged in both manufacturing and service. In the data analysis those companies which claimed to be both manufacturing and service are treated as manufacturers.

The survey displayed a range of experience with the concept. Just 1% of the respondents admitted that they were unfamiliar with the concept while 7% claimed to have heard about it but had yet to decide whether they would progress any further with the concept. A further 11% of the respondents were actively considering the concept but had yet to begin the process. Almost one third (33%) of the respondents had decided to adopt TQM and were in the learning stage with the remaining 48% claiming to be in the process of implementing it.

The data gathered from the detailed questions on the experience with TQM has been analysed in three ways.

1 A description of TQM as seen by the respondents.

2 A comparison between the results of this survey and the preceding Scottish one.

3 A search for descriptors which could identify the characteristics of successful TQM companies.

The detailed analysis of the data is presented in the following chapters.

CHAPTER SEVEN

Total Quality Management in the North of England

The remainder of the analysis of the survey is carried out on the data supplied by the 148 companies which claimed to be involved with Total Quality Management to a greater or lesser extent. All percentages relate to these respondents and not to the total number of forms returned. The numbers at each heading refer to the number of the question in the survey shown in detail in Appendix A.

3 LENGTH OF EXPERIENCE OF TQM

A total of 148 respondents claimed 'hands on' experience of TQM. Twenty three percent (23%) of the sample claimed to have more than three years experience of TQM. The longest experience quoted was a manufacturer who had been implementing the process for almost ten years.

One quarter of the sample had between one and two years experience and the remaining 50% of the respondents who claimed some experience of TQM had only been actively involved for one year or less.

4. INVOLVEMENT OF DEPARTMENTS

Respondents were asked to define the areas in their organisations in which TQM had been introduced. Some 69.6% claimed that all of their organisation were involved in TQM, 18.2% said that Production only were involved and 11.7% reported that only the commercial areas of the organisation were involved in a TQM programme.

5 INVOLVEMENT OF EMPLOYEES

The respondents were asked to assess the percentage of employees who were involved in the TQM programme.

Overall only 37.8% reported that all of their employees were involved in a TQM programme. Twenty percent claimed that between 50 and 90% of employees were involved while 41.5% of the companies responding claimed that less than 50% of their employees were actively involved in a TQM programme. There were significant differences between sectors in this area. Forty percent of manufacturing companies reported that they had a one hundred percent involvement against seventeen percent of service companies. This undoubtedly reflects the fact that the average manufacturing company has been involved in the Total Quality process for longer than the average service company. This does not of course,mean that manufacturing companies understand the concept of TQM any better than service companies.

6 TRAINING DAYS

Respondents were asked the number of days put aside for TQM training per employee per year. Seventy two per cent (72%) of the respondents indicated that they trained for five days or less per annum. Twenty five percent (25%) claimed to train between 6 and 10 days per annum. Only 2.7% indicated that their staff received 10 or more days training.

Service companies tended to spend more days training than manufacturing companies, with 34% indicating that they spent between 6 and 10 days per annum training staff. There was no significant difference between service and

manufacturing companies in the percentage training their employees for more than 10 days.

7 CORPORATE VISION STATEMENT

The majority of companies have a corporate vision statement. There were no differences in response between manufacturing and service companies with approximately 70% responding yes in each category.

8 CORPORATE MISSION STATEMENT

The response to this statement was even more emphatic than to the previous one with 86% of the total respondents claiming to have one. There was a minor difference between the two sectors with manufacturing companies claiming 88% had a mission statement while only 84% of the service companies claimed to have one.

Those companies which had mission statements were asked for the length of time for which the mission statement had been issued. Forty percent (40%) had published their Mission statement in the previous twelve months,a further thirty seven percent (37%) had published it no more than three years previously while twenty three percent (23%) had in place a mission statement for more than three years.

Only 5.4% of the total companies surveyed had neither a mission or a vision statement. Of the total respondents 22.9% had no vision statement but had a mission statement and 7.5% had a vision statement but no mission statement.

It would appear therefore that most companies have found benefit in creating a written description of their activities in a mission statement but the concept of describing their future ideal state in some form of vision statement is not as widely recognised. There is also the possibility of confusion as to the difference between the objectives of the two types of statement and that many companies may use the definitions loosely. Only 63.5% of the companies replying claimed to have both types of statement and therefore may truly understand the difference between them.

Only 72% of those companies who had been involved with TQM for less than 2 years had vision statements and only 68% of those who had been in TQM for over three years claimed to have a vision statement.

9 SENIOR MANAGEMENT INVOLVEMENT

The vast majority of companies 92.6% reported that senior managers were involved with TQM projects. There was no significant difference between sectors or length of time in TQM.

10 TQM CO-ORDINATOR

Again the vast majority of companies (80.4%) had appointed a person to co-ordinate the Quality work in the company. There were no significant differences between sectors or by time involved.

11 PERCENTAGE OF EMPLOYEES WITH QUALITY TARGETS

This question attempted to discover whether companies had devised separate targets which related to Quality issues for their employees.

There was a wide response to this question with only 16% claiming that all of their employees had quality based targets to achieve. Twenty three percent (23%) said that between 50% and 90% of their employees had such targets, 28% said that between 10% and 49% had quality targets and 33% claimed that less than 10% of their employees had quality targets.

The only difference between the business sectors was that twenty three percent (23%) of service companies claimed total involvement of employees in quality targets compared to only 12% in manufacturing companies.

12 EXTERNAL CUSTOMER SURVEY

Surprisingly, since TQM is about satisfying customer needs, only 43% of respondents had surveyed their external customers. There was little significant difference between the manufacturing sector at 43% and the service sector at 46% but there was a significant difference between the length of time in TQM and customers surveyed with 62% of those companies who had been involved in TQM for more than two years claiming to survey external customers compared with 43% of those companies who had just begun the quality process.

There was a significant difference in the perception of benefits gained from TQM between those companies who surveyed their external customers and those who did not.

The final question of the survey asked companies to rate the benefits which they had received from TQM on a scale of 1-10. Cross tabulating the results of

that question with the external customer survey responses shows that 78% of those companies who surveyed their external customers rated the benefits which TQM had brought them between 5 and 10. Only 55% of those companies who had not surveyed their external customers rated the benefits which they had received from TQM between 5 and 10.

13 SURVEY OF INTERNAL CUSTOMERS

Some 65% of companies had surveyed their internal customers. As in the case of external customer surveys the proportion of companies rose with length of time in TQM from 55% for those just beginning to 79% for those companies who had been practising the philosophy of TQM for more than three years. There was little difference in the frequency with which surveys were done. Twenty six percent of respondents reported surveying their internal customers more than once per year.

Crosstabulating the responses with the responses to question 33, which asked about the level of benefits gained, 71% of the companies which had surveyed their internal customers, rated the benefits which they had gained from TQM 5 or more on a score from 1-10 against 26% of those companies who did not carry out any survey.

There was no difference between the percentages surveying internal customers between the manufacturing and service sectors.

14 PERCENTAGE OF CUSTOMERS DEMANDING TQM

The response to this question indicated that customers are not yet demanding evidence of TQM activity in their suppliers in significant numbers. Sixty two percent of the respondents indicate that less than 5% of their customers would demand that a TQM system was in operation as a condition of ordering.
Six percent of the respondents did, however, claim that more than 95 % of their customers were concerned with the existence of a TQM system in their company.
No significant differences were identified when the data was analysed by sector but there was a suggestion that there might be a trend to a higher proportion of TQM demand dependant on the length of time for which companies had been operating to a TQM philosophy. The evidence is not however significant despite the obvious attractiveness of the theory.

15 PERCENTAGE OF CUSTOMERS BUYING ON LOWEST BID

This question asked the converse of the previous one and it would have been expected that the results would be an mirror image of the previous set.
Fifty four percent (54%) of the respondents claimed that more than half of their customers still made the purchase decision on the lowest bid while only 14% of companies claimed that all of their customers bought solely on the criteria of the lowest bid
Interestingly there was a difference in response between the manufacturing and service sectors in that significantly more service companies (27% compared with 16%) than manufacturing companies claimed that over 95% of their customers still made their purchase decision on the basis of lowest bid.

Overall the service companies were more pessimistic about the customer's ability to base his purchase decision on anything other than price.

There was no apparent difference between responses when analysed on the basis of the length of time for which companies had been operating a TQM philosophy.

However when the data was analysed by those who had surveyed their customers and those who had not, some significant differences did begin to emerge. Twenty five percent (25%) of companies who had not surveyed their external customers reported that 95% of their customers bought on lowest bid compared with only 10% of those companies who had carried out a survey of their customers.

16 ACTIONS TO ENABLE IMPROVEMENT TO HAPPEN

Respondents were given a list of six items and asked to mark those which they used in their improvement programmes. The total responses were as follows;

Design for Quality improvement	52%
Plan for Quality improvement	80%
Train for Quality improvement	84%
Monitor for Quality improvement	74%
Set targets for Quality improvement	61%
Measure Quality improvement	74%

Analysing each factor against the sector from which the respondents came showed that in all cases except training, the manufacturing sector had a significantly more positive response to using the techniques to help improve quality in their companies.

Comparing the responses with those to the internal customer survey there is a difference in every case showing that companies who claimed to survey their internal customers were more likely to adopt these measures as part of their improvement process. In some areas the differences were very marked. For example 83% of companies who surveyed their internal customers used measurement to help the improvement process as against only 57% of those companies who did not survey their internal customers. The smallest difference 52% v 48% occurred in the question about design for improvement. This might have more to do with the lack of definition of the question, than with the difference in approach between the two groups.

17 MEASUREMENT OF THE COST OF NON CONFORMANCE

Sixty two percent (62%) of the respondents claimed to measure the cost of non conformance. There were differences between the two sectors with manufacturing having 64% of respondents claiming to measure the cost of non conformance while only 47% of service companies claimed to do so. Measured against length of time in TQM there was a clear indication that companies newly into the concept had not yet attempted to measure the cost of quality. Only 48% of the companies who were either just starting or had less than one year of experience claimed to measure the cost of quality against around 70% of companies who had some experience of the TQM philosophy.

Companies were asked to put a value on the Cost of Quality. Forty four percent (44%) of respondents believed that the cost was less than 10% of their turnover; thirty six percent (36%) believed it to be between 10 and 19% of turnover while a further nineteen percent (19%) believed it to be between 20

and 30% of turnover. One percent of the respondents believed it to be more than forty percent of turnover.

Respondents were asked to rank three factors in order of importance of their contribution to the cost of quality.

The factors were- re-work, poor communications and bad planning. Thirty four percent of the respondents thought re-work was the major contributor to the cost of quality with 25% believing that poor communication was the most significant factor and 23% thought bad planning was the key contributor. Sixteen percent listed other factors. The companies who had not measured the cost of non conformance in their own organisations held different views on the importance of the three factors from those companies who had carried out some measurement. The largest percentage (28%) thought that poor communication was the major cause. Forty nine percent of those companies who had measured the cost of non conformance claimed that re-work was the major cost factor.

18 SURVEY OF EXTERNAL SUPPLIERS

Of the total replies received 64% said that they had surveyed their external suppliers.

There was a difference between sectors with 67% of the manufacturing sector claiming to have surveyed external suppliers compared to 54% of service industries. A similar difference is observed with time. Seventy four percent (74%) of the companies who had adopted TQM for more than 3 years surveyed their external suppliers compared with only 52% of those companies less than one year into the adoption of TQM.

Crosstabulating the results with the respondent's views of the benefits which they had derived from TQM showed that (72%) of those companies who

surveyed their external customers claimed a benefit score of 5 or more compared with only 52% of those companies who had not surveyed their external suppliers.

19 SINGLE SOURCING

Only 27% of the respondents claimed single sourcing as a significant policy. Thirty percent (30%) of the manufacturing sector and 20% of the service sector claimed to be using single sourcing.

Analysis of the level of benefits obtained from TQM between those companies who practiced single sourcing and those who did not showed that there was no difference as precisely the same proportion (65%) of the companies who operated single sourcing and those who did not claimed that TQM had delivered benefits of 5 or more.

20 SURVEY OF INTERNAL SUPPLIERS

The respondents were almost equally split between those companies who had surveyed their internal suppliers (50.7%) and those who had not (48.6%).

Examination of the results by sector shows that surveying of internal suppliers was more common amongst manufacturing companies (54%) than it was amongst service companies where only 43% reported surveying internal suppliers.

There was also a difference according to the length of time for which companies had been involved with TQM. Only 42% of those companies who were either just starting or had been involved for less than one year claimed to have surveyed their internal suppliers compared to 65% of those companies who had been working to TQM principles for three years or more.

Benefits gained from TQM also seemed to be biased in favour of those companies who had carried out a survey of their internal suppliers, where a massive 77% reported benefits of 5 or more compared to 52% of those companies who did not survey their internal suppliers.

21 REDUCTION OF EMPLOYEE TURNOVER

There was an overall view that TQM had not reduced the level of employee turnover with only 14.9% of respondents claiming that it had. There was no variation between sectors but there was a significant difference when the response to employee turnover was plotted against time. Twenty eight percent (28%) of those who had been involved with TQM for 3 years or more believed that there was a reduction in employee turnover compared with only 8% of those companies who had been involved with TQM for one year or less. Thirty two percent (32%) of those companies who had been involved with TQM for two years reported a reduction in employee turnover.

There was a link between a positive response to reduction in employee turnover and the perceived benefits gained from TQM. Ninety percent (90%) of the companies who reported a reduction in employee turnover had rated the benefits from TQM at 5 or more. Of the total number of companies who claimed benefits of 5 or more from TQM 27% of them also claimed that employee turnover had reduced.

22 REDUCTION IN EMPLOYEE ABSENTEEISM

As with employee turnover the majority response (81%) said that absenteeism had not reduced. There was no difference in response between sectors.

The longer that a company had been involved with TQM appeared to reduce the level of absenteeism. Fifty two percent (52%) of the companies who had been practising TQM for 3 years or more claimed that absenteeism had reduced compared with 10% for those companies who had been involved for one year or less.

This rose to 19% for companies in the second year of TQM involvement. Again there appears to be link between the degree of satisfaction with the benefits gained and a reduction in absenteeism. In this case 88% of the companies who reported that absenteeism had been reduced also reported benefits of 5 or more from adopting TQM. Of the total number of companies reporting benefits of 5 or more 25% of them also claimed a reduction in absenteeism.

23 INCREASED SAFETY

Forty six percent (46)) of the respondents claimed that safety had been increased as a result of the adoption of TQM techniques. Perhaps surprisingly only 44% of manufacturing companies found that safety had improved compared with 48% of service companies. There was however a steady increase relative to the length of time with which companies had been involved with TQM. The positive response to an increase in safety rose from 34% in companies with one year experience or less through 54% for those with up to two years to 57% for companies with three or more years experience in TQM. There appeared to be a link with the degree of benefit obtained from TQM with 77% of those companies who believed that safety had improved registering 5 or more on the benefits gained scale against 55% of those companies who thought that safety had not improved.

Presented in another way 53% of the companies who believed that they had received benefits of 5 or more also claimed that safety had improved.

24 INCREASED EFFICIENCY

Sixty six percent of the respondents overall reported that efficiency had improved. The differences between sectors was small with 69% of the manufacturing group claiming improvement against 62% of the service group. Analysing the data against the length of time in TQM the improvement with time is again demonstrated. In the group with less than one year of experience only 52% believe that efficiency had increased. This rises to 81% for the group with up to two years of experience and to 83% for the group who have operated with TQM for more than three years.
Comparing the responses against the benefits claimed from TQM 78% of those companies who claimed benefits of 5 or more reported an increase in efficiency compared with 50% of those companies who found no increase in efficiency.

25 INCREASED PRODUCTIVITY

Fifty eight percent (58%) of the respondents claimed that productivity had increased as a result of their TQM activities. Significantly more manufacturing companies 63% claimed an increase in productivity than those in the service sector where only 51% claimed any increase in productivity.
As might be expected there is a significant increase in response with time. Forty two percent(42%) of companies with less than one year's experience of TQM saw an increase in productivity but this figure rose to 64% for companies

with up to two years experience and 89% for companies with three years or more experience of TQM.

Analysis of the companies claiming benefits from TQM of 5 or more showed that 79% of those companies who had experienced an increase in productivity were in this sector compared with only 44% of those companies who had not been able to recognise any increase in productivity.

26 THE EXISTENCE OF A STEERING GROUP TO MANAGE THE TQM PROGRAMME

Seventy six per-cent (76%) of the respondents claimed that they had a steering group in place to mange the programme.

Manufacturing companies were significantly more likely to have steering groups (87%) than those in the service sector where only 60% reported having a steering group in place to manage the TQM process.

Analysis by the length of time in TQM showed that the difference was occurring only in the first year of experience with TQM where only 57% reported a steering group in place. This rose to 83% in year two and remained constant for the long term TQM group at 83%.

Seventy per-cent (70%) of the group of respondents claiming a benefits gained rating of 5 or more, said that they had a steering group in place. The non steering group sector were split 50/50 around the 5 score.

Only 17% of the total respondents claiming a benefits gained score of 5 or more did not have a steering group.

27 THE INCLUSION OF TOP MANAGERS IN THE STEERING GROUP

Once more the majority of the respondents (76%) claimed that top management were involved in their steering group. Manufacturing companies had 81% of their groups with top management involved, while service companies had only 68% of their top management involved with their Quality Steering Group. Comparing the responses of the companies who had involved their top management in the process with their responses on benefits gained, 71% of those respondents who had involved top management also claimed benefits of five or more. This compared with a score of only 44% from those companies who had no involvement of their top management. Analysing the data still further and examining the relationship between the sectors against benefits gained and top management involvement shows that in the manufacturing sector 50% of those companies who did not involve their top managers claimed benefits of five or more compared with 84% of those manufacturing companies who did involve their top management.

The comparison in the service sector shows that only 36% of companies who did not involve their top management claimed a benefits gained score of 5 or more compared to 67% of service companies who had involved their top management. There was a trend over time for the percentage of companies with top management involvement to increase, from 70% in those companies within their first year to 88% for those companies who had been involved with TQM for three years or more.

28 INVOLVEMENT OF STAFF IN STEERING GROUP

Fifty seven percent (57%) of the respondents involved senior management in the steering committee, 30% involved supervisory staff and 20% involved front line staff in their quality steering groups. Twelve percent of the respondents said that they had union representatives on the steering group.

There were no significant differences between sectors and the involvement of middle managers, supervisors, front line staff or unions on steering committees. Analysis of the benefits claimed by the types of staff involved in the Quality Steering groups revealed that there was a surprisingly small differential associated with the involvement of middle managers in the steering group. The largest difference occurred with the involvement of front line staff where 83% of the companies who involved front line staff in their steering group rated the benefits gained as 5 or more compared with 60% of those who had not involved front line staff.

29 ACHIEVEMENT OF A QUALITY ASSURANCE STANDARD

Overall 73% of the respondents claimed that they had obtained some recognised Quality Assurance standard. This varied from 62% amongst those companies who had just begun to work with TQM principles, to 91% of those companies who had been working in this way for three years or more. Overall 84% of the manufacturing sector had obtained a recognised standard compared with just 43% of companies in the service sector.

The respondents who had attained a recognised standard were equally divided between BS 5750 part 1 and part 2 with around 16% having obtained ISO 9002.

Seventy percent(70%) of those companies who had obtained some QA standard reported benefits gained from TQM as 5 or more compared with companies who had not gained some form of official QA standard.

Eighty eight percent (88%) of those companies who had been involved with TQM principles for three years or more had some type of QA Standard compared with 66% of those companies who had been involved with TQM for 2 years or less.

29 PHILOSOPHICAL APPROACH

Crosby was the most familiar " quality guru " with 55% of the total respondents claiming to be aware of him. Deming was next with 34% followed by Peters at 33% and Juran at 22%. Crosby was equally recognised by both the manufacturing and service sectors but Deming and Juran were considerably less recognised by the service sector. Both groups were equally aware of the work of Tom Peters. There was no difference between gurus when the results were crosstabulated with those respondents who rated benefits gained 5 or more.

30 APPROACH TO PLANNING

Respondents were asked to rate their company's approach to planning on a scale from one to ten where one represented a tendency for short term planning and ten represented a long term planning approach.

There were no differences between the sectors with fifty seven percent of manufacturing companies rating their planning as 5 or more compared with 52% in the service sector. There was a difference between the mean of the

planning scores (4.99 for manufacturing compared with 5.14 for service) but this is not statistically significant at the 5% level.

However there appeared to be a difference when the planning response was compared to time in TQM. Those companies who had been in TQM for three years or more had a higher mean score for planning (5.86) than those just beginning TQM (4.62). There was little apparent link between planning and benefits gained as 51% of the companies who rated benefits gained at 5 or more also rated planning at 5 or more.

31 INTERPERSONAL CLIMATE

Companies were asked to rate their interpersonal climate on a scale of 1-10 . A score of 1 indicated a competitive internal climate while a score of 10 indicated a very co-operative climate.

Overall 76% of the respondents rated their interpersonal climate as 5 or more. There was little difference between the sectors with seventy six percent(76%) of the manufacturing companies rating their interpersonal climate 5 or more as did 72% of service companies.

Eighty percent (80%) of those companies who had been involved with TQM for less than one year rated their interpersonal score 5 or more but 91% of the companies who had been working in a TQM manner for three years or more rated their interpersonal score at 5 or more.

Cross tabulated with the response to the level of benefits delivered by TQM, 66% of those companies who rated their interpersonal skills as 5 or more also rated the benefits gained from TQM at 5 or more.

Overall 56% of the total number of respondents rated both benefits and interpersonal climate at 5 or more .

32 APPROACH TO PROBLEM SOLVING

Respondents were asked to grade their company's approach to problem solving on a scale from 1-10 where 1 represented an approach based on assigning blame for the problem and 10 represented a approach to problem solving based on joint responsibility.

Overall 75% of the respondents rated their approach to problem solving as 5 or more leaving 25% who claimed that their approach to problem solving was assigning blame. Marginally more service companies (80% compared to 74%) claimed that their approach to problem solving was one of joint consultation rather than assignment of blame.

There was a difference in response when the groups were divided by the length of time for which they had been involved with TQM. Ninety one percent (91%) of the companies who had been involved with TQM for three years or more rated their organisations 5 or more compared with only 66% of those companies who had been involved with TQM for less than one year.

Seventy one percent (71%) of the companies who scored 5 or more on their approach to problem solving also rated the benefits which they had gained from TQM at 5 or more.

33 COMPANY STYLE

Respondents were asked to rank their company style on a scale between 1 and 10 where 1 represented a highly controlled approach to managing people while 10 represented an enabling approach.

Overall 68% of the respondents rated the style of their companies as 5 or more.

There was a difference between the responses of manufacturing and service companies with 70% of manufacturing companies rating the style as 5 or more compared with 61% of service companies.

Comparing the results with the length of time for which companies had been in TQM again displayed an improved rating from those companies who had been involved with TQM for three years or more. Eighty three percent (83%) of these companies rated style at 5 or more compared with 75% of those companies who had been in TQM for one year or less.

34 ATTITUDE TO CHANGE

Respondents were asked to rate their company's attitude to change on a scale of 1-10. A rating of 1 indicated that the attitude to change was static while a rating of 10 indicated a dynamic attitude to change.

Eighty nine percent (89%) of the respondents rated their companies as 5 or more. There was a small difference between sectors with 88% of the manufacturing sector reporting an attitude to change of 5 or more compared to 82% of the service sector.

There was a significant difference in the attitude to change when the comparison was made with the length of time for which companies had been involved with TQM. The mean score moved from 2.5 in companies starting out with TQM to 5.7 for those companies who had been involved with TQM for three years or more. Significantly sixty nine percent of the companies who rated their attitude to change as 5 or more also rated the benefits gained from TQM as 5 or more.

35 ATTITUDE TO FOCUS

Respondents were asked to rate their company's market focus on a scale of 1 - 10. A rating of 1 indicated an inwardly focussed company while a rating of 10 indicated a company very focussed on the external world.

Despite the low percentage who had claimed to have surveyed their external customers eighty nine percent (89%) of the respondents rated focus as 5 or more. Between sectors 93% of manufacturing companies rated their focus at 5 or more compared with 82% of service companies. There was a difference between companies when the results were analysed by time involved with TQM. Data from companies with one year or less in TQM showed that 83% of them rated their focus at 5 or more while 97% of those companies with three years or more experience of TQM rated their focus at 5 or more.
Seventy percent of those companies who rated their focus at 5 or more also rated the benefits from TQM at 5 or more.

36 BENEFITS GAINED BY THE ADOPTION OF TQM

Respondents were asked to rate the benefits which TQM had delivered against their expectations on a scale of 1-10.
A score of 1 indicated that no benefits had been found while a score of 10 indicated that all of the benefits expected from the adoption of TQM had been gained.
A majority of the respondents 65% rated benefits gained at 5 or more.
Seventeen percent (17%) of the total rated the benefits achieved as 1 and 1.4% of the respondents rated the benefits received as 10. Those respondents who claimed that they had not achieved any benefits from TQM were all in the first

year of their TQM programmes except for one respondent who had been working at TQM for 3 years or more.

There was a strong relationship between benefits gained and the length of time for which companies had been involved with TQM. Forty eight percent (48%) of those companies who had been involved with TQM for one year or less rated the benefits achieved against their expectations at 5 or more compared with 80% of those companies who had been involved with TQM for three years or more.

Seventy percent of the manufacturing companies who responded rated the benefits gained at 5 or more compared with 56% for the service sector.

Similarly 71% of those respondents who had surveyed their internal customers rated the benefits gained from TQM at 5 or more compared to 53% of those respondents who had not surveyed their internal customers.

Fifty six percent of those companies who had not achieved any recognised Quality Assurance standard rated benefits received from TQM at 5 or more while 69% of those who had obtained a Quality Assurance standard rated the benefits at 5 or more. Interestingly the only company to rate benefits received at 10 did not claim to have a QA standard.

Sixty nine percent (69%) of those companies who claimed senior management involvement rated benefits at 5 or more. Only 10 companies out of the 147 who replied to the survey claimed no senior management involvement and of these only 1 rated the benefits gained against expectations as 5 or more. The remainder rated benefits gained as 2 or less.

By contrast there was little difference in the benefits rating when this was crosstabulated against the involvement of middle management. Sixty percent of respondents who did not involve middle management in their steering group rated benefits gained at 5 or more against 69% of those companies who did involve middle management.

Analysing benefits gained with the involvement of supervisors displays an interesting pattern. Sixty two percent of those companies who did not involve their supervisors claimed benefits of 5 or more compared with 73% of those companies who did claim involvement of supervisors in the Quality steering committee. A comparison of the benefit ratings with involvement of front line staff shows a similar pattern with 61% of the companies who did not involve their front line staff rating benefits as 5 or more compared to 83% of those companies who did.

There was a small difference of 5% in favour of those companies who involved unions in their Quality steering group.

Comparing the benefits rating by "guru" showed little difference except for those companies who had used Deming as their philosophy where 76% of the companies who had followed the principles of Deming rated their benefits at 5 or more compared to only 60% of those companies who did not know of Deming.

There was little discernible affect on the benefit rating from the use of consultants. Sixty five percent of companies rated benefits at 5 or more in the group which had used consultants to help them implement TQM , precisely the same percentage in the group which did not claim to use consultants to implement TQM.

Interestingly those companies who had a marketing department and used it to help implement TQM had a significantly lower benefits rating (40%)than those who did not (67%). This difference has to be judged against the fact that the number of companies who involved their marketing departments was less than 7% of the total respondents.

37 MAIN DIFFICULTIES WITH IMPLEMENTING TQM

Respondents were asked to list the key issues which made the adoption of TQM difficult. Their replies were grouped under four major headings.

1 Commitment and Leadership

Sixty six percent of the respondents claimed this to be a major stumbling block to the implementation programme.
As well as a lack of clear leadership from the top of the organisation there was disappointment over the inability of senior and middle management to alter their behaviour and style to accommodate the new philosophy.

2 Company Culture

Half of the respondents claimed that the most difficult task which they had to do was to change the culture and attitudes of staff at all levels. A general resistance to change coupled with apathy and cynicism appeared to some respondents to be massive barriers to overcome.
Only three respondents said that union attitudes were against the change.

4 Lack of resources

One quarter of the respondents claimed that there were insufficient resources available to them to carry out the changes required to become TQM organisations. The lack of resources appears to be more about lack of time and priorities than it was about cash. There were many references to managers

being "too busy fire fighting" and it is possible that this relates to the comments about the resistance to change noted in section two.

3 Understanding and Coordinating

Forty percent of the respondents believed that issues such as getting people to understand the concepts, turning the theory into practice and communication of the issues across multi-sites posed significant barriers to the successful implementation of TQM in their companies.
The timing and integration of the TQM programme was also seen as important in achieving success.

IS TQM DELIVERING ITS PROMISE?

While it is obviously not possible to draw any conclusions about the position on TQM taken by all companies in the North of England, it is clear from the data that there is a substantial number of companies, employing a large number of people, whose management are sufficiently convinced of the benefits to be had by adopting Total Quality Management to devote much time and effort to it and who are convinced that benefits are being attained. Measured in this way TQM in the North of England is a well established vehicle for culture change which is delivering benefits to those companies prepared to put sufficient effort into the process.
Of the companies who completed survey forms only a small number of companies (2%) claimed not to know anything at all about TQM while 35% of the companies who returned the data sheets claimed to be thinking about TQM .

If this is a representative sample of companies in the North of England then it would appear that over half have an active involvement in Total Quality Management and that a sizeable proportion of the remainder are evaluating the philosophy.

It is clear from the data that, where the philosophy of TQM is well established in an organisation, it is delivering a significant proportion of the benefits which were expected of it. Those companies at an earlier stage of implementation claim less benefits delivered in the early stages confirming the belief that TQM is a long term activity and not one which should be undertaken with only short term gains in mind.

The principle benefits as described by the companies in the survey were seen to be; better performance; improved team working and better employee involvement. Improvements in customer satisfaction however,were mentioned by only a few companies. This is surprising, given that the main thrust of a TQM policy is, or should be, directed at satisfying the customer's needs better than they have been before. Part of the answer may well lie in the response to the question on customer surveys where only 43% of the companies had surveyed their customers suggesting that, for most companies, Total Quality is still an internally focussed activity.

The rise in the percentage of companies surveying their external customers co-incident with an increase in the length of their involvement with TQM does suggest that the external focus may develop over time.

The data shows clearly that companies who survey their external customers appear to gain real benefit from this with their customers more likely to look for other factors than price upon which to base a buying decision.

The results however are worrying when they are looked at in comparison with the clearly expressed view of most companies that they were market focussed. It is not possible to say whether companies truly believed that surveying their external customers had no relationship to their claim of high market focus but it would be disappointing to think that a commercial organisation could really be described as market focussed when it did not survey its customers to gain some measurement of its success or failure in meeting their needs.

The initial internal focus displayed in the results may be explained by senior management's desire for tangible short term benefits, thus focussing their attention on the substantial sums of money which they are told can be saved by improving the internal functioning of their organisation using Quality principles. Here the survey shows that nearly 20% of companies calculated that the cost to them of getting things wrong was somewhere between 10 and 20% of their turnover while a further 11% said it was between 20 and 30% of turnover. Bearing in mind that the companies surveyed were large and had substantial sales turnovers it is clear that the savings involved would indeed be substantial and would provide a powerful reason for Chief Executives to agree to support an involvement with Quality.

The survey shows that once these initial savings have been achieved the cost of quality drops along with the increase in the percentage of companies surveying their customers, thus indicating that the later development of TQM into a more mature system does take companies out into the marketplace to talk to their customers and get some measure of their performance.

Surveys of internal staff were carried out by the majority of companies, but one disappointing aspect of the survey was the evidence of little time being devoted to training with 42% of the companies devoting three days per annum

to TQM training.* Given the size of the cost savings possible by adopting a TQM philosophy this is a disappointing finding and gives concern for the long term development of TQM in some companies.

Most companies had seen the need for some kind of corporate statement of their aims and vision for the future and there was evidence of senior management involvement with the quality programme from the vast majority of the group of companies who were involved in TQM. About 80% of the companies involved with TQM had a co-ordinator in place and most of the companies reported a reasonable level of involvement of employees across most levels in the company.

One group of employees however, had a very marked effect on the benefits ratings of companies. Some 62% of those companies who reported senior manager involvement with TQM projects also rated benefits gained at 5 or more against only 10% of those companies who did not report the involvement of senior management. Although there was a difference in favour of each level of staff involvement the difference displayed in the analysis of senior management involvement was by far the largest.

The minimal difference in reported benefits gained by the inclusion or otherwise of middle management is interesting, especially given the findings from the face to face interviews where the common experience was a reduction in the layers of middle management with more responsibility and authority being given to front line staff.

Assuming that middle managers know and understand this, it would account for the resistance to TQM from this layer which was mentioned in many of the comments on the questionnaires.

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* Training and the relationship between TQM and the HR activity in an organisation is discussed in Appendix E

It would be gratifying to be able to record that employee turnover was reduced as a result of the adoption of TQM but this is not apparent from the data. Even in the group of companies which had adopted TQM for three years or more only 28% claimed that they had seen any reduction in employee turnover. Those companies which did report a decrease in turnover also qualified this by comments on the effect which the recession may have had.

Safety however is one clear benefit to emerge from the data with a significant increase in the response with experience of TQM.
Most companies had surveyed their external suppliers but there was little evidence of substantial use of single sourcing and no significant difference measured against the length of time in TQM. It would seem that UK companies have either not found any significant benefit in single sourcing or perhaps cannot find UK suppliers of a good enough standard to persuade them to move in this direction.

The majority of the companies in the survey had achieved some kind of Quality Assurance certificate with most of the rest of the companies working towards one of the recognised QA standards. There is no evidence to indicate what the motivation was for the achievement of a standard and it is therefore not possible to say whether the achievement of such a standard was used as the precursor of a move into Total Quality or not.

Most companies were aware of the quality "gurus" with Crosby being the most often reported reflecting perhaps a more aggressively commercial approach. Deming, Peters and Juran were next but with significantly fewer total mentions than for Crosby. Many companies commented that they had drawn from the philosophies of all of the leading exponents of TQM to create their own

programmes mirroring the Japanese experience of the need to mould the approach to the culture of the country and the company.

Although consultants were used by over half of the companies there seemed to be little to be gained from their use in terms of success with the TQM project. At first sight this may appear strange but the essence of TQM is culture change and this has to be internally sponsored and driven if it is to have any chance of happening. External consultants could only affect this culture change through the commitment of senior management which would be there in any case if a company decided to carry through the whole process without external aid.

Comparing the six measurements of company performance Planning, Internal Environment, Approach to Problem Solving, Management Style, Attitude to Change and Company Focus it is clear from the data that each of these characteristics scores higher the longer that a company has been involved with TQM. Not all of the attributes were equally improved with time suggesting that they could be of varying importance to TQM success. Planning timescales in particular did not seem to increase with time in TQM but measurements such as the approach to problem solving and the attitude to change did. This observation led to some further analysis which is reported in the final chapter of this work.

The overall picture which emerges from the data is one of companies making a conscious effort to alter their approach to management by embracing the principles of Total Quality. The approach is still more internally focussed than it ought to be but that may be accounted for by the stage which the majority of companies have reached in their programmes. Those companies which have spent the longest time grappling with the philosophy are now

beginning to move their quality out into the marketplace and involve their customers and suppliers in the quality chain.

The obstacles to improvement come mainly from the understandable desire of senior management to protect the status quo. Allied to this is a general fear of change and the cynical view that most new ideas ,given time but no effort, will vanish.

CHAPTER EIGHT

HAVE WE MADE ANY PROGRESS WITH QUALITY?

A Comparison with the Scottish Results

This chapter compares the data gathered in the North of England and described in the last chapter, with the data gathered in the original survey carried out by the then Scottish Development Agency as part of their Quality Initiative. The objective of the SDA survey was to provide data to allow an assessment of the current level of Total Quality Management in companies in the Scottish Quality Network and to provide a bench-mark which could be used for comparison purposes.

The raw data gathered in this survey was, unfortunately, destroyed after the initial summary results had been published and thus the comparison with the data collected then and in this work can only be made between the overall scores in each section and not in any more detailed way . The comparison which can be made however, is interesting in that it does serve to show that some progress has been made in the time which has elapsed between the two surveys.

The validity of the comparisons drawn depends on the belief that there is no significant difference between the attitudes of managers towards TQM between Scottish and English companies and that any differences seen can be attributed to an increase in general awareness of the concept. It is the author's experience that few ,if any, such differences exist and that this is confirmed by

discussion with Scottish Enterprise,two major companies operating in Scotland and a leading Scottish academic(1).

It is therefore believed that the differences which exist between the data gathered during the two surveys do reflect changes in the attitude of industry over the two year period between the surveys.

1 TYPE OF COMPANY

The Scottish survey was sent to 625 companies who were members of the Scottish Quality Network. One hundred and sixty six replies were received giving a response of 26.6%.

The Scottish survey had 52% of its respondents engaged in manufacturing compared to 62% in the North of England survey; 31% compared to 30% in service industries; 10% compared to 8% in other types of business and 11% in Government service. There were no Government or public bodies included in the North of England survey.

2 LENGTH OF EXPERIENCE WITH TQM

Sixty two percent of the respondents to the North of England survey were implementing TQM in their organisations compared to 51% in the Scottish survey.

Given the fact that the Scottish survey was carried out entirely amongst companies in the Scottish Quality Network and that the English survey was a sample drawn from the total number of companies in the area the results

suggest that the commitment to the philosophy of TQM is higher now amongst companies in general than it was amongst committed Quality companies in Scotland in 1990.

2 INVOLVEMENT OF EMPLOYEES

The data demonstrates that there has been a significant increase in the number of companies who claim to involve all of their employees ,from 21% in the Scottish survey to 39% in the North of England survey. It is likely that this indicates that managers now recognise that, to be successful, TQM has to involve all of the people who work in an organisation.

3 NUMBER OF DAYS TRAINING

There was little difference in the number of days given over to training between the two surveys (41% of respondents claiming 3 days or less in England compared with 31% in Scotland) indicating that a significant percentage of companies still do not put sufficient value on the benefits of training to improve performance. The Scottish survey did show a higher percentage (12% v 3%) for companies devoting more than 10 days per annum to staff training.

4 CORPORATE VISION STATEMENT

There is a substantial increase in the number of companies claiming either a Vision or a Mission statement between the two surveys. The Scottish survey shows 59% of companies with a Vision Statement and 58% with a Mission Statement compared with 70% and 86% respectively in the latest survey.

5 SENIOR MANAGEMENT INVOLVEMENT

The comparison of the level of involvement of Senior Managers between the two studies also shows a significant change. The Scottish survey showed only a 62% involvement compared with nearly 93% involvement of senior managers described in the North of England Survey.

6 TQM CO-ORDINATOR

The data shows an increase in the percentage of companies with a TQM co-ordinator in place; from 47% in the Scottish survey to 81% in the North of England.

7 PERCENTAGE OF EMPLOYEES WITH QUALITY TARGETS

The responses to this question were strikingly similar for both surveys. Only seventeen percent in the Scottish survey and sixteen percent in the North of England survey claimed that nearly all of their employees had quality targets. The percentage of companies claiming to set employees quality targets is

disappointingly small in both surveys and this lack of employee direction may account for the perception amongst some respondents that TQM is not delivering many of the expected benefits.

8 EXTERNAL CUSTOMER SURVEY

There was evidence of a increasing trend towards surveying external customers with the figure for the North of England being marginally better at 43% of respondents compared with only 37% in Scotland. The Scottish result again reflects the fact that the initial emphasis of TQM programmes appears to be concentrated on internal company processes.

There is an interesting dichotomy of view demonstrated here in that the majority of companies claimed that they were very much externally focussed and yet in both surveys less than half of the companies claim to make any formal effort to check on customer needs or how well they are satisfied.

There is a trend in the data which shows that in both surveys the gap between views of focus and reality of surveys narrows as companies get further into the process thus reinforcing the view that TQM begins introspectively but develops an external focus over time.

9 SURVEY OF INTERNAL CUSTOMERS

Both surveys show that more companies survey their internal customers than do their external customers.

The Scottish figure was 54% of respondents while the North of England figure was 65% suggesting that, in the two years between the surveys companies had

become more aware of the need to gather data on their internal people systems in order to begin a process of improvement.

In both surveys the percentage of companies who surveyed their internal customers grew with the length of time for which they had been involved in TQM.

10 CUSTOMER DEMAND FOR TQM

There was little difference between the surveys in the number of customers who were demanding evidence of a TQM programme as a condition of purchase.

11 CUSTOMER BUYING ON LOWEST BID

Here again there were no significant differences between the surveys.

It was not possible to obtain data to discover whether the Scottish survey gave the same indication as the North of England survey that service companies were more pessimistic about the ability of the customer to base his judgement on anything other than price.

12 ACTIONS TO ENABLE IMPROVEMENT TO HAPPEN

There was a remarkable consistency between the two sets of results with the responses differing by no more than 4 percentage points on each set of data. It is clear therefore that planning and training are the two most common ways which companies adopt to help them achieve Quality Improvement. The least

used ways were to design for Quality Improvements and, most disappointingly, to Set Targets for Improvement.

13 MEASUREMENT OF THE COST OF NON CONFORMANCE

Significantly more companies (62% compared with 47%) claimed to have measured the cost of non conformance in the North of England survey than had done so in Scotland. There was a similar ranking of the three main contributors to the cost of quality in both surveys.

The Scottish survey indicated that the cost of non conformance was significantly higher than that reported in the North of England Survey. In Scotland 27% of respondents claimed that it was between 20 and 30% of turnover compared to 19% in England and 4% believed that it was more than 40% of turnover compared to only 1% of the respondents to the North of England survey. It may well be that the recession ,which had stiffened its grip on the economy in the intervening period, could have already forced companies to look at ways of improving their efficiency.

14 SURVEY OF EXTERNAL SUPPLIERS

Only 45% of the respondents to the Scottish survey had surveyed their external suppliers compared to 64% in the North of England survey. Given that deeper analysis of the North of England survey data shows an increase in the percentage of companies surveying their external suppliers as their experience of TQM increases, the Scottish results may simply reflect a shorter time involvement with TQM on average than in the later survey.

15 SINGLE SOURCING

The percentage of companies reporting that they practised single sourcing was the same in each survey at 28% in Scotland and 27% in the North of England survey.

16 SURVEY OF INTERNAL SUPPLIERS

There was an increase in the percentage of respondents claiming to have surveyed their internal suppliers in the data obtained from the North of England survey. Given that there appears to be a tendency for the percentage to increase with length of experience in TQM it is possible that the Scottish data simply reflects a shorter involvement with TQM.

17 REDUCTION OF EMPLOYEE TURNOVER

The Scottish data showed that only 11% of respondents claimed a reduction of employee turnover as a result of implementing TQM compared to 15% in the North of England survey.

The English data did suggest that this response improved with the length of time in TQM but care needs to be taken in interpreting these figures as the recession may well have had a significant affect on both the ability and inclination of employees to change employers.

18 REDUCTION IN EMPLOYEE ABSENTEEISM

The results from each survey confirmed that little change had been seen in the level of absenteeism since the move towards TQM. Both surveys showed that only 20% of the respondents believed that there was any benefit.

19 INCREASED SAFETY

There was a difference between the two surveys in the response to this question. Only 31% of the Scottish survey claimed that there had been, compared with 45% of the respondents to the North of England survey.

20 INCREASED EFFICIENCY

The response to this question was interesting Scotland having 76% of the respondents claiming an improvement in efficiency compared with only 66% of the North of England group. There is no supportive data to allow further analysis which might provide an explanation.

21 INCREASED PRODUCTIVITY

The response shows a close relationship to the previous one. This is not surprising since there ought logically to be some kind of a link between productivity and efficiency. The Scottish response was again greater at 72% than that of the English survey at 59%

22 THE EXISTENCE OF A STEERING GROUP

Only 53% of the respondents to the Scottish survey claimed that their Quality programme was managed by a steering group. This was significantly higher in the North of England survey where 76% used a steering group.
In the North of England survey further analysis of the data suggests that the use of a steering group was more characteristic of organisations which had been in TQM for one year or more. The Scottish data, therefore, probably reflects the fact that the respondents had, on average, a shorter experience of the concept of TQM than was the case in England.

23 THE INCLUSION OF TOP MANAGERS IN THE STEERING GROUP.

The Scottish survey indicated that slightly more than half (53%) of the steering groups had top manager involvement in them. This figure was significantly higher in the North of England survey where 76% of the respondents claimed top management involvement. Further analysis of the English data showed a relationship with time which would explain the differences but significantly, even in those companies who had just begun the implementation of TQM in England, the figure of top management involvement was still higher (at 70%) than the Scottish figure suggesting that TQM has probably gained increased awareness and acceptability from top management in the interval between the two surveys.

24 INVOLVEMENT OF STAFF IN THE STEERING GROUP

A comparison of the level of involvement of other staff in Quality Steering Groups between the two surveys indicates an increasing appreciation of the need to involve as many levels of staff as possible in the process. The comparative figures are shown below;

Type of staff	Scottish Survey	North of England Survey
Middle Management	33%	57%
Supervisory	19%	30%
Front Line Operators	13%	20%
Union Reps	3%	12%

25 ACHIEVEMENT OF A QUALITY ASSURANCE STANDARD

The achievement of a Quality Assurance standard was claimed by 41% of the respondents to the Scottish survey compared with a massive 73% of the respondents to the North of England survey. This probably reflects the pressure from bodies such as the DTI on companies to attain a standard of some kind. It may also reflect the fact that directors may be more easily persuaded to spend money in attaining some kind of tangible mark of "Quality" than they are to embark on the more intangible process of culture change which TQM demands.

26 PHILOSOPHICAL APPROACH

The comparative figures of awareness of quality "gurus" is remarkably similar between the two surveys. The data is displayed below;

Guru	Scottish Survey	North of England Survey
Crosby	56%	55%
Deming	38%	34%
Peters	35%	33%
Juran	21%	22%
Taguchi	20%	14%
Others	23%	28%

It is perhaps not surprising that Crosby heads the table as there is no doubt that his world wide consultancy company the Crosby Group has been very active in selling his ideas as a commercial package. Interestingly, since the Total Quality Management philosophy is supposed to be about people, Peters, "the people man" was mentioned by fewer respondents in each survey than Deming who is perhaps more famous for his use of Statistical Process Control. This gives further weight to the argument that TQM is initially very much internally focussed since the process improvement systems of the type which Deming and Crosby propose would be the type of quality tools which companies would choose to use to improve production processes.

27 ORGANISATION PROFILES

Respondents were asked to rate their organisations on six characteristics on a score of 1-10. It was not possible to obtain the raw data from the Scottish survey to carry out the same analysis as was done on companies in the North of England. A simple comparison of the distribution of the percentage answers to each characteristic is all that is possible to do.

In five out of the six characteristics analysed there is insufficient difference between the percentage responses to allow any sensible conclusions to be drawn. In the sixth, the Attitude to Change , there was a distinct difference between the responses.

Over half 56% of the Scottish responses fall into the lowest two scores compared to only 3% of the English companies responses suggesting that ,at the time of the survey, Scottish companies appeared to be significantly more resistant to change than the companies who responded to the 1992 survey. Only 26% of Scottish companies claimed a dynamic attitude to change with scores of 8 or more compared with 38% in the later survey. The Scottish results were also significantly more polarised with no respondents scoring 5 or 6. It may be that the effects of the recession had shaken companies from a mood of complacency by the time the 1992 survey was carried out.

28 BENEFITS AND OBSTACLES

A high degree of similarity characterised the responses to this question. The Scottish survey believed that greater efficiency was the most important benefit with better team work coming second and customer satisfaction third. The

North of England survey rated performance first, involvement and attitude of employees second and customer satisfaction third.

In both surveys the major obstacle to the successful implementation of the concept was a lack of leadership and commitment from senior management closely followed by culture and attitudes.

HAS THERE BEEN PROGRESS IN TQM?

Judging by the comparison of the results of the two surveys there appears to have been considerable progress towards a deeper understanding and execution of Total Quality . A higher proportion of the companies surveyed are now seriously involved with the concept and it would appear that more of them see the need to involve all of their employees and not simply those front line staff engaged in production.

Given that this is so, it is very disappointing to note that there has been no increase in the time devoted to staff training*. One vital lesson from the Japanese experience has thus been ignored.

The highly visible things such as Vision and Mission Statements are being done and a cynical view might suggest that is only because these are the kind of things which look good on the annual report but do not demand any significant effort from the directors to change their way of operating. There is, however, an encouraging trend toward a higher involvement of senior managers in the process as nearly all of the recently surveyed companies, no matter what stage they were at, had involved their senior managers and most had a TQM

* The issue of training and the relationship between TQM and the HR activity in an organisation is discussed in Appendix E.

co-ordinator in place. There were also encouraging signs of a greater involvement of staff in the Quality Steering groups.

These trends can only create more commitment to the process and are much to be welcomed but there is still a reluctance to set tangible targets for quality improvement which must raise questions about the chances of success of these initiatives. However ideal Dr Deming's view that all targets for everyone in a company should be abolished (+) it is highly improbable that any organisation of any size could run without some formal objectives especially when attempting to improve the quality standards to which a company operates.

A key feature of a Total Quality system is the creation of a link between the customer and the company, both to understand the customer's needs and to measure how well the company is meeting them. The data from both surveys suggests that there is an encouraging increase in the number of companies doing this both internally and externally as well as involving their suppliers. This encourages the belief that there is now a better understanding of the basic concepts of the quality process.

Both surveys showed little difference in customer use of TQM as a criteria for their purchase decision. Price still appears, to the respondents at least, as the key buying criteria. Given the extent to which the recession had bitten in the time elapsed between the two surveys it is encouraging that there were still customers who did look for evidence of things other than price when making a purchase decision.

+ One of Dr Deming's 14 points states " Eliminate numerical quotas for the work force and numerical goals for management"

It is disappointing to note that there is little evidence as yet of significant changes in employee attitudes with no significant differences being shown between the surveys in things such as reduction of employee turnover and absenteeism .

Nearly double the percentage of companies in the English survey had obtained some kind of Quality Assurance award and there is real danger that this may be seen as the only tangible measure of quality that a company need have. Such QA programmes are internally focussed on processes and can be so constructed that little scope is left for employees to become involved in the key process of Continuous Improvement which is the hallmark of true Total Quality Management activities.

The two surveys taken together suggest that the concept of Quality Management is becoming better understood and that companies appear to be more committed to making the concept work. It is pleasing to note the increase in the level of employee involvement and the tendency to greater commitment and leadership from top management. Disappointingly ,but perhaps not surprisingly, the major obstacles to the successful introduction of Quality concepts to organisations remains the same.

Cynical and entrenched attitudes of middle management and lack of real commitment from the top appear not to have been affected very much by the passage of time. The stagnation in the number of days of training is also disappointing particularly as training was seen by most companies to be one of the key ways of improving quality. It is difficult to know whether this is a result of the recession or whether it reflects a lack of real commitment from senior managers in UK companies.

Overall however, there is a positive movement towards embracing the key concepts of Total Quality Management and the companies surveyed clearly believe that they are deriving benefits from the concept. In the timescale of the history of the concept of TQM the time between the surveys is minute and the degree of change evidenced is all the more gratifying for that.

References Chapter Eight

1 Gow I.T.M (1992) Personal communication

CHAPTER NINE

THE QUESTIONS ANSWERED

The work described in the previous pages began as an attempt to answer three key apparently simple questions;
Is TQM here to stay, does it really offer a sustainable route to improvement in an organisation and are there any key indicators which can be used to define the progress of TQM in an organisation?

IS TQM HERE TO STAY?

The author's contact with companies and consultants suggests that there is much confusion about what precisely TQM is. As more and more Quality standards, awards and programmes appear - BS 5750, the Baldrige Award, and Investors in People are just a few examples (#) it is not surprising that the whole issue of quality has become confused and over complicated and there is a real danger that the benefits of a powerful process for change may be swamped by the trappings surrounding it.

Perhaps the major contributor to the confusion surrounding the whole concept of Total Quality Management arises from the use of the word quality itself. The word quality in common usage, is taken to describe the excellence or the merit of a product and is usually prefixed with such words as poor or good. However it is also used on its own to describe things which are clearly superior to their peers. In this way a Rolls Royce is thought of as a Quality car- a

See Appendix C for fuller details.

Lada would not be the image people would associate with such a description. Newspapers are similarly divided into quality newspapers and popular newspapers and there is no doubt in reader's mind as to which are which.

The word quality therefore has come to acquire an expectation of excellence. Thus many managers may feel their abilities insulted, or their positions of authority in their company threatened, by this concept of perceived "excellence" when the word quality is used to describe business or production processes.

There is little help from dictionaries, the Concise Oxford Dictionary (1) for example offers a range of definitions most of which do little to dispel the common view;
" a degree of excellence , relative nature or kind or character..... Possessing higher degree of excellence; concerned with the maintenance of high quality (quality control)." All of these definitions tend to reinforce the view that quality is a measure of goodness which can be used to compare the value of different articles.

In Quality control terms of course quality is nothing more or less than the assessment of how closely a product matches the specifications laid down for it. It has nothing to do with possessing a higher degree of excellence.

The definition of what is meant by quality is therefore not easy. Even the leading exponents of it are unsure.
Crosby calls it "conformance to requirements" (2).
Deming says "Quality should be aimed at the needs of the consumer"(3)
Garvin notes five distinct definitions of Quality (4).

All of these definitions had their origins, as described in Chapter Three, in the development of processes designed to achieve repeatable product quality without the high costs of inspection and rejection associated with traditional systems.

Even in Japan, acknowledged as being at the leading edge of Quality developments, Quality standards were derived and companies worked to attain them in the belief that this was all they had to do to solve their problems. Often the award of a Quality standard, which simply certifies that such a Quality assurance scheme is in operation in a company, has only served to distract companies from the real issues of Quality. The UK companies who so proudly hang a QA certificate on the boardroom wall and believe that they have now "done" quality are, in reality, in the same position in which the Japanese found themselves in the 1950's.

Deming credits Feigenbaum with the first definition of Total Quality in The Harvard Business review in 1956 (5) Feigenbaum's view was that quality embraced everything which a company did and was not confined to the operations of the Quality Control department. He defined it thus (6) "Total quality control's organisationwide impact involves the managerial and technical implementation of customer-oriented quality activities as a prime responsibility of general management and of the main-line operations of marketing, engineering, production, industrial relations,finance and service as well as of the quality control function itself". In short he was saying that quality is part of everyone's job.

A more refined definition (7) comes from Japan, where the addiction to quality has been given much of the credit for the phenomenal success of that country's economic growth.

Professor Ishikawa defines it as;

"Quality Control involves the development, design, production and after sales service of products and services which are most useful,and which give most satisfaction to the purchasers. In addition, the quality of such products and services will be assured for five or even ten years. The essence of CWQC is to attain the objective stated above (*products which are most useful and give most satisfaction to customers*) , and beyond that to control all aspects of quality in its broadest sense: the quality of corporate structure and organisation, of corporate divisions and departments, of the environment, of human resources and ultimately that of society. CWQC involves comprehensive and integrated control of all work."

Ishikawa's definition is far more comprehensive than any of the earlier definitions reflecting the greater experience which Japan has had with the concept. It suggests a new philosophy for running a business which is quite different from traditional Western methods. Indeed it would suggest that managers in companies attempting to operate to a TQM philosophy may have to be better trained and more competent at their jobs than those in "conventionally " operated companies. Recent work by Wilkinson et al. (8) indicates that the adoption of TQM made employees more questioning of manager's decisions and that managers felt that there was a greater emphasis placed on their technical skills and knowledge.

The evidence presented in Chapter Three shows that Total Quality Management is neither a "quick fix " for companies in trouble nor some "New Age" collective approach to running a company, but is simply a logical extension of the business management techniques which have been developing in theory and practice since the Industrial Revolution .

Total Quality Management therefore should be considered as an evolutionary step, albeit a major one, in the developing science of business management, a powerful operating philosophy significantly different from that currently used to run most Western businesses.

DOES TQM DELIVER LONG TERM BENEFITS?

The body of evidence of the ability of TQM principles to make sustainable and continuing improvements to a business is large. The awesome advance of Japanese Industry illustrates just what the benefits of adopting TQM principles can be.

Professor Garvin (9) provides a graphic example of the success which Quality Management brought to Japanese efforts in the semi conductor industry. In 1980 Hewlett-Packard reported the enormous difference in quality of the 16K RAM chips supplied to the company. Traditional American suppliers had a failure rate of between 0.11 and .019 percent of the chips delivered to Hewlett-Packard. The Japanese failure rate on delivery was zero.

This was an example of what was to follow in almost every other area of manufacturing activity. The shock of such severe competition was the spur which caused Western companies in the late 1970's to begin to search for the reason for this success of Japanese industry which was now producing goods cheaper and better than their Western counterparts. The enormity of the problem facing Western companies was graphically described by William P Wiemels Director of Marketing of Union Carbide (Europe) Ltd at the 1989 British Deming Association Conference (10).

"I don't know how many of you in the course of your business lives have had the opportunity to stand and stare into your open grave, but I can tell you that it is an exhilarating experience"

He goes on to describe the painful process by which Union Carbide came to realise that there were no quick fixes such as SPC and that the root of the problem lay in management behaviour. This was the painful lesson which all Western companies have been forced to learn in the last ten years.

There are good examples of the principles of quality delivering real improvements in business performance in Western companies; Jaguar and Rank Xerox(11,12) are two high profile examples discussed in the text and the success of others such as Hydro Polymers and British Visqueen have been documented as part of the research. The evidence of the North of England survey demonstrates that companies do believe that the adoption of TQM does deliver demonstrable benefits which increase with the length of time for which they have been involved with TQM.

The evidence is strong that the adoption of TQM principles by a company does offer a route for sustainable improvement and that UK industry therefore has the tools available to it to enable it to survive and grow into the next century. Sadly the evidence of the survey would seem to suggest that companies are focussed more on short term quality control activities rather than on the wider implications of Total Quality Management.

Given that the principles of Total Quality Management are soundly based in theory and are proven in practice it is perhaps interesting to see if there is an explanation for the claims reported in the introduction that TQM is failing to work in many companies.

One key reason is undoubtedly associated with the attitudes of management in Western companies. Gow (13) defines "elitist European management practices" and suggests that this is a barrier to improvement in many companies. The elitist view of management has its roots deep,in the history of the Industrial Revolution in Europe in the nineteenth century. Gow's view is supported by the research evidence from the surveys reported in the text which show that management attitude and cynicism are still the prime obstacles to overcome in the attempt to move a company towards a Total Quality approach to management.

In many cases TQM has probably been seen as a method of improving shop floor productivity , as it was early in the Japanese experience, rather than a holistic approach to management.

Consultants may also be to blame, seeing the presentation and training of the techniques of TQM as more profitable than the slow persuasion required to make the most senior managers in a company believe in the need for change. Crosby's early success is an example of selling mainly techniques and cost savings to clients rather than long term continuous improvement.

A further reason for apparent failure my well lie in the data which shows that only a small percentage of companies set Quality Improvement Targets for their employees. Without clear goals to aim for it is perhaps not surprising that little progress can be measured in some companies. Add to this the wide disparity between companies in their objectives, culture and structure and the attempts to measure the benefits of TQM in simplistic terms such as a rapid improvement in profitability are clearly doomed to fail.

KEY CHARACTERISTICS OF A QUALITY COMPANY

The survey data indicates some key characteristics which would describe a company operating to a Total Quality Management philosophy. These characteristics all score more highly with increased experience of the concept.

A TQM organisation demonstrates commitment to a new way of managing from the top of the organisation and ensures that its employees know this through a clear statement of its future state.

A TQM company is more likely to have surveyed its employees and involved most of them in setting and achieving Quality Improvement targets. It will also be more likely to have developed closer links with its customers with the use of customer surveys. While there may not be significant reductions in the turnover of employees a TQM company is more likely to have a better safety record despite being more productive.

It will be more likely to have a co-operative approach to problem solving and an open style of management.

References for Chapter Nine

1 The Concise Oxford Dictionary of Current English (1982) Oxford:Oxford University Press

2 Crosby P.B. (1985) Quality Improvement Through Defect Prevention, Winter Park Florida: Philip Crosby Associates Inc.

3 Deming W.E.(1982) Out of the Crisis, Cambridge: Cambridge University Press p5.

4 Garvin D.A.(1988) Managing Quality The Strategic and Competitive Edge, London The Free Press pp40-41.

5 Deming W.E op cit

6 Feigenbaum A V op cit

7 Ishikawa K op cit

8 Wilkinson A, Redman.T, Snape.E (1993) Quality and the Manager: Survey commissioned by The Institute of Management:London

9 Garvin op cit

10 Wiemels W.P. (1989) The Union Carbide Experience, Paper presented at the 1989 British Deming Association Annual Conference,Salisbury,British Deming Association.

11 Hancock,G. (1984) opcit

12 Upton R.(1987) opcit

13 Gow I.M.T (19992) Personal communication

CHAPTER TEN

DEVELOPMENT OF A TQM MODEL

The descriptors of a quality company given in the closing paragraphs of the previous chapter,while correct in themselves , do not make it particularly easy for an organisation to decide where it stands against the concepts of TQM or what the key issues to work on might be. There is little doubt that much confusion surrounds the concept and many companies do find it difficult to know where to begin. The differing approaches of the various quality "gurus "do little to help an aspiring TQM company to know what the key issues to address might be with the evidence from the survey suggesting that companies tend to have an eclectic approach towards advice and systems.

Some models already exist. The European Foundation for Quality Management for example, has devised a model (shown in Appendix C) which is the basis of their annual award. They describe the model in these words (1) *Customer Satisfaction, People(employee satisfaction) and Impact on Society* are achieved through *Leadership driving Policy and Strategy, People Management, Resources and Processes* leading ultimately to *Business Results.*
They suggest that each of the nine elements is a criterion which can be used to appraise progress towards TQM. It goes on to suggest some things which an organisation could use to measure itself. The measures are detailed, wide ranging but all assume that the TQM programme is in place . It offers a range of measures to test the effectiveness of the system rather than a simple model to allow companies not yet into TQM to define the first tentative steps which they might take.

To be useful to companies at this early stage a model should help companies, and their advisers, to measure their current activities against the primary drivers of Quality.

Revisiting the in depth interviews begins to offer some ideas which might form the basis for such a model.

One common theme in the companies visited was that some external stimulus for change is a key part of the process along with the active involvement of senior managers. There was a clear sense of commitment and belief in the process, something which was most often cited as the reason for failure in the survey data.

Hydro Polymers is a good example of the pressures of external change . The marketplace for their products became increasingly competitive with price pressure and ever higher customer expectations of delivery and specification thus forcing change . The initial response was to look at their internal processes to find ways of reducing cost and increasing productivity. Work began to remove demarcation barriers and to attain BS 5750. Deming's SPC concepts were adopted to help improve consistency of production but his overall philosophy was not concrete enough to give an overall direction to the process. It was not until the discovery of Juran's concepts of creating teams to attack waste and reduce cost that full commitment was given to the Quality process by senior management. The result was a training programme which had as its end objective to give first line managers the ability and authority to perform their tasks without continual reference to higher authority.

External pressures then forced the initial changes on the company. These changes then gathered momentum and produced a change in management style and the adoption of the principles of TQM.

British Visqueen also had change forced upon it and used that as the stimulus to adopt Quality. They too have used this to alter management techniques and have gained benefits from operating through problem solving teams.

Darlington and Simpson Rolling Mills is an example of an organisation which actively looked for reasons to change using the stimulus of a piece of market research as a driver. It is now engaged in the difficult process of transforming the management style of the company.

In none of these three examples did the managers see the attainment of a non-competitive internal climate as a key objective of the TQM process nor did they see stability in their marketplace as vital. Indeed all of the companies visited were active in the search for new markets and products driven either by the collapse of the old or ,as in Derwent Valley Foods, as part of their basic philosophy for success.

Personal experience suggests that all too often when there is an external stimulus to change the reaction of managers is to retreat into a defensive style and shun all thoughts of adopting TQM . It would appear from the evidence of the interviews that this is probably the wrong approach and that a crisis does provide the best basis upon which to begin a process of management change.

It is not sensible to base any model on the experiences of such a small database and thus the survey information was further analysed to see if it gave any support for this hypothesis.

In the survey companies were asked to rate their companies on a scale from 1-10 against several key descriptors; Planning; Problem Solving Style;

Interpersonal Climate; Attitude to Change; Internal or External Focus; Management Style.

It was believed that a company practising TQM would rate itself higher on these descriptors than one which had not adopted part or all of the principles of TQM.
Simple crosstabulation of the data shows that this tended to happen for each of the six descriptors and that scores tended to increase with the length of time for which companies had been involved.

Companies were also asked to rate the benefits received from the adoption of TQM again on a scale from 1-10 and, as might be expected, the scores improved with the length of time for which companies had been practising TQM. It is therefore tempting to suggest that all of these criteria are equally important as yardsticks for an aspiring TQM company to measure itself against.

However when the responses to each of the six descriptors are correlated against the responses given for benefits some interesting relationships appear which may provide a clue as to the key first steps which a company should focus on to achieve success in its pursuit of TQM.

They showed that the highest correlation (0.4736) occurred between a company's attitude to change and the benefits perceived from TQM. The second highest correlation (0.4527) occurred between the problem solving style which a company adopted and the benefits achieved. The third highest correlation (0.4215) was recorded between the management style adopted by a company and the benefits received.

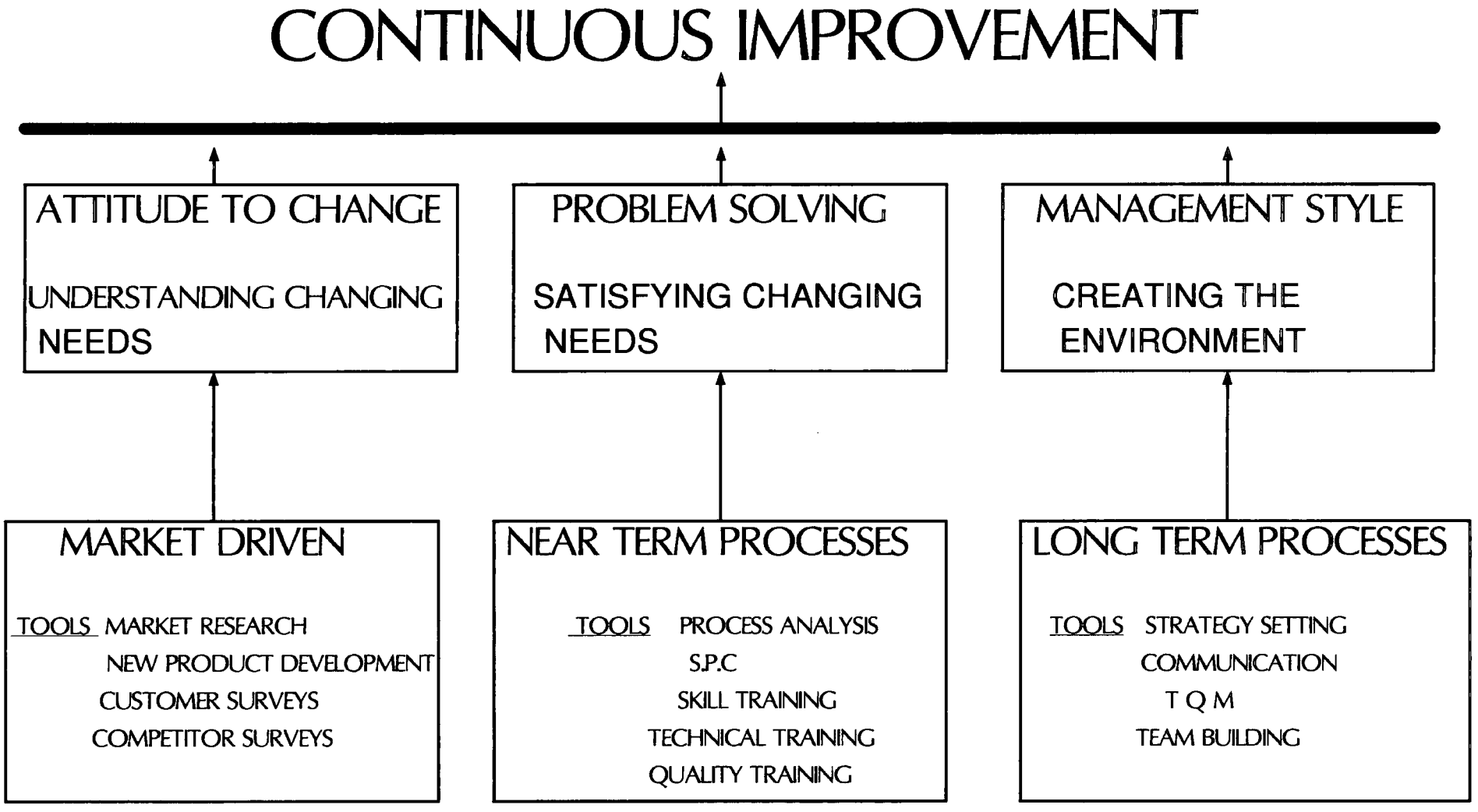


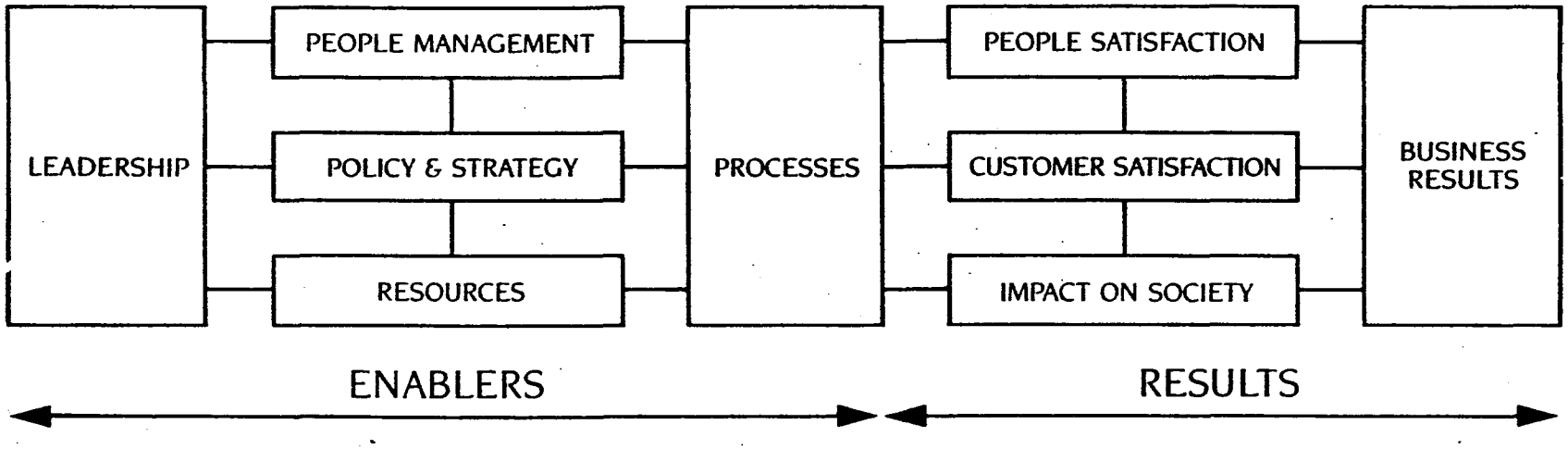
Figure 1 The Continuous Improvement Tripod

Despite the fact that every organization is unique, the following model provides a framework for self-appraisal that is applicable to virtually every business organization

The European Model

Processes are the means by which the organization harnesses and releases the talents of its people to produce results. In other words, the processes and the people are the ENABLERS which provide the RESULTS.

Expressed graphically, the principle looks like this:-



This model was developed as a framework for The European Quality Award, jointly sponsored by the European Commission, the European Foundation for Quality Management and the European Organization for Quality. Essentially the model tells us that:

Customer Satisfaction, People (employee) Satisfaction and ***Impact on Society**** are achieved through
Leadership driving,
Policy and Strategy, People Management, Resources and ***Processes,***
leading ultimately to excellence in
Business Results.

The remaining descriptors showed significantly lower correlations with benefits gained, suggesting that the attainment of these factors may be secondary in achieving benefits from the adoption of Total Quality Management.

In simplistic terms the results suggest that a company wishing to gain maximum benefits from the adoption of TQM principles should first ensure that the attitude to change in the company is dynamic rather than static. It should then ensure that it adopts a problem solving style which seeks to work together in a co-operative way to find solutions rather than in a confrontational way of assigning blame and finally it has to adopt a management style which has less to do with control and more to do with finding ways to enable employees to perform better.

This approach to TQM can be thought of as a tripod (Fig 1) upon which Continuous Improvement, the ultimate objective of any quality process , is balanced. Each leg of the tripod being formed by one of the three key criteria. Taken together they are both enough and sufficient to achieve the objective of continuous improvement and evolution of a company.

Each of the three key criteria can be described in terms of its principle processes.

Attitude to Change

This concerns itself with the external environment in which the company operates, thus defining the customer needs which the company must satisfy if it is to survive. There are well proven processes which a company must do if it is to understand the marketplace. does it carry out market research on a regular basis? Does it carry out any customer satisfaction surveys on a regular basis? Does it have a system through which it can translate the data gathered

in these activities into new product development and improvement of current activities?

Approach to Problem Solving

This leg of the tripod concerns itself with the mechanism of fulfilling customer needs. Here the model is concerned with the nuts and bolts of the production process and a company must assess the traditional quality assurance issues in terms of the processes and controls which it has in place as well as identifying the way in which it involves front line operators in the development of their tasks and approach to finding solutions to problems.

Management Style

The third leg of the tripod is Management Style. This concerns itself with the process of management the enabling activity which allows both the determination of customer needs and the delivery mechanism to function efficiently.

It can be described in terms of management skills and techniques as well as the existence of Mission and Vision Statements. The check list should take into account the training programmes for managers and the level of involvement which line managers have with employee training.

The model therefore allows a series of simple check lists to be developed which will allow companies to measure their current activities against the level of activity which would characterise a TQM company. Primary tasks for improvement are those associated with identifying the changes going on in the marketplace which will produce the pressure for change. The pressure for change will drive improvements in both of the other categories simultaneously as companies work on short term improvements to their production systems and

longer term activities associated with the management changes required for future success.

References for Chapter Ten

1 Total Quality Management The European Model for Self Appraisal 1992 Guide-lines for Identifying and Addressing Total Quality Issues. op cit p3

Appendix A

The Nature of Work- Theory X and Theory Y

Professor Douglas McGregor summarised the two approaches to management in his book The Human Side of Enterprise (1). He presented the assumptions of traditional management systems as theory X and those of the human relations view of management as Theory Y.

Theory X The Traditional Approach to Management

The traditional approach sees Management as responsible for organising the elements of production such as finance ,raw materials and employees to achieve economic ends.

McGregor describes it thus;

"The average human being has an inherent dislike of work and will avoid it if he can.
Because of this human characteristic of dislike of work, most people must be coerced, controlled, directed, threatened with punishment, to get them to put forth adequate effort toward the achievement of organizational objectives.

The average human being prefers to be directed,wishes to avoid responsibility,has little ambition,wants security above all."

Sisk (2) argues that Theory X leads to an authoritative organisation with the power of decision making firmly at the top of an organisation with a clearly

defined chain of command and a low or non existent degree of freedom at lower levels to make decisions. The worker at the lowest level of Theory X organisation therefore is seen as a cog in a wheel performing tasks explicitly assigned to him and with no interest in any other person except his immediate supervisor.

Theory Y The Humanistic Approach.

Theory Y claims that the very opposite is true. McGregor describes it in six key elements ;

" *The expenditure of physical and mental effort in work is as normal as play or rest.*

External control and the threat of punishment are not the only means for bringing about effort toward organisational objectives. Man will exercise self-direction and self control in the service of objectives to which he is committed.

Commitment to objectives is a function of the rewards associated with their achievement.

The average human learns, under proper conditions, not only to accept but to seek responsibility.

The capacity to exercise a relatively high degree of imagination,ingenuity,and creativity in the solution of organisational problems is widely, not narrowly, distributed in the population.

Under conditions of modern industrial life, the intellectual potentialities of the average human are only partially utilised."

Theory Y suggests that an organisation can work effectively without being authoritarian. Sisk (3) suggests that such an organisation requires a different type of leadership from that which best suits an authoritarian approach and argues that man makes the decision for himself about the kind of authority which he will recognise. He argues that in this type of organisation Management has to replace the absolute power which it exercises in authoritarian organisations with persuasion and participation in order to achieve economic objectives.

The theories offer only a black and white picture of what is a highly complex issue but they are useful core concepts to illustrate the fundamental changes which have taken place in the structure and management of organisations in the short timescale of industrial life.

References for Appendix A

1 McGregor D 1960 The Human Side of Enterprise, New York:McGraw Hill

2 Sisk H L 1969 The Principles of Management, Cincinnati:South Western Publishing Company p240-254

3 Sisk H L 1969 ibid

Appendix B

THE QUALITY GURUS

Dr J Edwards Deming

A statistician by training, Dr Deming is an advocate of the concept of Statistical Process Control first propounded by Shewhart. He teaches managers to focus on the variations from the "norm" of variability of any process and to adopt a systematic approach to improvement commonly called the Deming Cycle.

In his own words he sees his task as "to find out the sources of improvement " He claims that over 90% of quality problems are due to management and not workers and has created a list of 14 management points which he believes will enable managers to mange better. Some of these are difficult for managers to live with such as Eliminate numerical quotas and drive out fear.

Deming views quality as the responsibility of the individual and believes that it is always possible to improve quality.

Dr J M Juran

Dr Juran is also a statistician but takes a different approach to the problem. He looked at the broader issues of management and believed that there are three parts to solving the Quality issue. He sees them as Planning,Control and Improvement.

Quality Planning--

Quality planning begins with the customer's needs which are known and used to design the product. Quality planning extends into the production process itself to ensure that quality is designed in at all levels.

Quality Control

Quality control embraces all of the precepts of SPC and other measurement techniques to ensure the production of error free product

Quality Improvement

This is the area in which the process of continuous improvement occurs with employees seeking better ways of operating. Juran favours problem solving in project teams and encourages quality circles.

Like Deming Juran is emphatic about the need for clear leadership and of the benefits of the involvement of top management in all quality issues believing that most quality problems are interdepartmental. He believes that the law of diminishing returns applies to quality and that there is an optimum level of quality which should be achieved.

He offers ten steps to Quality.

1 Build awareness of the need for improvement
2 Set goals for improvement
3 Organise to reach these goals
4 Provide training
5 Carry out projects to solve problems
6 Report progress
7 Give recognition

8 Communicate results

9 Keep score

10 Maintain momentum by making annual improvement part of the regular systems of the company.

Philip B Crosby

Probably the best known and most commercially successful of the group Philip Crosby has the concept of "zero defects" as his key principle. This was developed while he was employed with the Martin company on various missile projects for the US Government. He defines quality as" conformance to requirements" and encourages clients to measure the cost of not having quality. The Crosby " cost of non-conformance "

Crosby's belief is that there is only one way to achieve quality and that is to prevent bad quality happening. Statistically acceptable levels of quality in the sense that Deming uses them are not acceptable. There can only be one standard in Crosby's system and that is zero defects.
Like the others he is firmly of the belief that the responsibility for quality is firmly in the hands of management. He has developed a quality education programme which has been adopted in companies world wide to improve employees ability to improve their jobs.
Crosby has Four Absolutes of Quality.

1 Quality is defined as conformance to requirement

2 The system for creating quality is prevention not appraisal

3 The performance standard must be "Zero Defects"

4 The measurement of Quality is the price of non conformance.

Armand V Feigenbaum

His concept is perhaps closest of all of the "Gurus" to the way in which Total Quality Management appears to operate in leading companies. He emphasises the people aspects of quality and teaches that TQM has to be an all embracing approach. He sees statistical methods as being only a part of an overall approach to quality in which everyone in an organisation has a key role to play. In essence he has two steps in his quality approach;

Defining the specification which will deliver a product which satisfies the needs of the customer in all aspects.
Developing systems which will control the process of production to ensure that this happens continuously.

Karoru Ishikawa

An engineer from Tokyo University, Ishikawa is the creator of the "FISHBONE " Cause and Effect Diagram which he designed in 1943.
He is regarded as the originator of the Company Wide Quality Control concept which is characterised by the participation of all departments and employees in a company. Like Feigenbaum he sees Quality applying to every aspect of a company's operations from design through to after sales service. He believes that the result of CWQC is to improve product quality and reliability while reducing the costs of inspection an testing. Along with this should come reduced costs and increased production thus allowing the market for products

to be extended. He believes that CWQC will improve the human relations within a company and smooth the flow of information between departments.

Appendix C

Outline of Quality Awards and Standards

BS 5750

This is the UK national Quality Assurance standard which is awarded to companies who can demonstrate to an assessor that they have instituted quality Assurance practices which are fully documented and which are followed in the company. It is possible to obtain BS 5750 for individual parts of a company and it is common for companies to obtain the standard for their production processes initially before deciding whether to adopt the same process for other parts of the company such as administration or sales.

The Baldrige Award

This was instituted by President Regan to recognise the standard of excellence attained by American companies. The award involves an in depth examination of a company's performance against a number of performance criteria.

Investors In People

This scheme was launched by the UK government on the recommendation of an advisory body of industrialists to recognise companies who had committed themselves to staff training as a method of improving business performance. The award is gained in a similar manner to BS 5750
when a company convinces an assessor that it has met a series of criteria related to training.

Appendix D

The Questionnaire used in the Survey of Companies in the North of England

DURHAM UNIVERSITY BUSINESS SCHOOL

TOTAL QUALITY MANAGEMENT
RESEARCH QUESTIONNAIRE

All information will be treated in total confidence

Company Name: .....

Address: .....

.....

.....

Which sector do you operate in?

MANUFACTURING	☐
SERVICE	☐
FINANCE	☐
TOURISM	☐
EDUCATION/TRAINING	☐
OTHER	☐

What stage are you at with TQM?

NOT HEARD ABOUT IT	☐
HEARD ABOUT IT	☐
THINKING ABOUT IT	☐
LEARNING ABOUT IT	☐
IMPLEMENTING IT	☐

If implementing it please state how long for:- ☐

TQM SURVEY

Please answer each question by ticking the appropriate box.

1. In which parts of your organisation is TQM applied?

Production	☐	Administration	☐
Quality Assurance	☐	Purchasing	☐
Sales/Customer Service	☐	Accounting	☐
Research and Development	☐	Marketing	☐
Distribution	☐	All Departments	☐

2. What percentage (%) of your employees are involved in TQM?

Less than 10%	☐	10% - 49%	☐
50% - 90%	☐	90% - 100%	☐

3. How many days does the average employee spend in training during one year?

Less than 3 days	☐	3 - 5 days	☐
6 - 10 days	☐	more than 10 days	☐

4. Do you have a corporate Vision Statement?

Yes	☐	No	☐

5. Do you have a quality Mission Statement?

Yes	☐	No	☐

If yes when was it published?

Less than 6 months ago	☐	6 months - 1 year	☐
1 - 2 years	☐	2 - 3 years	☐
3 - 5 years	☐	More than 5 years	☐

6. Are your senior managers personally involved in a TQM project?

Yes	☐	No	☐

7. Do you have a TQM co-ordinator?

Yes	☐	No	☐

8. What percentage (%) of your employees have quality targets?

Less than 10%	☐	10% - 49%	☐
50% - 90%	☐	90% - 100%	☐

9. Have you surveyed your external customers since implementing TQM?

Yes ☐ No ☐

If yes, how often are they surveyed?

Annually ☐
More frequently ☐
Less frequently ☐

10. Has the organisation surveyed the internal customers needs?

Yes ☐ No ☐

If yes, how often are they surveyed?

Annually ☐
More frequently ☐
Less frequently ☐

11. What percentage (%) of your customers are demanding TQM?

Less than 5% ☐
5% - 29% ☐
30% - 69% ☐
70% - 95% ☐
More than 95% ☐

12. What percentage (%) of your customers still buy on lowest bid?

Less than 5% ☐
5% - 29% ☐
30% - 69% ☐
70% - 95% ☐
More than 95% ☐

13. Do you:-

Design for quality improvement? ☐
Plan for quality improvement? ☐
Train for quality improvement? ☐
Monitor for quality improvement? ☐
Set targets for quality improvement? ☐
Measure quality improvement? ☐

14. Do you measure the cost of non-conformance?

Yes ☐ No ☐

If yes, what is it as a percentage of your turnover?

Less than 10% ☐
10% - 19% ☐
20% - 29% ☐
30% - 40% ☐
More than 40% ☐

15. Which are your three main contributors to the cost of non-conformance? (List number in order of priority)

1. _____ (1) Rework

2. _____ (2) Poor Communication

3. _____ (3) Bad Planning

16. Have you surveyed your external suppliers?

Yes ☐ No ☐

17. Have you surveyed your internal suppliers?

Yes ☐ No ☐

18. Do you practice single sourcing?

Yes ☐ No ☐

19. Has the introduction of TQM reduced your level of:-

(a) employee turnover?

Yes ☐ No ☐

(b) employee absenteeism?

Yes ☐ No ☐

20. Has the introduction of TQM increased your level of:-

(a) safety?

Yes ☐ No ☐

(b) efficiency?

Yes ☐ No ☐

(c) productivity?

Yes ☐ No ☐

21. Do you have a steering group or committee to manage your TQM programme?

Yes ☐ No ☐

If yes, does it include:-

Top management? ☐
Middle management? ☐
Supervision? ☐
Front line operators? ☐
Union representatives? ☐

22. Has your company achieved a recognised Quality Standard/Certification?

Yes ☐ No ☐

If yes, please specify:-

BS 5750 Part 1 ☐
BS 5750 Part 2 ☐
AQAP ☐
ISO 9001 ☐
ISO 9002 ☐
Aiming for one ☐
Other ☐

23. Which philosophical approach has been pursued in your organisation?

Crosby (zero defects, right first time) ☐
Deming (statistics, use of SPC) ☐
Juran (statistical approach to improvement) ☐
Peters (excellence philosophy) ☐
Taguchi ☐
Other ☐

24. With which approach are you personally most familiar?

Crosby ☐
Deming ☐
Juran ☐
Peters ☐
Taguchi ☐

Where do you think your organisation is in relation to the following areas?

25. PLANNING

1. Short term ☐
2. ☐
3. ☐
4. ☐
5. ☐
6. ☐
7. ☐
8. ☐
9. ☐
10. Long term ☐

26. YOUR INTERPERSONAL CLIMATE

1. Competitive
2.
3.
4.
5.
6.
7.
8.
9.
10. Co-operative

27. YOUR ATTITUDE TO PROBLEM SOLVING

1. Assigning blame
2.
3.
4.
5.
6.
7.
8.
9.
10. Joint problem solving

28. YOUR MANAGEMENT STYLE

1. Control
2.
3.
4.
5.
6.
7.
8.
9.
10. Enabling

29. YOUR ATTITUDE TO CHANGE

1. Static
2.
3.
4.
5.
6.
7.
8.
9.
10. Dynamic

30. YOUR COMPANY FOCUS

1.	Inward looking	☐
2.		☐
3.		☐
4.		☐
5.		☐
6.		☐
7.		☐
8.		☐
9.		☐
10.	Market focus	☐

31. What were your three greatest difficulties with the introduction of TQM? (List in order of priority).

1. _____

2. _____

3. _____

32. What are the three main benefits of the introduction of TQM? (List in order of priority)

1. _____

2. _____

3. _____

33. Have you used consultants to implement TQM?

Yes ☐ No ☐

34. Is your TQM programme delivering the benefits which you expected?

1.	Not at all	☐
2.		☐
3.		☐
4.		☐
5.		☐
6.		☐
7.		☐
8.		☐
9.		☐
10.	Totally	☐

35. If you have a marketing department did you use them to develop an internal marketing plan for TQM?

Yes ☐ No ☐

Thank you

APPENDIX E

TQM- THE WIDER ISSUES

The involvement of Human Resource Specialists

Leaders of the TQM philosophy such as Crosby (1) and Juran (2) focus on the improvement of systems and tend to minimise the role of people in the improvement process. Although Deming (3) expresses views on the wider aspects of employee involvement in his "14 points" his philosophy is also based on the control and improvement of the processes themselves . It is perhaps not surprising therefore that the majority of TQM training is thus focussed on tools and techniques and very little is said about the people aspects of the issue.

Wilkinson et al (4) writing in the Human Resource Management Journal in 1992 believe that up until now little attention has been paid to TQM by Personnel or Human resource specialists. They believe that this might stem from the early concepts of TQM which have their roots (as the text illustrates in Chapter 3) in process and production activities. This view gains added weight when the standard texts on quality such as Oakland (5) emphasise the need for training in the tools and techniques which apply to TQM and make little mention of the wider issues in people training. Oakland says that " training must be the responsibility of the line management" and then details the process and procedures by which senior management can decide on training needs and construct training programmes focussed entirely on tools and techniques. The discussion on teams, in his text, is also driven entirely from a line managers point of view and no issues about Human Resource management are addressed.

Other workers have noted the lack of effort on training which was recorded in the North of England survey reported in Chapter Six. Wynne and Lancaster (6) noted that only half of the companies which they surveyed had perceived

the need to conduct any kind of training needs analysis. They also note (7) that little is done to educate people in the wider issues of the underlying concepts and strategies of TQM.

All to often therefore TQM appears to be seen in a simplistic way expressed solely in terms of tools and techniques. The evidence presented in the text (Chapter 6) from the North of England survey indicates that, in the early stages at least , TQM is very inward looking and concentrates its efforts on the improvement of processes and the elimination of waste. There is no evidence to say whether this is a result of the concentration on tools and techniques by TQM trainers or whether the companies themselves have driven it in this direction in their pursuit of short term improvement goals.

Edwards and Clutterbuck (8) claim that TQM programmes are unsuccessful because " While many quality programmes concentrate on raising awareness of problems and providing the skills for dealing with them, only programmes which also succeed in raising the motivation to actually face and tackle problems stand a significant chance of fulfilling their objectives".
The author's view is that the general risk averse attitude of British business may well continue to marginalise the benefits which can be gained from the cultural change which is inherent in a full implementation of TQM and that, until managers approach their tasks in a holistic way, seeking to add the inputs of the skills available form Human Resource activity to the new work culture implied by the TQM philosophy, only little progress will be made and the general level of competitiveness of British companies will continue to decline.

References for Appendix E

1 Crosby P. (1985) Quality Improvements through Defect Prevention, Winter Park, Florida, Philip Crosby Associates Inc.

2 Juran J M (1951) Quality Control Book, New York, McGraw-Hill

3 Deming W.E. (1982) Out of the Crisis, Cambridge, Cambridge University Press

4 Wilkinson A, Marchington M and Goodman J (1992) Total Quality Management and Employee Involvement, Human Resource management journal Vol 2 No 4 Summer 92 pp1-21

5 Oakland J.S, (1989) Total Quality Management, London, Butterworth-Heinemann

6 Wynne R.M, and Lancaster J. (1992) The Importance of Understanding the Concepts of Total Quality management and the Consequent Training Needs, Total Quality Management Vol 3 Number 1 pp19-30

7 op. cit.

8 Edwards D, Clutterbuck D, (1991) Motivation and Problem Solving, Managing Service Quality Vol1,No5. July 1991 pp275-280

BIBLIOGRAPHY

Allen N, (1986) David Dale, Robert Owen and the Story of New Lanark, Edinburgh;Moubray House Publishing.

Arbrose J R . (1981) Japanese Technology Saves a Welsh Factory, International Management(UK) June

Atkinson P. E. (1990) Creating Culture Change:The Key to Successful Total Quality Management, Kempston:IFS Publications

Bolwijn P T ,Brinkman S (1987) Japanese Manufacturing:Strategy and Practice, Long Range Planning Vol. 20 No.1 pp25-34

British Deming Association (1989) Annual Conference Papers,Salisbury: The British Deming Association

Christopher M, Majaro S, McDonald M, (1987) Strategy Search, Aldershot:Gower

Clutterbuck D, Crainer S (1990) Makers of Management, London:McMillan

Collier P, Horrowitz D, (1987) The Fords, London:Collins

Crosby P B (1979) Quality is Free The Art of Making Quality Certain, New York:McGraw-Hill.

Crosby P B (1985) Quality Improvement through Defect Prevention,Winter Park Florida:Philip Crosby Associates.

Coulson-Thomas C (1992) Surveying the Scene, The TQM Magazine,February,pp25-31

David A J (1990) The Customer/Supplier Relationship-The Nissan Way,Total Quality Management,Vol.1,No.1,pp59-67

Deming W.E. Out of the Crisis (1986) Cambridge: Cambridge University Press.

Drucker P. F (1965) The Practice of Management, London:Mercury Books

Drucker P. F (1985) Innovation and Entrepreneurship, London ; Heinemann

Eason K (1993) Cinderellas of Motor Industry Begin to Reap their Rewards,The Times September 15th p27

Edwards D, Clutterbuck D (1991) Motivation and Problem Solving, Managing Service Quality Vol 1, No 5 July 1991

Fiegenbaum A.V. (1991) Total Quality Control, New York: McGraw-Hill

Garvin D A (1988) Managing Quality:The Strategic and Competitive Edge,London: The Free Press

Gow I T M (1989) Japanese Management Practices and their Transferability to Europe, Working the Japanese Way Japanese Employment Practices at Home and Abroad , Brussels, Sept25-26th 1989

Hancock G (1984) Quality Brings Sales Progress at Jaguar, Quality Progress Vol 17 No 1 May pp30-34.

Handy C (1993) Understanding Organisations 4th edition Harmondsworth, Penguin Books Ltd

Harvey D (1980) Quality Control Represents a Challenge to Everyone, Chief Executive (UK) November

Hughes M D, Gow I M T, Ewa M Helinska-Hughes Japanese Business in the Context of the New East West Order Personal Communication from Professor Gow

Ishikawa K (1984) How Quality Control Started and Developed in Japan Sumotomo Quarterly Spring 1984

Kazmier L.K. (1969) Principles of Management, New York;McGraw-Hill

Kotler P (1988) Marketing Management, Analysis, Planning, Implementation and Control,Englewood Cliffs,Prentice-Hall.

Lee M (1982) Danger:Men at Work: Why Don't They Ask? , Management Today May

McLaren D,J, (1983) David Dale of New Lanark, Milngavie;Heatherbank Press

Naden J, Bremner A (1991) A Guide to Total Quality Management, Glasgow; Scottish Enterprise.

Oakland J.S. (1989) Total Quality Management, Oxford; Butterworth-Heinemann Ltd

O'Brien R Cruise, Voss C.A. (1992) In search of Quality, An assessment of 42 British Organisations Using the Criteria of the Baldrige Quality Award, London Business School Operations Management Paper

Peters T Austin N (1985) A Passion for Excellence, Glasgow; Fontanna/Collins

Peters T (1988) Thriving on Chaos, London ; McMillan

Sisk H. L. (1969) Principles of Management, Cincinnati: Southwestern Publishing Company

Smith B (1989) Company Experience Nissan Motor Manufacturing (UK) Ltd, Paper presented at the British Deming Association Annual Conference in 1989.

Upton R (1987) Xerox Copies the Message on Quality, Personnel management Vol.19 No.4.

Walton M (1989) The Deming Management Method, London: Mercury Books

Wayne R.M. ,Lancaster J. (1992) The Importance of Understanding the Concepts of Total Quality Management and the Consequent Training Needs, Total Quality Management Vol 3 No 1 1992

Wilkinson A, Marchington M, Goodman J, Ackers P, (1992) Total Quality Management and Employee Involvement, Human Resource Management Journal , Vol2 No 4 Summer 1992 pp1-20.

Wilkinson A, Redman T, Snape E. (1993) Quality and the Manager; Survey commissioned by the Institute of Management :London

Wilkinson A, Snape.E, Allen P, (1990) Total Customer Service, Total Quality Management October

Wilkinson A , Allen P, Snape E, (1991) TQM and the Management of Labour: Employee Relations Vol.13 No.1

Wiemels W P (1989) The Union Carbide Experience; Paper presented at the 1989 British Deming Association Annual Conference,

Witcher B J (1990) Total Marketing: Total Quality and the Marketing Concept, The Quarterly Review of Marketing, Winter