

**THE IMPLEMENTATION OF TOTAL QUALITY MANAGEMENT  
IN  
SMALL AND MEDIUM ENTERPRISES**

**PHAIK LAN GOH**

**A Thesis Submitted for the Degree of Doctor of Philosophy  
May 2000**

**Ibberson Centre  
Department of Mechanical Engineering  
The University of Sheffield  
Mappin Street  
Sheffield  
S1 3JD**

## **Abstract**

Oakland (1989b) argues that following the Industrial Revolution in the 19<sup>th</sup> century we are presently in the midst of the quality revolution.

In the United Kingdom quality took on a new significance in 1979 with the publication of the British Standard for Quality BS5750. Since that date the Department of Trade and Industry (DTI) has been actively promoting quality improvements. In 1989, the DTI specially supported the implementation of Total Quality Management (TQM) in its *Managing in the '90s Program*.

The benefits of TQM are widely recognised following reports of its successful implementation in many large companies. It has led to these companies becoming highly competitive both locally and internationally through the production of quality products that meet customer requirements at the lowest cost, significantly increasing their market share and profitability.

As part of the Sheffield Regeneration effort, this thesis examines the current position of Small and Medium manufacturing Enterprises (SMEs) in Sheffield. The thesis aims to facilitate the implementation of TQM in SMEs by enabling them to benchmark their progress.

The thesis examines three hypotheses:

1. SMEs do not understand the definitions or implications of TQM.
2. SMEs can be encouraged to implement TQM by a combination of training and mentoring (Uncle Concept).
3. It is possible to benchmark management styles and the relative position of a company on route to TQM using the biological classification system, Cladistics.

The characteristics of SMEs and principles of TQM were closely researched to develop a TQM model based on 5 Pillars that would specifically cater to the needs of SMEs. A questionnaire was developed based on these 5 Pillars to assess the level of TQM implementation in 30 Sheffield and 10 Singapore manufacturing SMEs.

The survey results based on interviews with senior management confirmed the first hypothesis that SMEs do not understand the definitions or implications of TQM. This led to the second hypothesis that SMEs can be encouraged to implement TQM through a Framework comprising a combination of training and mentoring (Uncle Concept) by a company that had already implemented TQM.

The TQM Framework was applied to six SMEs in South Yorkshire. Customer and Employee surveys conducted as the prerequisite to TQM implementation provided valuable information to the companies about actions they needed to undertake in their implementation programme. All six companies proceeded to TQM Facilitator Training which was conducted by Avesta Sheffield Limited, who having successfully implemented and sustained TQM fulfilled the role of the Uncle.

However, the second hypothesis was proved to be incorrect. The companies 'cherry picked' facets of TQM and the implementation programs failed in each case.

This thesis also reviews the evolution of management styles through a study of management pioneers and their principles and theories on management, organisation structures and motivation. The evolution of the bureaucratic, authoritarian and impersonal management style of Frederick W. Taylor to the flexible, open and participative management style of TQM was applied to the classification technique Cladistics to determine if it was possible to benchmark management styles and the relative position of a company along its route to TQM (Hypothesis 3). A Management Style Survey Questionnaire was developed and a structured interview was conducted with ten companies from South Yorkshire and one company from Japan. The results supported Hypothesis 3.

To Mum, Dad and Jek



## **Acknowledgements**

I would like to express my thanks to Professor Keith Ridgway for his supervision, support and patience which has brought me through this work. His sense of humour and ready smile have seen away many a dark day. I would also like to thank Mrs Chris Ridgway for her care, help and encouragement, and for always being there.

I am grateful to Mr Jim Finnie of Avesta Sheffield Limited for conducting the Facilitator Training which was an integral part of this research.

My thanks also to the management and employees of the companies that participated in this research and for the invaluable insight gained through this experience.

I would like to thank my family, especially Mum, Dad, Jek, Nette and Chih-hao for your love, encouragement and belief in me. Thank you Dad for your advice and insight into management practices borne of your personal experience and Mum for just being Mum.

## Table of Contents

<b>ABSTRACT</b>	<b>i</b>
<b>ACKNOWLEDGEMENTS</b>	<b>iv</b>
<b>TABLE OF CONTENTS</b>	<b>v</b>
<b>LIST OF FIGURES</b>	<b>xi</b>
<b>LIST OF TABLES</b>	<b>xii</b>
<b><u>CHAPTER 1: INTRODUCTION</u></b>	<b><u>1</u></b>
1.1 IMPORTANCE OF SMES	1
1.2 CHARACTERISTICS OF SMES	3
1.3 PROBLEMS FACING SMES	5
1.4 THE IMPORTANCE OF TQM FOR SMES	7
1.5 TQM FRAMEWORK	9
1.6 MANAGEMENT STYLES	10
1.7 RESEARCH METHODOLOGY	14
1.8 RESEARCH AND THESIS STRUCTURE	15
<b><u>CHAPTER 2: THE FIVE PILLARS OF TOM</u></b>	<b><u>18</u></b>
<i>HYPOTHESIS 1: SMES DO NOT UNDERSTAND THE DEFINITIONS OR</i>	
<i>IMPLICATIONS OF TQM</i>	
2.1 QUALITY AND COMPETITION	18
2.2 TQM IN THE UNITED KINGDOM	19
2.3 QUALITY GURUS: THEIR PHILOSOPHIES, PRINCIPLES AND METHODS	24
2.3.1 W. EDWARDS DEMING	25
2.3.2 J. M. JURAN	29
2.3.3 PHILIP B. CROSBY	31

2.3.4	ARMAND V. FEIGENBAUM	34
2.3.5	KAORU ISHIKAWA	35
2.3.6	OVERVIEW	37
2.4	TQM MODEL FOR SMES	39
2.4.1	THE 5 PILLARS OF TQM	41
2.5	TOTAL QUALITY MANAGEMENT SURVEY	48
2.5.1	OBJECTIVE OF TQM SURVEY	48
2.5.2	DEVELOPMENT OF TQM SURVEY QUESTIONNAIRE	49
2.5.3	QUALITY AWARDS	49
2.5.4	SELF-ASSESSMENT USING THE QUALITY AWARDS	54
2.5.5	SURVEY METHODOLOGY	55
 <b>CHAPTER 3: RESULTS OF TOM SURVEY</b>		 <b>56</b>
3.1	SURVEY RESULTS	56
3.2	STRENGTHS AND WEAKNESSES	65
3.3	COMPARISON OF COMPANIES IN SHEFFIELD AND SINGAPORE	66
3.3.1	SIGNIFICANT DIFFERENCES	66
3.3.2	MARGINAL DIFFERENCES	71
3.4	CASE STUDY 1: BEST COMPANY IN SHEFFIELD	73
3.5	CASE STUDY 2: BEST COMPANY IN SINGAPORE	77
3.6	CONCLUSIONS	80
 <b>CHAPTER 4: DEVELOPMENT OF A TOM FRAMEWORK</b>		 <b>83</b>
<i>HYPOTHESIS 2: SMES CAN BE ENCOURAGED TO IMPLEMENT TQM USING A</i>		
<i>FRAMEWORK OF TRAINING AND MENTORING (UNCLE CONCEPT)</i>		
4.1	DEVELOPMENT OF TQM FRAMEWORK	83
4.2	THE UNCLE CONCEPT	84
4.2.1	THE UNCLE	85
4.3	PREREQUISITES FOR TQM FRAMEWORK	87
4.3.1	CUSTOMER FOCUS	87
4.3.2	CUSTOMER SURVEY QUESTIONNAIRE	88

4.3.3	EMPLOYEE MOTIVATION	90
4.3.4	EMPLOYEE SURVEY QUESTIONNAIRE	92
4.4	TQM FRAMEWORK IMPLEMENTATION	94
4.1.1	CUSTOMER SURVEY METHODOLOGY	95
4.1.2	EMPLOYEE SURVEY METHODOLOGY	97

**CHAPTER 5: RESULTS OF TQM FRAMEWORK IMPLEMENTATION    99**

5.1	METHOD FOR ANALYSIS OF CUSTOMER SURVEY RESULTS	99
5.2	METHOD FOR ANALYSIS OF EMPLOYEE SURVEY RESULTS	101
5.3	SUMMARY OF SURVEY RESULTS	104
5.3.1	CUSTOMER SURVEY RESULTS	104
5.3.2	EMPLOYEE SURVEY RESULTS	105
5.4	OVERVIEW OF SURVEY RESULTS	107
5.5	FACILITATOR TRAINING	108
5.5.1	BACKGROUND	108
5.5.2	EVALUATION OF FACILITATOR TRAINING	110
5.6	EMPLOYEE TRAINING	112
5.6.1	BACKGROUND	112
5.6.2	EVALUATION OF EMPLOYEE TRAINING	113
5.6.3	OUTCOME OF EMPLOYEE TRAINING	114
5.7	CONCLUSION	116

**CHAPTER 6: BENCHMARKING THE ROUTE TO TQM    118**

*HYPOTHESIS 3: MANAGEMENT STYLES AND THE RELATIVE POSITION OF A  
COMPANY ON ROUTE TO TQM CAN BE BENCHMARKED  
USING CLADISTICS*

6.1.	INTRODUCTION	118
6.1.1.	EVOLUTION OF MANAGEMENT	118
6.1.2.	ROBERT OWEN	120
6.1.3.	CHARLES BABBAGE	121
6.2.	SCIENTIFIC MANAGEMENT	122



6.2.1. FREDERICK W. TAYLOR	123
6.2.2. HENRY L. GANTT	126
6.2.3. FRANK & LILLIAN GILBRETH	126
6.3. ADMINISTRATIVE MANAGEMENT	127
6.3.1. HENRI FAYOL	127
6.3.2. MAX WEBER	129
6.3.3. CHESTER BARNARD	130
6.3.4. JAMES MOONEY	131
6.3.5. LYNDALL F. URWICK	132
6.4. HUMAN RELATIONS	135
6.4.1. MARY P. FOLLETT	135
6.4.2. GEORGE ELTON MAYO	137
6.5. MODERN ERA	139
6.5.1. DOUGLAS MCGREGOR	140
6.5.2. ABRAHAM H. MASLOW	141
6.5.3. CHRIS ARGYRIS	142
6.5.4. FREDERICK HERZBERG	143
6.5.5. OPERATIONS RESEARCH	145
6.5.6. DECISION THEORY	146
6.5.7. SYSTEMS THEORY	146
6.5.8. CONTINGENCY THEORY	147
6.6. TOTAL QUALITY MANAGEMENT	149
6.7. CONCLUSION	152
<b>CHAPTER 7: BENCHMARKING MANAGEMENT STYLE</b>	<b>153</b>
7.1 ORGANISATIONAL CHANGES	153
7.2 MANAGEMENT STYLES	156
7.3 EVOLUTION OF MANAGEMENT STYLES	158
7.4 CONCLUSION	158

<b>CHAPTER 8: CLADISTICS</b>	<b>162</b>
8.1 INTRODUCTION	162
8.2 CLADISTICS	162
8.3 CLADOGRAM	164
8.4 CLADOGRAM CONSTRUCTION	165
8.5 CONCLUSION	166
<b>CHAPTER 9: RESULTS OF MANAGEMENT STYLE SURVEY</b>	<b>167</b>
9.1 MANAGEMENT STYLE SURVEY QUESTIONNAIRE	167
9.1.1 MANAGEMENT COMMITMENT	167
9.1.2 EMPLOYEE PARTICIPATION	168
9.1.3 CUSTOMER FOCUS	170
9.1.4 ADDITIONAL INFORMATION	170
9.2 BACKGROUND	170
9.3 SURVEY METHODOLOGY	171
9.4 SURVEY RESULTS	171
<b>CHAPTER 10: CONCLUSION</b>	<b>178</b>
<b>REFERENCES</b>	<b>188</b>
<b>APPENDIX A TQM SURVEY QUESTIONNAIRE</b>	<b>208</b>
<b>APPENDIX B CUSTOMER SURVEY QUESTIONNAIRE</b>	<b>226</b>
<b>APPENDIX C CUSTOMER SURVEY REPORT</b>	<b>231</b>
<b>APPENDIX D EMPLOYEE SURVEY REPORT</b>	<b>254</b>
<b>APPENDIX E EMPLOYEE SURVEY QUESTIONNAIRE</b>	<b>258</b>

<b>APPENDIX F</b>	<b>FACILITATOR TRAINING</b>	<b>284</b>
<b>APPENDIX G</b>	<b>EMPLOYEE TRAINING</b>	<b>295</b>
<b>APPENDIX H</b>	<b>MANAGEMENT STYLE QUESTIONNAIRE</b>	<b>305</b>

## **List of Figures**

Figure 1.7	Research Map of Thesis	14
Figure 1.8	Research and Thesis Structure	14a
Figure 2.3.2	The Juran Trilogy	30
Figure 2.3.3	Crosby's Quality Management Maturity Grid	32a
Figure 2.3.5	Cause and Effect Diagram	36
Figure 2.3.6a	TQM Plan	37a
Figure 2.3.6b	Pyramid Model of TQM	37a
Figure 2.4	The 5 Pillars of TQM	40
Figure 2.5.2a	Malcolm Baldrige National Quality Award	49a
Figure 2.5.2b	European Quality Award Assessment Categories	49a
Figure 3.6	Percentage of Sheffield Companies per Category	80
Figure 6.2.1	Taylor's Functional Foremen	123a
Figure 6.3.5a	The Fundamental Principle – Process – Effect of Management: The First Level of Analysis	133a
Figure 6.3.5b	Identification of Co-ordination and Control: The Second Level of Analysis	133a
Figure 6.5.2	Abraham Maslow's Hierarchy of Human Needs	141a
Figure 8.2	Example of a Monophyletic Group	164
Figure 8.3	Four Taxa Cladogram	165
Figure 9.4a	Cladogram of Evolutionary Phases of Management Styles	175
Figure 9.4b	Cladogram Showing the Evolution of 11 Companies' Management Styles	177



## **List of Tables**

Table 1.2a	The Characteristics of Small and Big Industrial Enterprises	3a
Table 1.2b:	The Strengths and Weaknesses of SMEs	4
Table 2.2	Differences between BS5750/ISO9000 and TQM	21a
Table 2.4.1	Culture Change	40a
Table 2.5.2a	Scoring for the Malcolm Baldrige Award	50a
Table 2.5.2b:	EQA Assessment Categories and Criteria	51a
Table 2.5.2c	Scoring the Enablers	52a
Table 2.5.2d	Scoring the Results	53
Table 3.1a	Summary of TQM Survey Results	56
Table 3.1b	Quality Progress of Companies in Sheffield	57
Table 3.1c	Quality Progress of Companies in Singapore	58a
Table 3.1d	Average Ratings of Companies in Sheffield	63a
Table 3.1e	Average Ratings of Companies in Singapore	64
Table 3.2	Strengths and Weaknesses	64a
Table 3.3	Comparison of Companies in Sheffield and Singapore	65a
Table 5.1a	Number of Customers per Rating for Section 1 (Quality Management)	99
Table 5.1b	Classification of Customer Satisfaction Levels for Section 1 (Quality Management)	100
Table 5.2a	Number of Employees per Rating for Part A (Work Environment)	102
Table 5.2b	Classification of Employee Satisfaction Levels for Work Environment	103
Table 5.3.1	Summary of Customer Survey Results	103a

Table 5.3.2a	Summary of Employee Survey Results	104a
Table 5.3.2b	Top 15 Questions Classified as “High Satisfaction”	105a
Table 5.3.2c	Top 10 Questions Classified as “Dissatisfaction”	107
Table 6.3.1	TQM Management Functions	127a
Table 6.5.4	Correlation between Maslow’s Hierarchy of Needs and Herzberg’s Hygiene and Motivation Factors	143a
Table 6.6	Changes from Traditional Management to Total Quality Management	151a
Table 7.1	Organisation Culture, Traditional Management and TQM	154a
Table 7.2	Comparison of Management Principles	156a
Table 7.3	Evolution of Management Styles from the Pre-Industrial Revolution to TQM	159
Table 9.4a	Management Style Characters	173
Table 9.4b	Data Editor for 6 Evolutionary Phases of Management Styles	174
Table 9.4c	Data Editor for the Evolution of the 11 Companies’ Management Styles	176

## **Chapter 1: Introduction**

---

### **1.1 Importance of SMEs**

This thesis is part of the Sheffield regeneration efforts to improve the performance of small and medium enterprises (SMEs). It describes a study carried out by the author on a part-time basis from 1992 to 1999. The extent to which SMEs understand Total Quality Management (TQM) is examined with the objective of encouraging SMEs to implement TQM and boost their competitiveness. This need to assist SMEs is reinforced by the report from The Department of Trade and Industry in 1996 that stated that “small business population changes constantly. New businesses are started, others close, while some change ownership. In recent years, information collected about business bank accounts indicates that, in England and Wales, around 400,000 new businesses start each year and that similar numbers closed down”. It is acknowledged that SMEs that are neither viable nor competitive would naturally close down. However, if no effort is made to assist SMEs, attrition over time can increase the casualties in the current business environment where “competition is more intense, customers are more demanding and technology continually advancing” (DTI Managing in the ‘90s).

This thesis tests the following three hypotheses that are structured to ensure the problems facing SMEs are fully understood in order to effectively meet and overcome them.

#### **Hypothesis 1:**

SMEs do not understand the definitions or implications of TQM

#### **Hypothesis 2:**

SMEs can be encouraged to implement TQM using a Framework of training and mentoring (Uncle Concept)

#### **Hypothesis 3:**

Management styles and the relative position of a company on route to TQM can be benchmarked using the biological classification system, Cladistics



The importance of SMEs to the national economy cannot be overlooked. In the United Kingdom, SMEs employ 67.2% of the total workforce (HMSO, 1992). Within the manufacturing sector 94% of companies are SMEs with less than 200 employees (QED, 1992). This research uses the DTI's definition of an SME, which defines it as having fewer than 200 employees. Although the definition of an SME differs, for example, the European Foundation for Quality Management defines an SME as having fewer than 250 employees, the same concepts apply. Hewitt (1997) views these differences as insignificant because these are upper limits.

Owing to the limited financial resources and management skills of SMEs, this sector is one of the most vulnerable and requires assistance. The UK, like other countries, cannot depend only on multi-national and large companies to support its economy. SMEs form an integral part of the country's economy. They are the potential future large and multi-national companies and need to be nurtured and assisted. Wedgwood, Marks and Spencer, W.H. Smith, Sainsbury's and Tesco are examples of small firms that have grown into household names (Clarke, 1972). High technology SMEs have already demonstrated their innovation and enterprise by developing new state of the art products and markets (Oakley, 1995). Aspiring SMEs can be equally successful in this era of changing technology, precision engineering, computer and knowledge technology. The issue is not the shortage of skill, innovation, invention and enterprise. Rather, it is the need to assist and nurture SMEs through understanding and implementing TQM, allowing them to reap the benefits (O'Neil and Duker, 1986) enjoyed by the larger enterprises which have successfully implemented TQM (Buzzel and Gale, 1987; Mann and Kefoe, 1994).

The importance of SMEs was recognised back in July 1969 when the UK government set up the Bolton Committee whose official title was 'Government Committee of Inquiry on Small Firms'. The Bolton Committee had the task of determining the role of small firms in the national economy, the facilities available to them and the problems they faced. The definition of small firms used was companies employing 200 or less. The Committee reported there were 1.25 million small firms, which accounted for 19% of GNP and employed 29% of the work population. It also reported that these small firms were not employing resources efficiently. The main finding of the 1971 Bolton report was that "despite the small firm sector being a large and important component of the country's industrial structure, it was in a state of



long-term decline both in size and in its share of economic activity, and while the same was true of most other developed countries throughout the world, the process appeared to have gone further in the UK than elsewhere. To guard against the possibility that the decline might continue past danger point, it recommended the setting up, within the Department of Trade and Industry, of a Small Firms Division under the aegis of a minister designated as responsible for small firms, whose main function would be to monitor the health of the sector". This recommendation was immediately implemented (Clarke, 1972).

In 1983, Prime Minister Margaret Thatcher launched the *European Year of Small and Medium-Sized Enterprise* with the following message: "No sector in industry is more representative of the entrepreneurial spirit of Britain than the small and independent business community. The foundations of this country's economic structure are based upon the enterprise of those who started and developed small businesses. The health of big business may reflect the true state of the economy's present position but it is the health of the small business which provides the best measure of its future" (Ritchie, 1984).

## **1.2 Characteristics of SMEs**

Small companies are characterised by their size, simple organisation structure, and personalised management where communications and procedures are mostly informal or verbal. They are often family businesses or partnerships controlled by one or two people who own or started the business (Jennings and Beaver, 1997). These owner managers are more entrepreneurs than professional managers. Despite their having little or no formal training in management, they run the whole enterprise, making all the decisions, financing the business and learning through experience. They face time pressure and lack of knowledge (McTeer and Dale, 1994). Successful small enterprises that grow larger often retain their original characteristics. At a critical point of growth when the owner managers or partners cannot cope, they employ managers or supervisors to help with the technical and financial aspects of the business whilst maintaining tight control, making all decisions in traditional military style, and focusing on short term goals of profit and sale without any proper business strategy (Scott, Roberts, Holyroyd and Sawbridge, 1989).

## THE CHARACTERISTICS OF SMALL AND BIG INDUSTRIAL ENTERPRISES

### Big Enterprise

- Resources: personnel, financing, knowledge of markets, economical experience.
- Planning: strategies.
- Demanding development projects.
- Connections to institutes and other outsiders.
- Independent of one person.
- The government regulations are well known.
- Qualified technical staff.
- Using of idea sources.
- Profit targeting through improving existing product lines.
- New ideas not approved, creativity kept on the background.
- Smaller and incremental innovations.

### Small Enterprise

- Simple and efficient organisation, strong motivation for development.
- Flexibility when markets and techniques are changing.
- Quick reaction towards the changes in markets and new possibilities.
- Lack of bureaucracy. Managers are willing to take risks.
- Inside information is informal and efficient.
- Unexpected development results can be benefited.
- Creativity.
- Entrepreneurship.
- Capability to use small, new or risky market areas.
- Considerable innovations.

**Table 1.2a: The Characteristics of Small and Big Industrial Enterprises**

(Source: Hyvarinen, 1990)

Similar to large companies, SMEs face the challenges of competition, demanding customers and technological advancements. Whereas large companies have the management resources, organisation structure, human resources and support systems, SMEs do not have these basic infrastructures on the same scale. Therefore, although both SMEs and large companies are aware of TQM there exists a difference in their comprehension and interpretation of its meaning and implications. Table 1.2a shows the characteristics of small and big industrial businesses (Hyvarinen, 1990). The strengths and weaknesses of SMEs are listed in Table 1.2b (Hewitt, 1997).

<b>SMEs</b>	
<u>Strengths</u>	<u>Weaknesses</u>
<ul style="list-style-type: none"> <li>▪ Ability to respond very quickly to changing market conditions.</li> <li>▪ Waste little time on non-core business activities.</li> <li>▪ Tend to have high employee loyalty.</li> <li>▪ Reflect the commitment and personality of MD/CEO.</li> <li>▪ Likely to deploy improvements quickly and therefore gain rapid benefit.</li> <li>▪ Usually very closely in touch with customers.</li> <li>▪ Potential for excellent internal communications.</li> <li>▪ People are likely to be multi-skilled.</li> <li>▪ Operating an effective ISO9000 compliant quality management system.</li> <li>▪ Training is likely to be very focussed on skills needed to achieve targets.</li> <li>▪ People will usually be aware of how their job impacts on the business.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Highly vulnerable to slumps in markets.</li> <li>▪ Funding investment is more difficult.</li> <li>▪ Cash flow is crucial.</li> <li>▪ May not have time to look at 'outside world'.</li> <li>▪ May have difficulty getting good suppliers.</li> <li>▪ May be operating an inappropriate quality management system because of customer pressure to be certified to ISO9000.</li> <li>▪ Training budgets are likely to be limited and the wider aspects of people development will probably not be addressed.</li> </ul>

**Table 1.2b: The Strengths and Weaknesses of SMEs**

(Source: Hewitt, 1997)



### **1.3 Problems Facing SMEs**

The question frequently raised is “Why TQM for SMEs? Would BS5750/ISO9000\* not be sufficient since this is required by customers?”

It is important to realise that although ISO9000 is an aspect of TQM, only TQM can take the quality strategy to the highest level and ensure quality products and services (Dale, Lascelles and Plunkett, 1990). ISO9000 is a quality system that specifies the procedures for ensuring the quality of products or services. In 1996 the DTI reported that when ISO9000 was introduced into an organisation as part of a strategy, it provided a useful and progressive tool for improving internal operations. The standard however does not offer any guarantee of a company’s products, although it assures purchasers that specifications would be met consistently. Generally, the problems encountered in the implementation of BS5750/ISO9000 concern commitment to quality, leadership, documentation, procedures and training. Long, Dale and Younger (1991) found companies lacked full understanding of the fundamental requirements of a quality system and the necessary commitment.

Hence it can be hypothesised that SMEs will encounter even more problems with the implementation of TQM, starting from the understanding of the basics to the resources and efforts required to implement it (Holliday, 1994). Companies having implemented ISO9000 will need guidance to progress onto TQM instead of stopping at ISO9000. Askey and Dale (1994) and Bradley (1994) state that ISO9000 can provide the basis for the development of a road map for TQM. Further research by Majerczyk and DeRosa (1994) identified one of the major benefits of adopting ISO9000 as the common sense approach for building a TQM foundation.

*\* The standards BS5750 and ISO9000 are used interchangeably in the thesis. Although BS5750 has since been replaced by ISO9000 to bring uniformity to the international standard, BS5750 is referenced because it was the standard sought by Sheffield SMEs when this research was conducted.*



The caution is not to oversell TQM as a short-term panacea, rather to emphasise the importance of quality management focused on the customer. The path to TQM is strewn with many failures from multi-nationals and large enterprises to SMEs without the need to add to the numbers (Atkinson, 1990). Research indicates that about 80% of TQM failures were due to problems with implementation (Brown, 1993; Fisher, 1994).

The failure of TQM can be attributed to one or a combination of the following, which include the lack of management commitment, poor implementation planning, reluctance to change attitudes, culture and management styles, and the lack of employee training, participation and motivation (Lascelles and Dale, 1994; Wilkinson, 1994; Kearney, 1992). Research by Sirota, Usilaner and Weber (1994) reported that many companies achieved poor results from their TQM initiative when efforts were fundamentally tool and technologies-oriented. These companies restricted their TQM efforts to isolated quality-focused projects and activities and not systematic attempts to overhaul existing cultures, systems and processes.

North, Curran and Blackburn (1993) identified two concerns of small firms when implementing ISO9000 as that of finance and time. Clarke (1972) identified two main weaknesses of SMEs as money and management. The findings of North, Curran and Blackburn and Clark, although 20 years apart, both identified finance as a concern for SMEs. This does not imply large companies are immune from these problems, having themselves had to close down because of cash flow problems and poor or mismanagement. SMEs cannot realistically expect to fare any better when faced with these problems, and it is within reason to assume the lack of money and management will have greater adverse effects on SMEs. The lack of money and difficulty in raising money is often the most serious problem for small companies. A small company is very vulnerable to cash flow problems. Often customers are themselves small companies and are slow in payment. Suppliers are also tougher on small companies and extend only limited credit to reduce risks. Banks impose strict lending criteria and are often of little help in granting additional funds to overcome the crisis. These result in the need for continual juggling to maintain cash flow for the company's survival with little reserve for other use. It is therefore understandable that small companies resist or limit spending money on TQM.

The concerns about management weakness have been highlighted by Stanworth and Gray (1991) and Jennings and Beaver (1997). SMEs are often preoccupied with daily operational chores and do not concentrate on strategic management or long term improvements vital for their survival (Scott, Roberts, Holyroyd and Sawbridge, 1989).

Ironically, the strengths of small companies lie in their size as it accords them flexibility (Curran and Blackburn, 1992; Hewitt, 1997). They can respond quickly to market changes, have good internal communications, and have the opportunity to develop very close working relationships with customers and suppliers. Employees are multi-skilled, loyal, motivated and know their products and services. This is supported in a postal TQM survey of British managers conducted in 1992 which reported firms with fewer than 500 staff were less likely to face a lack of commitment from middle managers, poor communications and clashes with other initiatives as significant barriers. Wilkinson, Redman and Snape (1993) attributed this to the less bureaucratic nature of smaller organisations. There are fewer barriers for a small company to implement TQM compared to a large company (Lee and Oakes, 1995).

#### **1.4 The Importance of TQM for SMEs**

Research conducted by Dale and Prapopoulos (1995) supports the findings of this thesis, which is, similar to large companies, small companies require TQM to remain competitive. Other studies report that the benefits of TQM enjoyed by large companies can similarly be enjoyed by SMEs (O'Neil and Duker, 1986).

The vision of Sheffield regeneration is for SMEs to meet the challenges of the '90s. The market of today is no longer limited to the local UK market, but includes the European and global markets. These markets present new opportunities and neglecting them will be detrimental. The biggest threat however comes from newly industrialised countries. They offer the same products and services often at the same quality but at lower prices. This trend in international trade increases imports, with the resultant closure of local enterprises that cannot compete.

Technology is changing at ever-increasing rates. Product life cycles are shorter and product quality rapidly improving. Research and development (R&D) has added innovative enhancements and complexities to existing products. All these require



companies to continually upgrade and enhance to remain competitive (DTI Managing in the '90s). Environmental issues too are becoming more important. Regulations regarding pollution and control and the preservation of the environment are more stringent, adding to the costs of production and the need for companies to prove they are environmentally responsible. All these factors place severe demands on companies. Investing in R&D or ISO9000 alone is insufficient. Companies must engage a holistic approach to quality management that addresses each challenge and propels them to world class standards (Flood, 1993).

Today's customers are spoilt for choice. With the global market literally at their doorstep through aggressive marketing via the multimedia, internet, mail order and hypermarkets, customers are more demanding, wanting the best possible value for their money. They want products incorporating the latest technology, features and performance, in addition to quality and reliability, supplemented by good service and on-time delivery. In 1955 management consultant Peter F. Drucker stressed the importance of customers for the survival of any business. Forty-five years later, despite all the technological advancements, his focus on the importance of the customer still applies. If anything, the customer has become even more important. Drucker said in 1955 that "there is only one valid definition of business purpose: to create a customer. It is the customer who determines what a business is. For it is the customer, and he alone, who through being willing to pay for a good or service, converts economic resources into wealth, things into goods. What a business thinks it produces is not of first importance. What the customer thinks he is buying, what he considers value is decisive – it determines what a business is, what it produces. The customer is the foundation of a business and keeps it in existence".

TQM emphasises changing a company's culture, systems and procedures to ensure the continual improvement of processes, systems and innovation in order to meet the challenges and demands of the market, competition, technology, customer and environment. TQM will give SMEs the competitive advantage (Davies, 1991).

Oakland (1989a) states that TQM helps companies to:

- Focus clearly on the needs of the market.
- Achieve top quality performance in all areas, not just in product or service quality.

- Operate the simple procedures necessary for the achievement of top quality performance.
- Critically and continually examine all processes to remove non-productive activities and waste.
- See the improvements required and develop measures of performance.
- Understand fully and in detail the competition, and develop an effective competitive strategy.
- Develop a team approach to problem solving.
- Develop good procedures for communication and acknowledgement of hard work.
- Review continually the processes to develop the strategy of never-ending improvement.

### **1.5 TQM Framework**

The development of a tailor-made cost effective TQM framework with a combination of training and mentoring (Uncle Concept) will meet these needs. This is a novel approach, and distinct from conventional off-the-shelf TQM packages promoted by consultants. As it is low cost and requires minimal management effort, it builds on the strengths of small companies whilst overcoming their weaknesses. This approach is supported by Dale, Boaden and Lascelles (1994) who suggest that the most effective method is an organisation developing a tailor-made approach after assimilating the available knowledge on the subject, discussing with practitioners and visiting other companies. Research by Newall and Dale (1991) shows that companies tend to introduce 'off-the-shelf' TQM packages that are not suited to their needs and are either rejected or extensively modified. A further approach identified by Mortiboys and Oakland (1993) is the 'do-it-yourself' method where SMEs develop their own TQM package. Both these approaches are costly and require extensive resources that SMEs are typically unable to provide.



## **1.6 Management Styles**

The importance of understanding the past in order to fully address the future is the basis for the third hypothesis.

TQM requires changes in the organisation culture and in management practices (Wiggans and Turner, 1991; Oakland and Waterworth, 1995). It impacts on key areas of management styles such as leadership, strategy and employee involvement (Dean and Bowen, 1994), requiring a departure from Taylorism and the dominance of the finance function in the management of the business (Pfeffer, 1994). Taylorism cannot meet the demands of the present day competitive market environment of high technology, customer responsiveness and flexibility. Management concepts, theories and principles are propounded by scientists and scholars to meet the needs of their economic and social environments. Taylorism met the management needs of the Industrial Revolution but it is not adequate to meet the management requirements of the present quality revolution, illustrating the close relationship between the socio-economic environment and management styles.

The TQM culture involves a change in management strategy from “direct control” to “responsible autonomy” based on self-control, trust and commitment (Oliver, 1990). In line with the findings of this research, Ishikawa (1985) writes that top and middle managers must be bold and delegate as much authority as possible, incorporating as part of their management philosophy respect for employees and establishing a management system where employee participation is both top down and bottom up.

Historically, management assumed the basic form of organising collective efforts to achieve specific results. A literature study by Claude (1968) revealed the management practices of Sumerian temple priests and Egyptian pharaohs involved the management concepts of planning, staff assistance, division of labour, control and leadership. Mooney (1939) attributes the greatness of the Roman empire to their genius for organisation.

The Industrial Revolution brought major changes. The development of steam engines and interchangeable parts in production changed the economy, with mass production creating a market economy for the sale of surplus products. The focus of management became to increase production at the lowest cost. With this effort came Scientific

Management which is part of the classical school of management. The practitioners, engineers, scientists and writers from the classical school of management sought answers to the question of efficiency.

Frederick Winslow Taylor who is credited as the founder of scientific management drastically changed the way manual work was performed on the shop floor with his time study aimed at increasing efficiency. Production standards were introduced and workers rewarded for producing more than the standard. There was a negative side to his approach. It had no place for the workers' intelligence, creativity and initiative. They were treated as work gangs, not as individuals. Management's role was to plan and give orders, and the worker's role was to execute the plans set by management (Person, 1912).

Administrative management emphasised the best way to do a job based on the belief that monetary incentive is the motivation. Fayol (1949) proposed fourteen management principles and identified Planning, Organising, Commanding, Co-ordinating and Controlling as the five elements of management. Weber (1947) proposed the organisation structure for technical efficiency. He sought to establish a rational basis and definition of authority for the efficient functioning of an organisation or bureaucracy.

The next management school to evolve was Human Relations, which was popular from 1930 to the early 1950s (Wren, 1979). The writers in this school expanded on the classical school of management to include social aspects of human behaviour in the work environment using scientific procedures. This need for social skills in addition to the technical skills emphasised by the classical school added a new dimension to management.

The Hawthorne study provided the impetus for the study of social behaviour. Mayo (1933) perceived the key factor for explaining the Hawthorne mystery lay in the remarkable change of mental attitude within the group, and attributed the higher productivity to improved morale, supervision and interpersonal relations. The most notable researcher in this field was Mary Parker Follett. Her thesis was "true man" is found only through group organisation, and the "potentialities of the individual remain potentialities until they are released by group life. Man discovers his true nature, gains



his true freedom only through the group” (Follett, 1918). Another contribution made by Follett was the integration of management with workers and their interests, the result being the reduction in conflicts and improvement in control and co-ordination.

The Modern Management era started during World War II and encompassed Management Science and Behaviour Science. Management science is characterised by the use of mathematical models and computers in decision making.

The Behavioural Science approach to the study of management involved the scientific study of observable and verifiable human behaviour in organisations, drawing significantly from the literature of psychology, sociology and anthropology. It studied the needs of people in organisations and provided motivation theories that are applicable today. Behaviour science is largely inductive and problem centred (Filley and House, 1969). Key contributors to behaviour science include Douglas McGregor, Abraham Maslow, Frederick Herzberg and Chris Argyris.

McGregor theorised that a manager’s assumption of human nature and human behaviour determined his management style. McGregor’s “Theory X” represented the “traditional view of direction and control”. “Theory Y” on the other hand represented both the “integration of individual and organisational goals” and the “beginning for the new theory to the management of human resources” (McGregor, 1960). His Theory X and Theory Y were self-fulfilling prophecies about how people responded to the way they were treated.

Maslow argues for the improvement of the employee’s mental health through better organisational practice. His theory of motivation consists of a hierarchy of 5 sets of needs, namely, “physiological, safety, love, esteem and self-actualisation” (Maslow, 1943). He theorised that people would move up the hierarchy of needs as each level was satisfied or they could move down if a lower hierarchy need was threatened.

Herzberg developed the “hygiene-motivation” theory (Herzberg, Mausner and Snyderman, 1959). He classified work environment factors such as salary, work conditions, supervision, interpersonal relationships, company policies and administration as hygiene factors which brought dissatisfaction to workers when absent, removed dissatisfaction when present to an optimal level but did not motivate

workers. Motivation was related instead to factors such as respect, recognition, achievement, responsibility, advancement and growth.

Argyris (1957) challenged concepts from the classical school of management, such as division of labour, chain of command and unity of direction that he ascertained demotivated employees. He called on management to fully develop and utilise the abilities, self-control and self-direction of employees for the mutual benefit of the organisation and employee.

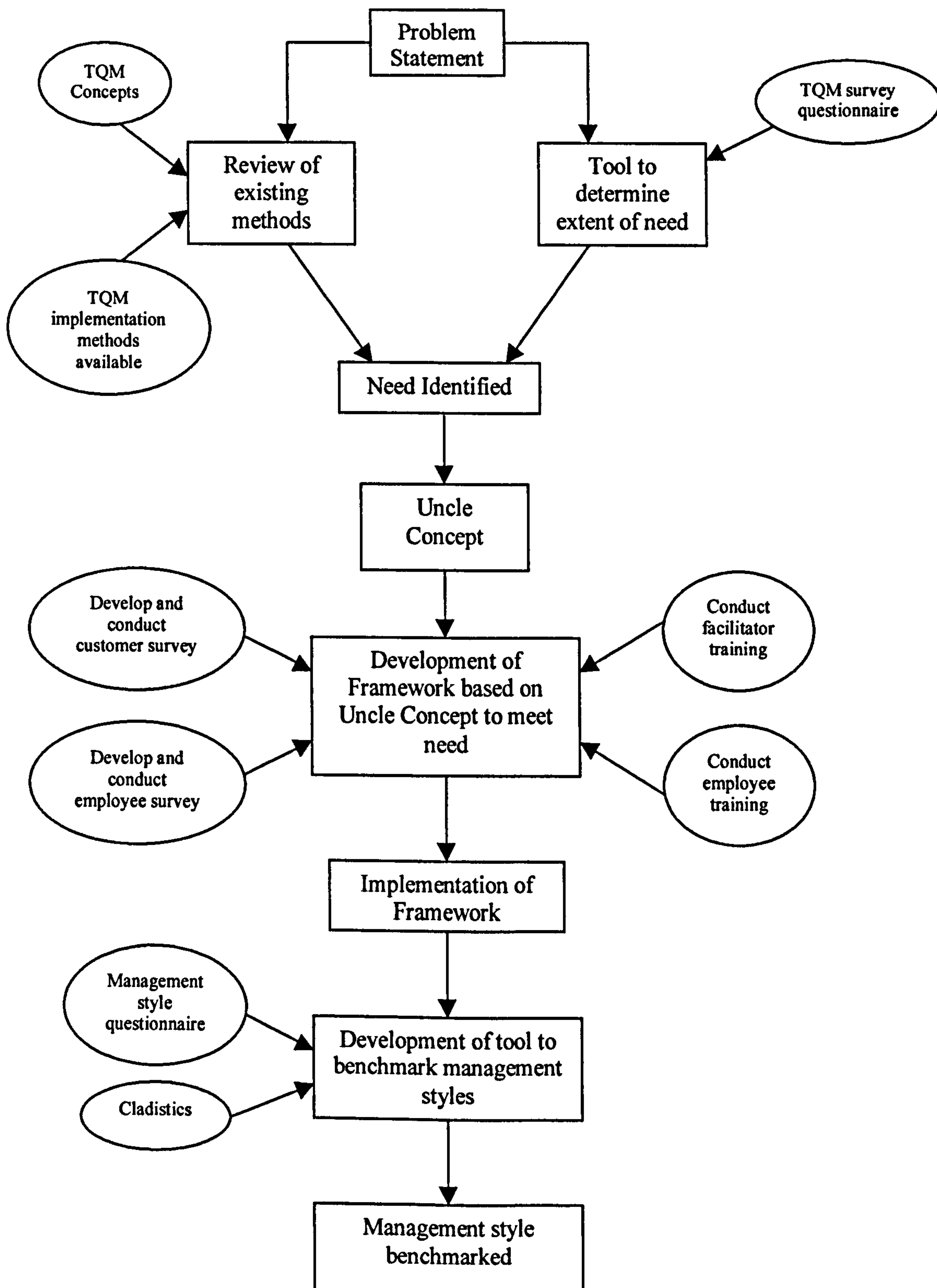
Modern management began to be displaced by TQM in 1980 when America received the wake-up call from Japan (Walton, 1986). The question “If Japan can ... why can’t we” led to the new quality revolution, and spawned the TQM gurus Deming, Juran, Crosby and Feigenbaum. After almost 20 years the change from traditional management styles to TQM is still proceeding.

This evolution of management styles from the authoritarian, bureaucratic and impersonal management style of Taylor and scientific management to the flexible, open and participative style of TQM is applied to the classification technique Cladistics. This is to allow a company’s progress along its route to TQM to be benchmarked, enabling the accurate determination of its progress and future requirements.

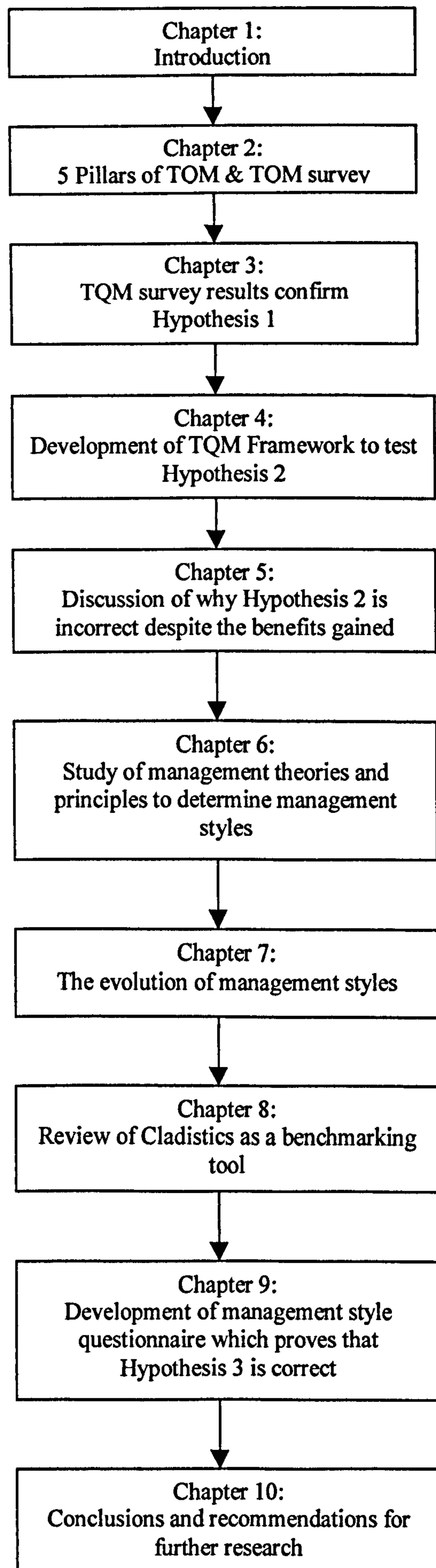


## 1.7 Research Methodology

Based on the need to assist SMEs in their implementation of TQM the following research map is presented to show the sequence employed in this thesis.



**Figure 1.7: Research Map of Thesis**



**Figure 1.8: Research and Thesis Structure**

## **1.8 Research and Thesis Structure**

This thesis sought to test three hypotheses. The research and findings of which are presented in ten chapters. Figure 1.8 shows the research and thesis structure. The following is a brief overview of each chapter.

### **Chapter 1: Introduction**

The characteristics, strengths and weaknesses of SMEs, from the perspective of TQM, are reviewed in Chapter 1 which concludes that while the strengths of SMEs help in their implementation of TQM, their weaknesses can be a major obstacle. The TQM implementation process used in large companies does not take into consideration the strengths and weaknesses of SMEs and is not suitable to SMEs who require a tailor-made TQM implementation framework.

### **Chapter 2: The 5 Pillars of TQM**

The chapter reviews and evaluates the principles and philosophies of the quality gurus and also reviews the development of TQM in the UK. A TQM model is developed for SMEs. This model is based on the 5 Pillars of TQM identified by the author. The 5 Pillars are Management Commitment, Customer Focus, Quality Costs, Quality Systems and Continuous Improvement. The TQM model led to the development of a TQM survey to assess quality management systems in SMEs and their readiness to implement TQM. The Malcolm Baldrige National Quality Award (MBNQA) and the European Foundation for Quality (EFQM) self-assessment models are reviewed and their suitability is evaluated. Both models are found to need modification before they can be applied to SMEs.

### **Chapter 3: Results of TQM Survey**

This chapter reports the results of the TQM survey for 30 SMEs in Sheffield and 10 SMEs in Singapore. The results confirm the hypothesis that SMEs do not understand the definitions or implications of TQM. Despite their high awareness of quality management, ISO9000/BS5750 certification was largely in response to pressure from their customers.

### **Chapter 4: Development of a TQM Framework**

The second hypothesis is examined. The development of the TQM Framework based on the Uncle Concept, as well as the development of Customer Focus and Employee

Motivation Questionnaires are discussed. Both these questionnaires were developed in response to the needs highlighted by the TQM survey and are prerequisites for the TQM Framework.

#### Chapter 5: Results of TQM Framework Implementation

The results of the Customer and Employee surveys are analysed and the method used in the implementation of the Framework is presented. The results show hypothesis two is incorrect. This is largely attributed to the lack of management commitment to TQM and a propensity to cherry-picking by management.

#### Chapter 6: Benchmarking the Route to TQM

The management theories and principles of management are studied to provide an understanding of how management has evolved from the formal, bureaucratic, authoritarian and impersonal management style of scientific management to the flexible, open, participative management style of TQM.

#### Chapter 7: Benchmarking Management Styles

A Management Style Questionnaire is developed to test the hypothesis that it is possible to benchmark management styles and the relative position of a company on the route to TQM using Cladistics which is a classification technique based on biological evolution.

#### Chapter 8: Cladistics

Explains the use of Cladistics and the development of the Cladogram used to benchmark management styles and the relative position of a company en route to TQM.

#### Chapter 9: Results of Management Style Survey

The results of the Management Style Survey conducted with eleven companies confirm the hypothesis that cladistics can be used to benchmark management styles and the relative position of a company en route to TQM.

#### Chapter 10: Conclusion

This chapter concludes the thesis which has gathered a wealth of information about TQM in SMEs in the manufacturing sector of South Yorkshire. This information will



be a valuable help in the regeneration of South Yorkshire's manufacturing industry. The conclusion also critically reviews the four novel aspects developed in this research:

- The survey of the state of TQM implementation in SMEs.
- The development of a TQM model based on the 5 pillars of TQM.
- The development of an implementation framework using the Uncle concept.
- The method of benchmarking management styles using cladistics.

## Chapter 2: The Five Pillars of TQM

### *Hypothesis 1: SMEs do not Understand the Definition or Implications of Total Quality Management*

---

#### 2.1 Quality and Competition

Quality is one of the most misunderstood issues in business today, and yet it is central to the survival of even the most successful company. Quality is defined by the customer, no longer by the company. In the past, the company defined quality for its customers. Now, customer requirements must be determined factually and the company must produce what its customers want, within the required time frame, at minimum cost.

Quality has been defined in a variety of ways by various gurus, consultants and researchers:

- Quality is improvement through statistical control of all processes and the reduction in variability of these. - Deming (1986)
- Quality is fitness for use. - Juran (1988)
- Quality is conformance to requirements. - Crosby (1980)
- Quality is the loss to the company and the total loss to society caused by the product. - Taguchi (1986)
- Quality is the total composite product and service characteristics of marketing, engineering, manufacturing and maintenance through which the product and service in use will meet the expectation of the customer. - Feigenbaum (1991)
- Quality is the totality of features and characteristics of a product, service or process, which bear on its ability to satisfy a given need.  
- British Standard Definition BS4778: Part 1 (1991)
- Quality is delighting the customer by continuously meeting and improving upon agreed requirements. - MacDonald and Piggott (1990)
- Quality means meeting customer (agreed) requirements, formal and informal, at lowest cost, first time every time. - Flood (1993)

These definitions of quality reinforce the importance of focusing on customer requirements and expectations, the improvements needed to meet these requirements and expectations, and the reduction of costs, wastage and losses.

The development of quality management took off rapidly at the turn of the century with the Industrial Revolution which radically changed the way people worked. The prolific growth of factories and workers meant managers had to find new principles and techniques to ensure effective operations (Wren, 1979). Quality management progressed from simple inspection to quality control, quality assurance and TQM.

Evidence from the 1990 Workplace Industrial Relations Survey (WIRS) involving 500 establishments revealed that the factors most crucial for competitive success were “quality” followed by “price”. Other aspects of quality such as “responsiveness to customer requirements” and “delivery time/availability” were third and fourth respectively. It appeared from these results that quality is a key factor for competitive success (ESRC, 1990). It is also a key factor that can ensure the survival of a company (Tuckman, 1995; Bavad, 1996).

The keen competition in the business environment of the ‘90s was recognised in the British Government White Paper on Competitiveness (HMSO, 1994) which encouraged organisations to be more flexible so that they could react quickly to changing markets. McQuater, Dale, Boaden and Wilcox (1996) maintain that these continuous and company-wide changes can be attained successfully through the implementation of TQM and the use of quality management tools and techniques.

## **2.2 Total Quality Management in the United Kingdom**

“British productivity is growing rapidly, but, UK companies are not about to overtake their major competitors”. This is the result published from the 1988 Confederation of British Industry (CBI) survey by MacDonald and Piggott (1990) which showed that if the rate of growth per person remained at its 1983-87 level, it would take Britain nearly ten years to catch up to West Germany, more than twenty years to overtake Japan and the idea of catching up with the United States could surely be forgotten. The report also indicated that the second stage of Britain’s economic resurgence would be tougher than the first, which happened in the post World War II period.

It is of interest to note that since that forecast was made, both Japan and Germany have faced problems in today’s market because productivity alone is insufficient. This was brought forth in a speech made by the Prime Minister of Singapore regarding the



need for innovation. He had this to say about both the countries: “Japan’s life-long employment culture helped ensure social stability in the past, but risked becoming “an albatross” when nimbleness is required. German precision and quality were suited to the industrial economy, but flexibility and agility are valued more in today’s markets. This could be one reason why German economic performance, from 1995 to 1998, was worse than the US’ or the developed Organisation for Economic Co-operation and Development countries’ average” (Chua, 2000).

In the 1970 *Fortune* league of the top 50 companies in the world outside the USA, British firms occupied the first four places, the sixth place and seven other places, making up twelve of the 50 companies listed. By the end of 1986, there were only six British firms left in the list - the top two and four others, of which three were in the bottom half of the table (Dale and Plunkett, 1990). However, in the midst of these depressing figures lies the story of Jaguar. Despite favourable comments about the design of Jaguar cars from international journalists, Jaguar nearly ran out of business in 1980 after losing its market share in North America and other parts of the world because of quality problems. It was at this point that Sir John Egan (1984) demonstrated clearly the role of top management in creating a quality culture. The quality of Jaguar cars improved rapidly because Sir John Egan took quality seriously. Everyone in the organisation knew that his first question would be about some aspect of quality so everyone took quality seriously. By adopting a vigorous new quality policy where suppliers, managers and workers who consistently failed to achieve the high quality standards required of them were replaced, a dramatic turnaround in quality performance was achieved. In the three years from 1980 to 1983, the sale of Jaguar cars more than doubled world-wide. In North America, sales increased five-fold to customers who were highly critical and had the freedom to choose their products from the world market.

BS5750 is the UK national standard for quality systems developed in 1979. It is equivalent to the International Standard ISO9000. It documents the requirements of a quality-oriented system. The principles of BS5750 are applicable for companies with ten or 10,000 employees. It identifies the basic principles and specifies in detail the procedures required to ensure that products meet customer requirements. BS5750 defines quality as fitness for purpose. This falls short of the TQM objective of delighting the customer. BS5750 sets out how a company can establish, document and



maintain an effective quality system, the objective being to ensure that customers receive the product or service they require every time. The standard defines a logical framework that when correctly applied will ensure that quality requirements are met. Companies certified to BS5750 must not be under the illusion that they now have a total quality company. BS5750 is but one aspect of TQM and its implementation will not change management behaviour or employee attitudes.

The DTI has actively promoted quality improvements and assisted companies in achieving quality. It launched the National Quality campaign in 1983 with advertisement telling the executive, 'Quality is too important to leave to your Quality Manager' (Lascelles and Dale, 1989). When it was reported that more work was necessary to promote quality, the *Managing in the '90s* programme was launched in 1989 as part of the Enterprise Initiative. The Enterprise Initiative was the DTI's comprehensive package of advice, guidance and practical help for British businesses. The DTI provides extensive advisory and support services both regionally and nationally. An independent firm or group with a payroll of fewer than 500 could obtain financial assistance covering five to fifteen man-days of specialist consultancy support in a number of key management functions, including quality. This was particularly directed at the assessment and implementation of systems for BS5750 certification and since June 1989 has included TQM although TQM had begun in earnest by the mid 1980s (Tuckman, 1994).

BS5750 has been successful in turning around the fortunes of small and medium sized British businesses as evidenced from the survey conducted by Research International on the impact of quality management certification (Harris, 1993a). The research commissioned by Lloyd's Register Quality Assurance (LRQA) showed that among small businesses, 83% reported improvements in management control and 64% said certification increased their chances when tendering for work. Furthermore, despite widespread criticisms from the small business sector, the survey reported that disappointments with BS5750 were relatively low. Only 3% of all organisations reported that BS5750 had increased their paperwork, with no more than 6% claiming that the standards were too costly.

Linda Campbell, then director and general manager of LRQA and chairman of the Association of British Certification Bodies, the certification industry's trade body, had

<b>Differences Between BS5750/ISO9000 and TQM</b>	
<b>BS5750/ISO9000</b>	<b>TQM</b>
▪ Not necessarily customer focused	▪ Definitely customer focused
▪ Not integrated with corporate strategy	▪ Integral to corporate strategy
▪ Technical systems and procedures focused	▪ Philosophy, concepts, tools and techniques focused
▪ Employee involvement not necessary	▪ Emphasis on employee involvement and employee empowerment
▪ No focus on continuous improvement. BS5750/ISO9000 – a decision	▪ Continuous improvement and TQM are synonymous: TQM is a never-ending journey
▪ Can be departmentally focused	▪ Organisation-wide. Involves all departments, functions and levels
▪ Quality department is responsible for quality	▪ Everyone is responsible for quality
▪ More likely to preserve the status quo	▪ Involves process and culture change

**Table 2.2: Differences Between BS5750/ISO9000 and TQM**

(Source: Pike and Barnes, 1994)



this to say about the potential of British industrial competitiveness and success world-wide (Harris, 1993b): "I firmly believe BS5750 has increased the competitiveness of British industry. It is a real success story for Britain. ... Britain has the best workforce in the world, but where we have fallen down is in the poor standard of management for which, rightly, we have been criticised. Now there are the means by which to achieve management control. ... For total quality management it is essential you have all the right building blocks in place. Understanding systems is essential. With TQM there are wider issues such as staff motivation and elements like cost effectiveness".

Hence it is seen that although BS5750 does improve companies' fortunes, it cannot take the place of TQM which is a quality management process involving everyone in the company working together to improve every aspect of the company's operation continuously to satisfy customer requirements. The differences between BS5750/ISO9000 and TQM are shown in Table 2.2.

Another important development in quality management in the UK is Investors in People (IIP). This standard was publicly announced in October 1991 by the Training and Enterprise Councils (TECs) in England and Wales and Local Enterprise Councils (LECs) in Scotland which serve the needs of local economies and local businesses. TECs and LECs advise, administer, co-ordinate IIP awards and conduct re-assessments. IIP is a national standard to assess and recognise the effective investment by a company in employee training, development and participation. This however falls short of TQM. There are four elements in the assessment: (Scrimshaw and Wooton, 1995)

- 1) Commitment to training and developing employees to meet the company's business goals.
- 2) Planning and reviewing employee training and development on a regular basis.
- 3) Developing action plans to train employees.
- 4) Evaluating the effectiveness of training and development.

The IIP award is for a period of three years after which the company needs to be re-assessed. This standard is available to all companies in the UK, regardless of size. The certified companies range from Boots, employing 54,000 employees nationwide, to a small consultancy firm employing four people. By the end of 1992 a total of 168 companies were certified to IIP, of which 61% represented companies with 250



employees or less (Ashton, 1993). Some of the benefits derived by companies awarded the IIP standard are employee motivation and training, the upgrade of production systems and standards, teamwork and the achievement of company goals such as the elimination of waste, work improvement and quality. Criticisms of IIP are that it is too prescriptive and complicated (Ashton, 1993).

With BS5750 and IIP, a company has only two principles of TQM, that is, quality system and employee training /development/participation.

Owing to widespread interest in TQM, the British Standards Institution (BSI) published BS7850: 1992 Total Quality Management. Unlike ISO9000 and IIP, BS7850 is not a standard that companies can register for or achieve certification. It is an important standard nonetheless as it clears misconceptions about BS5750 (Williams, 1993). BS7850 has two parts. Part 1 is a 'Guide to Management Principles', whilst Part 2 is a 'Guide to Quality Improvement Methods' and gives guidance on implementation.

Total Quality Management is defined in BS7850: Part 1 (1992) as:

"Management philosophy and company practices that aim to harness the human and material resources from an organisation in the most effective way to achieve the objectives of the organisation".

This definition is to be applied together with BS4778: Part 2 (1991):

"A management philosophy embracing all activities through which the needs and expectations of the customer and the community, and the objectives of the organisation are satisfied in the most efficient and cost effective way by maximising the potential of all employees in a continuing drive for improvement".

BS7850: Part 1 (1992) defines the fundamental concepts of TQM:

- 1) Commitment by the chief executive and involvement by everyone in the organisation.
- 2) Customer satisfaction should be the key objective.
- 3) Quality losses due to inefficient and ineffective usage of resources such as customer loss, loss of opportunity, wastage or misuse of resources.
- 4) Participation by all employees in an organisation.

- 5) Process measurements.
- 6) Continuous improvements to people and process performance.
- 7) Problem identification.
- 8) Alignment of corporate objectives and individual attitudes.
- 9) Personal accountability.
- 10) Personal development through appraisal, training and career development.

Quality improvement is defined in BS7850: Part 2 (1992): Guide to Quality Improvement Methods as:

“Actions taken throughout the organisation to increase the effectiveness and efficiency of activities and processes to provide added benefits to both the organisation and its customers”.

The critique of BS7850 is that although it is very comprehensive and encompassing which is expected of a national guide, SMEs may have problems implementing the principles and guides. They may be overawed by BS7850, and their lack of management skill and resources may turn them off both TQM and BS7850, seeing BS7850 as further confirmation that TQM is a very complex process, meant only for large companies with the financial resource and manpower to implement the standard.

Based on the characteristics of SMEs discussed in Chapter 1, it is necessary to develop a TQM model that can distil the TQM concept, principles and definitions, and present them in a format that is easy to understand and implement. Implementation approaches adopted by large companies are not suitable for SMEs who require tailor-made implementation plans (Nagpal, Twamley and Vallis, 1989).

### **2.3 Quality Gurus: Their Philosophies, Principles and Methods**

Some large companies implement TQM using consultants who adopt the teachings of the quality gurus such as Crosby, Deming, and Juran. A common complaint about consultants is their use of TQM packages as common prescriptive solutions with little consideration of their clients' varying requirements, organisation and culture (Dale, Boaden and Lascelles, 1994). At the same time, a thesis on TQM will not be complete without a review of the TQM philosophy, principles and methods of these pioneers and gurus. The review will also provide invaluable insight on the understanding of



TQM and the necessary culture change. This change can be compared to the changes that Scientific Management (Taylor, 1911) brought to the industrial revolution. A detailed discussion of these changes is found in Chapter 6 of this thesis.

The American and Japanese quality gurus have their own concepts of Total Quality Management based on their professional background. Although there are differences in their approach, there is also much common ground. These differences as explained by Dale and Plunkett (1990) do not present a problem: “It sometimes seems unfortunate that there are so many different interpretations of quality. But by being amenable to wide and differing interpretations it remains appropriate in widely differing situations and circumstances. Thus it has a unifying effect in that all genuine aspirations to improve quality are known to be moving in the same direction. The total quality image is the sum of a set of attributes, each of which has its own quality criteria.”

The following provides a brief insight to the contributions of five gurus:

### **2.3.1 W. Edwards Deming (Deming, 1986)**

Deming is the most widely known of all the quality gurus. He gained fame by helping Japanese companies to improve their quality after the Second World War and was awarded Japan’s highest Imperial honour, the Second Order of the Sacred Treasure in 1960. In the USA, he is recognised in the annual Deming Prize awarded to outstanding TQM companies.

Deming’s major philosophy is quality improvement through statistical control and reduction in variability. He explained that “statistical control does not imply the absence of defective items. It is a state of random variation in which the limits of variation are predictable”. According to Deming, many companies waste time and money looking for causes of chance or random variation in attempting to solve quality problems without using statistical methods. He advocates the use of statistics to measure performance in all areas, not just conformance to product or service specifications. Deming recognised “special” and “common” causes in variability. Special causes are assignable to individual machines or operators, and common causes are those shared by operations and are the responsibility of management. Statistical



Process Control (SPC) charts were the main technique put forward by Deming to identify common and special causes.

He also formulated a systematic approach to problem solving. The PDCA cycle has four main components: to *plan*, to *do*, to *check* and to carry out *action*.

Deming (1986) drew up 14 points to tackle the diseases plaguing Western industry:

1) Create Constancy of Purpose

Create constancy of purpose for continual improvement of products and service by formulating and implementing long term plans to remain competitive and to stay in business, which include innovation, research and education, investment in equipment and constant improvement.

2) The New Philosophy

Not accepting commonly accepted levels of delays, mistakes, defective materials and defective workmanship. Transformation is necessary to halt the continued decline in industry. Management must lead and adopt the new philosophy.

3) Cease Dependence on Mass Inspection

Eliminate inspection as a way to achieve quality. Build quality into the product in the first place and use statistical measures of built-in quality in production.

4) End the Practice of Awarding Business on Price Tag Alone

Reduce the number of suppliers. Select a single supplier and establish a long-term relationship, building trust and loyalty. This will lead to the elimination of variability in supplies and minimise total cost.

5) Improve Every Process

Search continually to improve every activity in the company, to improve quality and productivity and thus to constantly decrease costs. It is management's job to work continually on the system (design, incoming materials, maintenance, improvement of machines, training, supervision, retraining).

6) Institute Training

Institute training for every employee, including management, on the necessary techniques to achieve a full TQM company. Training is essential in ensuring that the employee fully understands his role within the company and knows how to perform it correctly.

7) Institute Leadership

Institute leadership aimed at helping employees to do a better job. Management must take action to improve quality by helping employees rather than telling them what to do or punishing them.

8) Drive Out Fear

Many employees are afraid to ask questions even when they do not understand what the job requires, or if what they are doing is right or wrong. This results in the employee continuing to do the wrong job. Also, employees may be afraid to point out problems as they may be blamed. When employees feel secure about asking, quality and productivity improve.

9) Break Down Barriers Between Staff Areas

Break down barriers between departments and staff functions. Have people in different areas such as research, design, sales, administration and production work in teams to solve problems and design new products that meet customer requirements.

10) Eliminate Slogans, Exhortations and Targets for the Workforce

Slogans never help anybody to do a good job. They generate frustration and resentment, especially when management fails to provide the means to the ends proclaimed. A workman can only work with the tools provided. To therefore imply that they could do better only serves to offend, and to communicate to them that management not only does not understand their problems, it does not bother enough to find out. This effectively leads to adverse relationships between management and staff.

11) Eliminate Numerical Quotas

Quotas and other numerical work standards impede quality. They tend to limit the amount of improvement that can be attained. Once the standard is reached, there is no motivation to go further. They also tend to confuse the understanding of the actual nature of work – Are they to accomplish so many jobs per day or to meet customer needs? Numerical targets only take into account quantity, not quality or work methods.

12) **Remove Barriers to Pride of Workmanship**

Workers have the right to pride of workmanship. To allow this, the responsibility of supervisors must be changed from sheer numbers to quality, giving workers the chance to produce quality work they can be proud of. People are eager to do good work and are distressed when they cannot. Too often, misguided supervisors, faulty equipment and defective materials stand in the way. Those in management also have the right to pride of workmanship. This implies abolition of annual merit rating (appraisal of performance) and management by objectives.

13) **Institute a Vigorous Programme of Education and Retraining**

People must continually acquire new knowledge and new skills to deal with new materials and methods. This can only be achieved with appropriate education and retraining. With increased productivity, some jobs may become redundant in a company. It is important that quality does not cost jobs. Management must make it clear that they will reinvest in their workforce.

14) **Top Management's Commitment**

Top management needs to be committed to continually improving quality and productivity. A structure has to be created in top management that will push everyday on the preceding 13 Points, and take action to accomplish the transformation.

Deming identified the key weaknesses in management in his "5 Deadly Diseases":

- 1) Lack of constancy and purpose.
- 2) Emphasis on short term profits.
- 3) A lack of or unsuitable evaluation of performance, merit rating or annual review.



- 4) Management are too mobile.
- 5) Management decision-making too readily relies on quantitative data without paying due consideration to tangible or hidden factors.

To overcome these 5 Deadly Diseases, Deming proposed the “7 Point Action Plan”:

- 1) Management must understand and accept the fourteen points and the undesirability of the 5 Deadly Diseases. They must then formulate an action plan for change.
- 2) Management takes pride in having taken this decision and develops courage to follow the new direction.
- 3) Management must then explain to everyone in the organisation why change is required.
- 4) Every activity within the company is divided into stages. The customers and suppliers of each stage are identified. Each stage should be improved continually and should work together.
- 5) The methods of each stage must be improved and those working in each stage should work together towards quality. Deming advocates the Plan, Do, Check, Action (PDCA) cycle when introducing any improvement.
- 6) Everyone needs to participate as a team to improve the input and output of each stage.
- 7) An organisation for quality is required which uses measurements to guide process improvement.

### **2.3.2 J. M. Juran (Juran, 1988)**

Juran’s definition of quality is “fitness for use” which attained widespread although not universal acceptance.

Together with Deming, he pioneered the bulk of the quality initiatives in Japan. However, unlike Deming, Juran focused on the role of top and middle management in achieving quality. He concluded that the bulk of quality problems are the responsibility of management and hence they are responsible for the success of quality management.

He developed the Quality Trilogy comprising Quality Planning, Quality Control and Quality Improvement outlined below:

Quality Planning

- 1) Determine who are the customers.
- 2) Determine the needs of the customers.
- 3) Develop product features which respond to customers' needs.
- 4) Develop processes that are able to produce those product features.
- 5) Transfer the resulting plans to the operating forces.

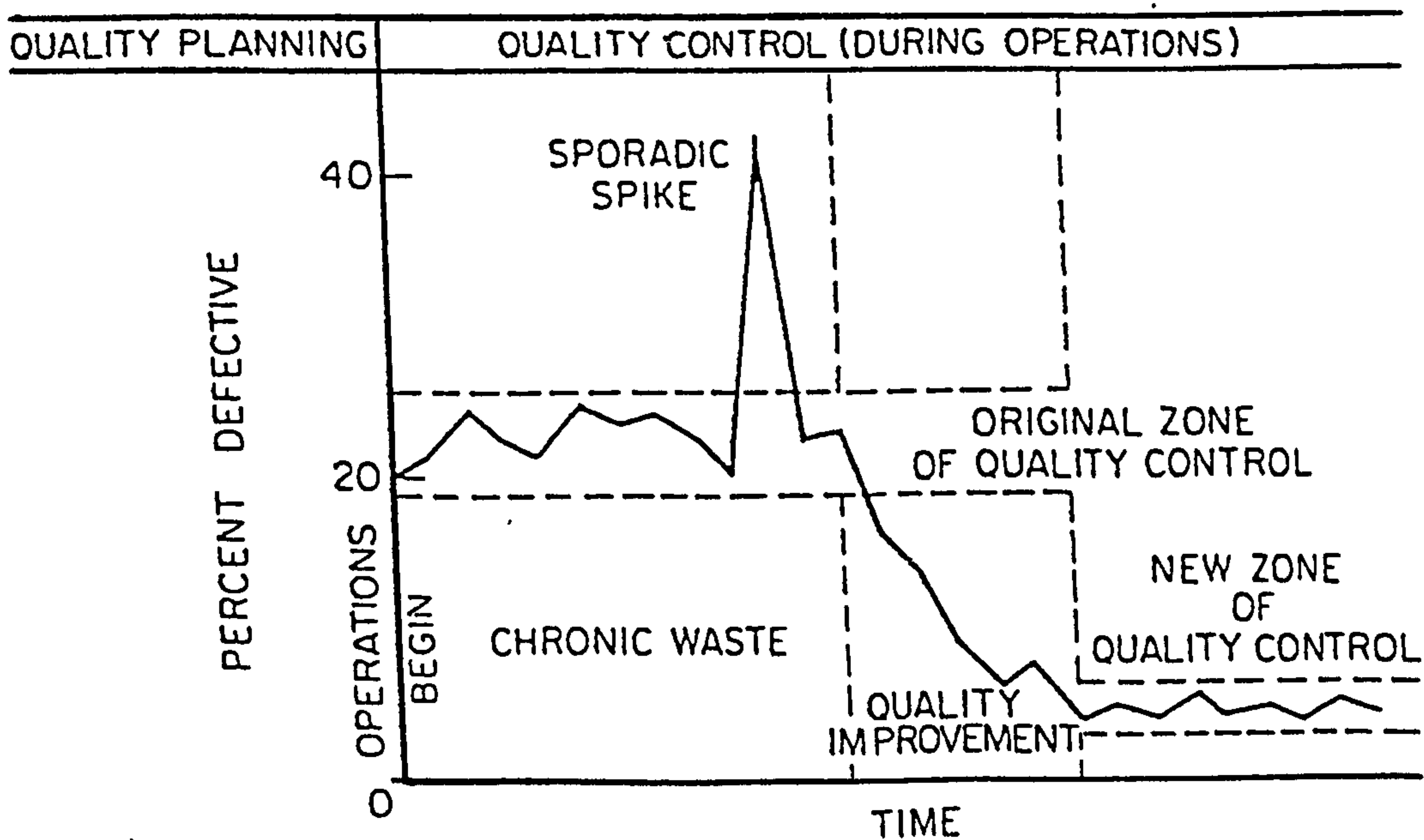
Quality Control

- 1) Evaluate actual operating performance.
- 2) Compare actual performance to goals.
- 3) Act on the difference.

Quality Improvement

- 1) Reduce wastage.
- 2) Improve deficient processes.
- 3) Improve deficient planning processes.

The Quality Trilogy is best understood from the Juran Trilogy shown in Figure 2.3.2:



**Figure 2.3.2: The Juran Trilogy**

(Source: Juran, 1988)

The initial activity is quality planning to develop the product and process design. The plans are then given to production whose job it is to run the processes. When the output is plotted onto the graph, it becomes evident the product deficiencies can be

traced to the planning process which created the “chronic waste” that production is unable to eliminate. Hence, the best that can be done is to implement “quality control” which includes “putting out fires” such as the “sporadic spike”.

With quality improvement, “chronic waste” can be greatly reduced to a lower level than originally planned. “Chronic waste” presents the opportunity for quality improvement which requires a change in priority to give planners the time and resources to do a more thorough job of quality planning.

### **2.3.3 Philip B. Crosby (Crosby, 1980; Crosby, 1984)**

Crosby is best known for his concept of Zero Defects. This is the attitude of defect prevention and involves doing the “right job right the first time”. He is commonly criticised for his statement “Quality is free” by people who are not aware of the second part of the statement, which in its totality reads as: “Quality is free. But it is not a gift.” (Crosby, 1980).

Crosby's TQM philosophy is contained in his 4 absolutes:

- 1) The definition of quality is conformance to requirements (not “goodness” or “elegance”).
- 2) The system of quality is prevention (not appraisal).
- 3) The only performance standard is Zero Defects (not “that’s close enough”).
- 4) The measure of quality is the price of non-conformance (not indices).

Crosby advocates that because management is the cause of 80% of the quality problems within an organisation, the only way to improve is through management leadership. To eliminate the many non-conformances which exist within an organisation, he recommends administering a Quality Vaccine with the following “ingredients”:

- 1) Integrity

Everyone, including the chief executive, is dedicated to the customer receiving what was promised.

- 2) Systems

Systems must be in place, e.g., measurement system, quality education system.



- 3) **Communications**  
Information about the progress of quality improvements, achievements, recognition programs, and information to help identify errors, waste, missed opportunities, etc.
- 4) **Operations**  
Educate suppliers, review and update procedures, conduct routine training, etc.
- 5) **Policies**  
Clear and unambiguous policies on quality.

Crosby recommends 14 steps that an organisation can follow to achieve continuous quality improvement.

- 1) **Management Commitment**  
To state where management stands on quality.
- 2) **Quality Improvement Team**  
To run the quality improvement programs.
- 3) **Quality Measurement**  
To identify non-conformance leading to corrective action.
- 4) **Cost of Quality**  
To identify the cost of quality to the company.
- 5) **Quality Awareness**  
To make quality the concern of everyone in the company.
- 6) **Corrective Action**  
To provide a systematic method for problem solving.
- 7) **Zero Defects Planning**  
To plan the commitment to the Zero Defects Program.

<b>Quality Management Maturity Grid</b>					
<b>Rater:</b>			<b>Unit:</b>		
<i>Measurement Categories</i>	<i>Stage I: Uncertainty</i>	<i>Stage II: Awakening</i>	<i>Stage III: Enlightenment</i>	<i>Stage IV: Wisdom</i>	<i>Stage V: Certainty</i>
<i>Management understanding and attitude</i>	No comprehension of quality as a management tool. Tend to blame quality department for "quality problems".	Recognising that quality management may be of value but not willing to provide money or time to make it all happen.	While going through quality improvement program learn more about quality management; becoming supportive and helpful.	Participating. Understand absolutes of quality management. Recognise their personal role in continuing emphasis.	Consider quality management an essential part of company system.
<i>Quality organisation status</i>	Quality is hidden in manufacturing or engineering departments. Inspection probably not part of organisation. Emphasis on appraisal and sorting.	A stronger quality leader is appointed but main emphasis is still on appraisal and moving the product. Still part of manufacturing or other.	Quality department reports to top management, all appraisal is incorporated and manager has role in management of company.	Quality manager is an officer of company; effective status reporting and preventive action. Involved with consumer affairs and special assignments.	Quality manager on board of directors. Prevention is main concern. Quality is a thought leader.
<i>Problem handling</i>	Problems are fought as they occur; no resolution; inadequate definition; lots of yelling and accusations.	Teams are set up to attack major problems. Long-range solutions are not solicited.	Corrective action communication established. Problems are faced openly and resolved in an orderly way.	Problems are identified early in their development. All functions are open to suggestion and improvement.	Except in the most unusual cases, problems are prevented.
<i>Cost of quality as % of total sales</i>	Reported: unknown. Actual: 20%	Reported: 3% Actual: 18%	Reported: 8% Actual: 12%	Reported: 6.5% Actual: 8%	Reported: 2.5% Actual: 2.5%
<i>Quality improvement actions</i>	No organised activities. No understanding of such activities.	Trying obvious "motivational" short-range efforts.	Implementation of the 14-step program with thorough understanding and establishment of each step.	Continuing the 14-step program and starting Make Certain.	Quality improvement is a normal and continued activity.
<i>Summation of company quality posture</i>	"We don't know why we have problems with quality".	"Is it absolutely necessary to always have problems with quality?"	"Through management commitment and quality improvement we are identifying and resolving our problems".	"Defect prevention is a routine part of our operation".	"We know why we do not have problems with quality".

**Figure 2.3.3: Crosby's Quality Management Maturity Grid**  
(Source: Crosby, 1980)

- 8) **Employee Education**  
To define training that employees need to actively carry out quality improvement programmes.
- 9) **Zero Defects Day**  
To select a day that emphasises Zero Defects when everyone should do things right the first time.
- 10) **Goal Setting**  
To let employees set goals on quality improvement that are specific and can be measured.
- 11) **Error-Cause Removal**  
To allow individual employees to describe any problem that prevents them from performing error-free work.
- 12) **Recognition**  
To award those who meet their goals (Award should not be financial).
- 13) **Quality Councils**  
To let professional quality people meet on a regular basis to improve quality programs.
- 14) **Do it Over Again**  
To emphasise that quality improvement is a continuous programme.

The 14 steps do not fit all national or even company cultures. Therefore, the implementation of TQM must be designed to fit the nature of the business and the culture of the company.

Crosby also developed the Quality Maturity Grid, shown in Figure 2.3.3, for management to determine where it stands from a quality viewpoint. The grid is divided into 5 stages of maturity or ratings:

- 1) **Uncertainty**
- 2) **Awakening**



- 3) Enlightenment
- 4) Wisdom
- 5) Certainty

Each stage is measured using the following 6 measurement categories:

- 1) Management understanding and attitude.  
From no comprehension, to quality being an integral part of the company system.
- 2) Quality organisation status.  
From quality inspection to having the quality manager on the Board of Directors.
- 3) Problem handling.  
From fire fighting to prevention, except in the most unusual cases.
- 4) Cost of quality as a percentage of sales.  
From 20% to 2.5%.
- 5) Quality improvement actions.  
From no organised activity to continuous improvement.
- 6) Summation of company quality posture.  
From “We don’t know why we have problems with quality” to “We know why we do not have problems with quality”.

#### **2.3.4 Armand V. Feigenbaum (Feigenbaum, 1991)**

Feigenbaum emphasises Total Quality Control, his philosophy being:

- 1) Set quality standards;
- 2) Appraise conformance to standards;
- 3) Act when conditions are not met; and,
- 4) Plan to make improvements.

Feigenbaum saw quality as a way of managing a business organisation. Significant quality improvement can only be achieved with everyone’s participation. The

workforce must have a good understanding of what management wants to achieve. Fire-fighting of quality problems has to be replaced with a very clear, customer-oriented quality management process that people can understand and commit themselves to. Senior management must understand quality improvement and incorporate quality into their management practice. Managers must abandon short-term motivational programmes that yield no long-lasting improvement and realise that quality does not mean customer problems have to be fixed faster.

Feigenbaum believes that the effective installation and management of quality programmes represent the best return-on-investment opportunity for companies in a fiercely competitive environment. His major contribution to the subject of cost of quality was the recognition that quality costs must be categorised if they are to be managed. He identified three major categories: appraisal costs, prevention costs and failure costs. Total quality cost is the sum of these costs.

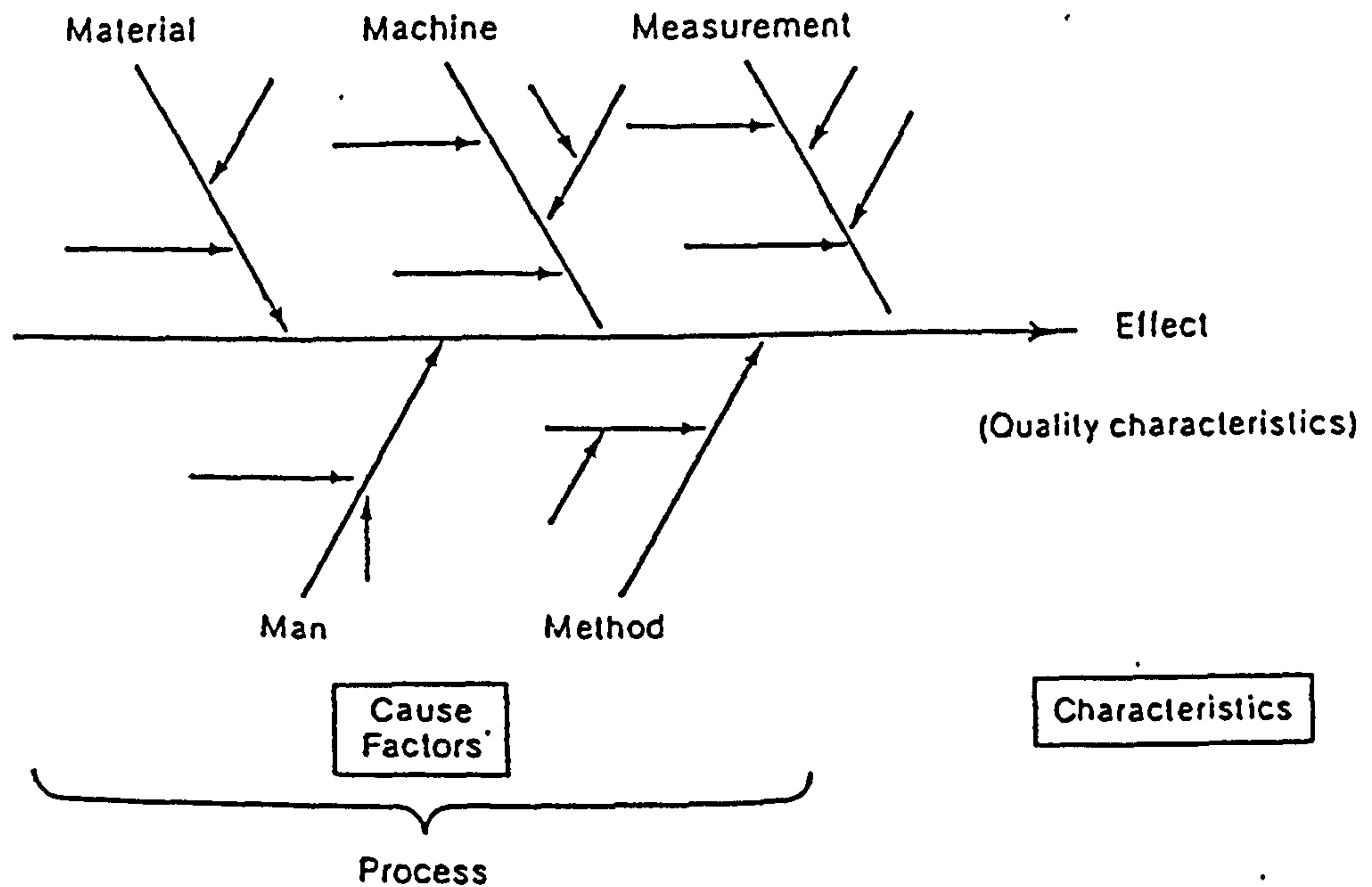
Feigenbaum maintains that management must commit itself to:

- 1) Strengthening quality improvement;
- 2) Making sure that quality improvement becomes a habit; and,
- 3) Managing quality and cost as complementary objectives.

### **2.3.5 Kaoru Ishikawa (Ishikawa, 1985)**

Ishikawa is the best known of the Japanese contributors to quality management. The main focus of his work was the use of statistical techniques to improve quality in Japanese industry and his greatest achievement was the successful introduction of Quality Control Circles (QCCs) into Japan. QCCs usually consist of a small number of volunteers from one unit of an organisation who investigate problems, collect data to identify their cause, and implement solutions to eliminate them and improve quality. The circle can be led by any person, whether supervisor or worker. Regular meetings are held to discuss how their task can be done more effectively and efficiently, and difficulties and issues are raised and change proposals suggested. Where possible, the circles proceed to implement their own ideas. Management is approached only when they are unable to proceed because of a lack of resources or authority.

He developed the Ishikawa Cause and Effect Diagram, also known as the “Fishbone Diagram”, shown in Figure 2.3.5. This technique is used for analysing the likely causes of a known effect. The diagram identifies, sorts and documents the potential causes of a problem so that relationships between the causes can be analysed.



**Figure 2.3.5: Cause and Effect Diagram**

(Source: Ishikawa, 1985)

Ishikawa developed seven basic tools for use by QCCs. He wrote: “From my past experience as much as 95% of all problems within a company can be solved by means of these tools. These seven indispensable tools are sometimes likened to the seven tools of Benkei, the twelfth-century warrior. Unless a person is trained to use these simple and elementary tools, he cannot expect to master more difficult methods” (Ishikawa, 1985). Ishikawa’s seven tools are:

<u>Tool</u>	<u>Function</u>
Process flow charting	What is done
Tally charts	How often it is done
Histograms	Pictorial view of variation
Pareto analysis	Rating of problems
Cause and effect analysis	What causes problems
Scatter diagram	Defining relationships
Control charts	Measuring and controlling variation



### **2.3.6 Overview**

The works of five quality gurus, namely, Deming, Juran, Crosby, Feigenbaum and Ishikawa show that each has his own definition of quality and approach regarding how a company is to achieve TQM. These are based on their professional backgrounds and interests. Although their personal perspectives and approaches read differently, they share a common emphasis. This emphasis is the continuous improvement of work processes, systems, and management to meet customer requirements (Tenner and Toro, 1992). Ghobadian and Speller (1994) identified these common emphases as:

- The importance of controlling the process and not the products;
- The controlling of the human process is as vital, if not more so, than controlling the technical process;
- Quality is the responsibility of top management;
- Management must foster the participation of the workforce to develop a quality culture;
- The importance of education and training for changing attitudes and enhancing competence;
- The need for an emphasis on prevention of defects, not inspection after the event;
- Quality improvement is a process built up over time and not an instant cure;
- Functional integration is an important ingredient of TQM;
- Quality is a company-wide activity.

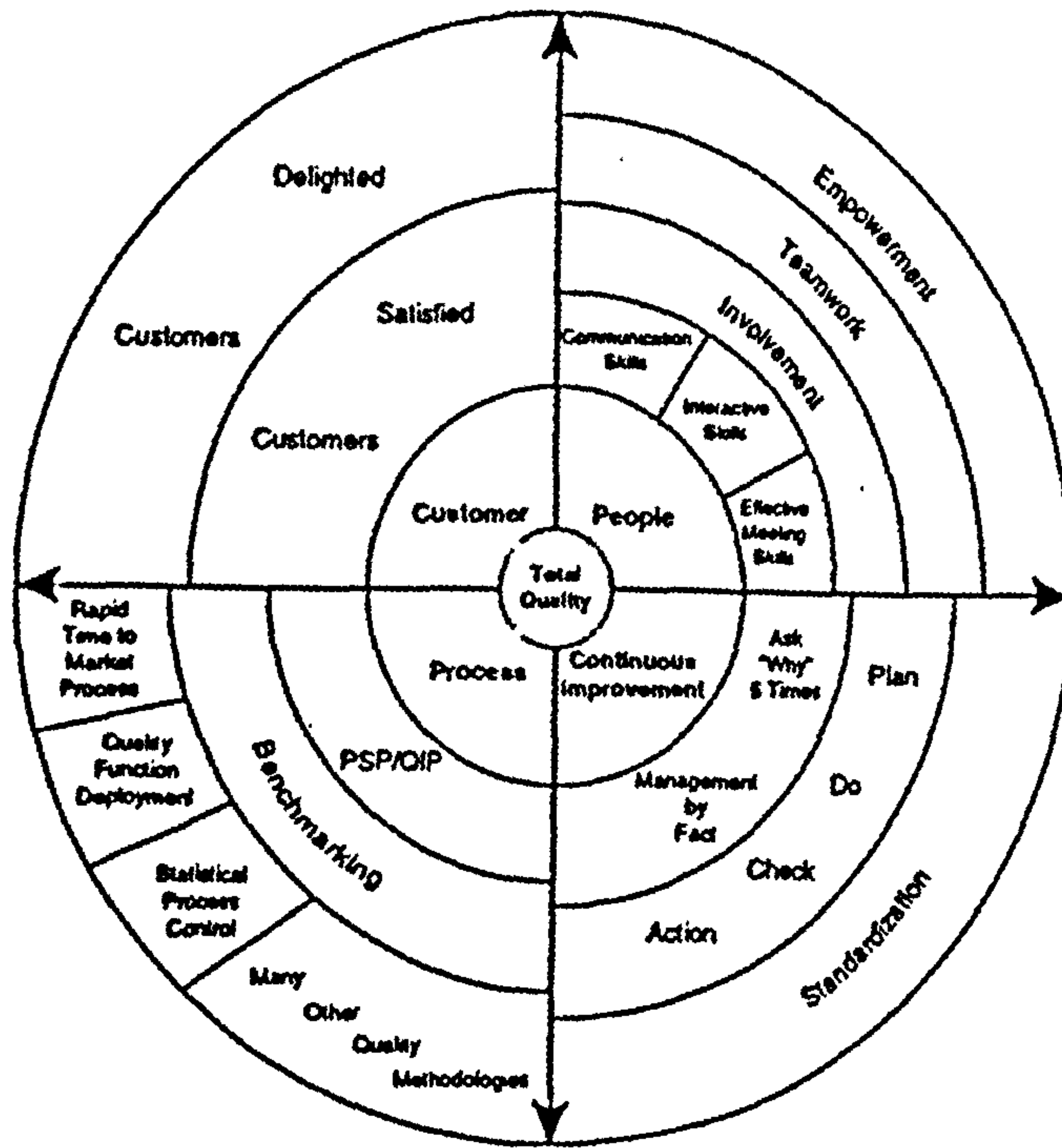
The following summarises their collective view of the key characteristics of TQM:

a) Quality of products and services to meet customer requirements.

This requires a change in the culture and philosophy of the company, management and employees. The focus of the company must be the customer and customer requirements. The objective of the company is to meet these requirements to achieve customer satisfaction at the lowest cost. Everyone in the company, from the chief executive to the newest employee, must be committed to this objective on quality and the customer.

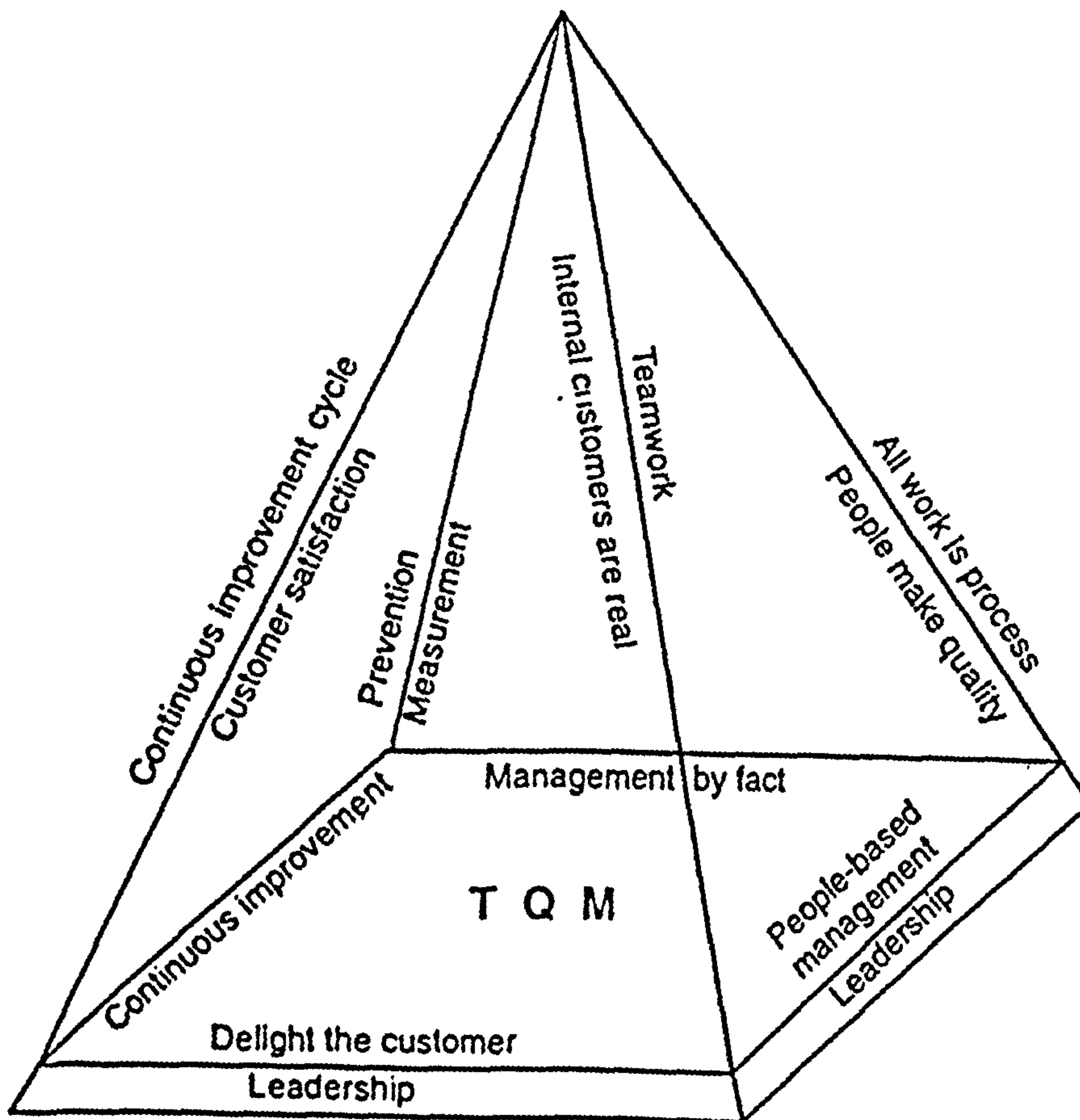
b) Total involvement within the company.

Everyone in the company including marketing, sales, finance, design and production needs to participate to make improvements in quality, reduce wastage,



**Figure 2.3.6a: TQM Plan**

(Source: Cole, 1995)



**Figure 2.3.6b: Pyramid Model of TQM**

(Source: Kanji and Asher, 1993)

eliminate non-conformance, improve efficiency, productivity and effectiveness. Quality control circles and work improvement teams are formed as appropriate.

c) Continual search for improvements.

This is a continuous process that seeks to continuously improve quality, management and organisation. It is not a system that can be started and left to run on its own. It requires the commitment of top management and every employee in the continual search of customer requirements and expectations, and in meeting these at the lowest cost.

In more recent work, Mortiboys and Oakland (1993) in the DTI's Enterprise Initiative publication "Total Quality Management and Effective Leadership" used the following components of TQM:

- Management commitment
- A quality assurance system
- Quality tools and techniques
- Teamwork

These four components do not emphasise some of the major concepts of TQM such as customer focus, quality costs and continuous improvement.

Cole (1995) used four concepts to express TQM – customer, people, process and continuous improvement, as shown in Figure 2.3.6a. This is more comprehensive but does not emphasise quality cost which is very important especially for SMEs as explained in Section 2.4.3.

For the Pyramid Model of TQM in Figure 2.3.6b, Kanji and Asher (1993) used four principles and eight core concepts. The four principles and eight core concepts are:

Principles

- Delight the customer
- Management by fact
- People-based management
- Continuous improvement

Core Concepts

- Customer satisfaction



- Internal customers are real
- All work is process
- Measurement
- Teamwork
- People make quality
- Continuous improvement cycle
- Prevention

In this definition the concept of quality cost is mentioned in the core concept “measurement” but is not given significance as in the TQM Model proposed by the author which is found in Section 2.4.

#### **2.4 TQM Model for SMEs**

A TQM model is proposed by the author which is based on the concepts of TQM described in the works of Oakland (1989b), Flood (1993), Dale and Plunkett (1990), and the quality gurus. The concepts are classified into the following five areas:

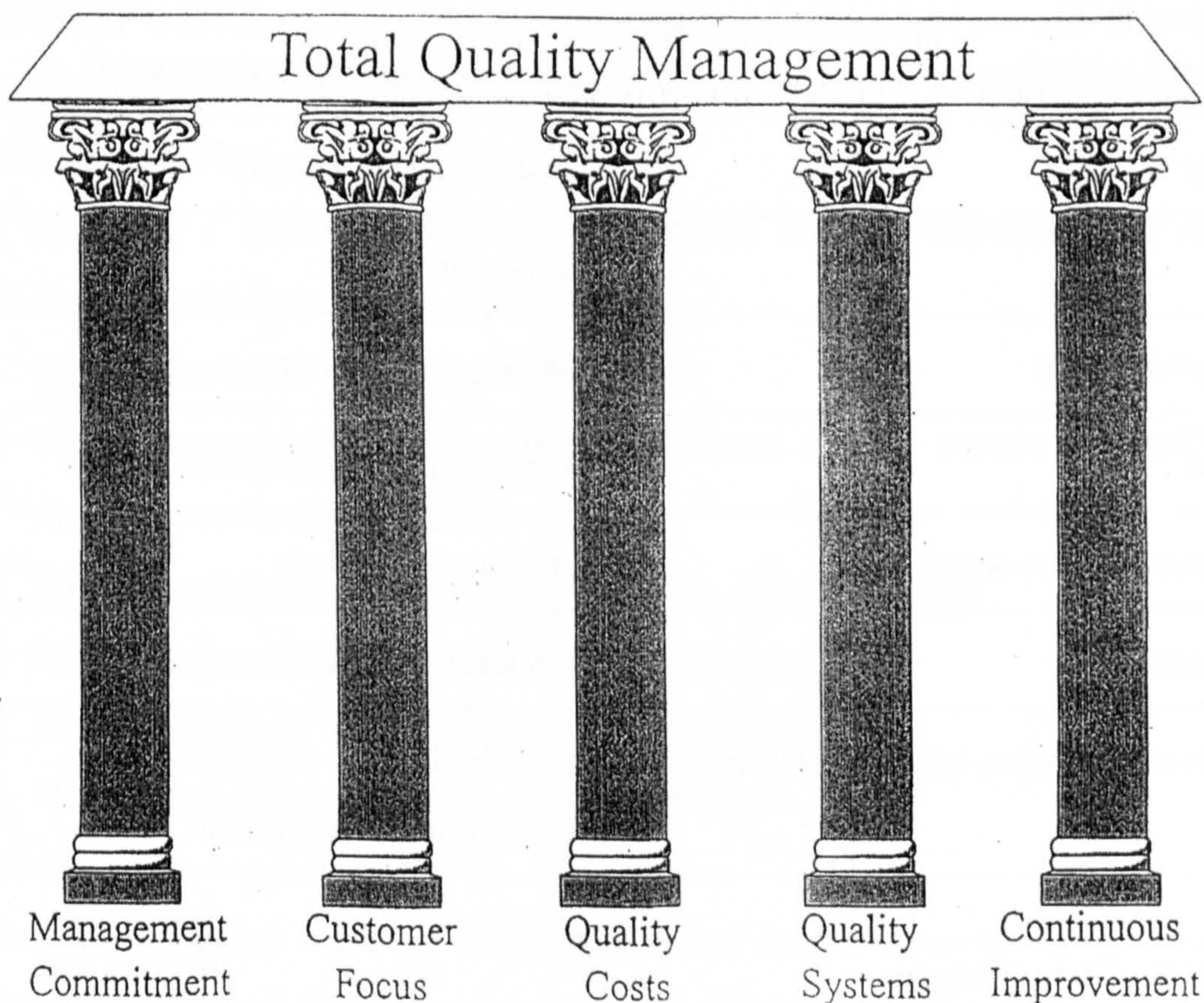
- 1) Management leadership and employee participation in the new philosophy (Deming, 1986). Make quality the concern of everyone in the company (Crosby, 1980; Crosby, 1984; Feigenbaum, 1991).
- 2) Emphasis on meeting the requirements of both the internal (Crosby, 1980; Feigenbaum, 1991) and external customer (Ishikawa, 1985).
- 3) Eliminate non-conformance. Ensure conformance to standards, specifications and requirements. Have zero defect standard of performance. Reduce the costs of appraisal, prevention and failure (Crosby, 1984; Feigenbaum, 1991).
- 4) Use statistical and quantitative control methods. Problem solving using Quality Control Circles, the Shewart/PDCA cycle, Quality Assurance. (Ishikawa, 1985; Deming, 1986)
- 5) Search continually to improve processes and products (Deming, 1986). Develop new products and processes. Quality is a continuous program (Crosby, 1980; Feigenbaum, 1991).



Each of the five areas constitute a major component or concept of TQM and are explained in more detail in Section 2.4.1. These areas are defined as **Pillars** which support TQM. They also cover all the fundamental concepts of TQM in BS7850: Part 1. All 5 Pillars are required to fully define and successfully implement TQM. The model developed by the author is called the **5 Pillars of TQM** as shown in Figure 2.4.

A definition of TQM using the **5 Pillars** is:

*TQM is a system of quality management consisting of the 5 Pillars of Management Commitment, Customer Focus, Quality Costs, Quality Systems and Continuous Improvement to ensure that a company meets customer requirements at the lowest cost and continually improves its processes, products and services via the use of creative techniques and innovation.*



**Figure 2.4: The 5 Pillars of TQM**



<b>Culture Change</b>	
<b>From</b>	<b>To</b>
▪ Hierarchical style	▪ Participative style – fewer layers
▪ Top down information flow	▪ Top down, lateral and upward information flows
▪ Inward quality focus	▪ Customer defined quality
▪ Function focus	▪ Process focus
▪ Short-term planning	▪ A vision for the future
▪ Episodic improvements	▪ Comprehensive/continuous improvement
▪ Anecdotal data	▪ Systematic, quantitative data
▪ Top down initiatives	▪ All staff involved and engaged
▪ Manage	▪ Delegate, lead, coach
▪ Direct	▪ Empower
▪ Employees a cost	▪ Employees an asset
▪ Counsel	▪ Ownership, participation
▪ Functional narrow scope job	▪ Integrated functions
▪ Enforcement	▪ Promoting mutual trust
▪ Firefighting with few team incentives	▪ Individual/group recognition for continuous improvement

**Table 2.4.1: Culture Change**

(Source: Sirota, Usilaner and Weber, 1994)



### **2.4.1 The 5 Pillars of TQM**

The **5 Pillars** supporting the TQM system are:

1. Management Commitment
2. Customer Focus
3. Quality Costs
4. Quality Systems
5. Continuous Improvement

#### **1. Management Commitment (Commitment to Quality)**

Management commitment is essential for a company to successfully implement TQM as resources and management leadership are required. With this commitment, management needs to establish a sound quality policy. The quality policy will state the company's corporate policy, its objective(s), its mission and vision for the quality of the company's products and services and its commitment to customers. The contents of the policy should be made known to and understood by all employees. The preparation of a properly thought out policy, together with continuous monitoring, makes for smoother production and operation, minimises errors and reduces wastes. The following must be set out in a quality policy, which requires that management (Oakland, 1989b):

- a) Establish a quality policy with emphasis on the customer and continuous improvement by everyone in the company;
- b) Identify customer needs and requirements;
- c) Change organisation culture and management style to sustain the quality culture necessary to meet these needs;
- d) Educate and train in TQM principles, tools and techniques;
- e) Concentrate on prevention rather than detection;
- f) Ensure quality of bought-in materials and services; and,
- g) Maintain continuous improvement by everyone.

The quality policy must be widely publicised and understood by all levels of the organisation. Plans for the implementation of this policy should be developed, with special emphasis placed on changing the company culture from that of traditional management (Wiggans and Turner, 1991; Coulson-Thomas, 1992). The plan should include company-wide training and employee motivation. The cultural changes needed are described by Sirota, Usilaner and Weber (1994) in Table 2.4.1.



A warning was given by Oakland (1989a) at the 1989 International Conference on Quality Management in London that “management’s commitment to TQM must be real and obsessional, not lip service. It is possible to detect real commitment, it shows on the shop floor, in the offices, at the point of operation”. Research by Tyrrell (1991) reported that “unless TQM is not only demanded but also practised by the chief executive, nothing will happen. People will not believe that anything can change – and TQM demands a fundamental, even revolutionary change of ideas, culture and behaviour. Words, videos and posters will not bring it about: only deeds”.

Without management commitment, the TQM initiative can never be successful. Research by MacDonald (1992) suggested that lack of management commitment was the most common reason for the failure of TQM.

## **2. Customer Focus**

A strength of an SME lies in its closeness to customers because of its size and its smaller customer base. Customer focus may not be a major problem if SMEs are aware of its importance and actively participate in seeking customer satisfaction, requirements and expectations. Companies only continue to exist because of their ability to meet the requirements of their customers and this must drive all the internal processes (Drucker, 1955). A British Institute of Management survey in 1990 reported that “customer satisfaction and quality are ranked as the top two customer issues. Nine out of ten of the participants in the survey considered them to be very important” (Coulson-Thomas, 1992).

TQM emphasises both external and internal customer satisfaction. The internal customer, being the next process or person, is most aware of the deficiencies and areas for improvement and can provide valuable input. Their responses can be solicited through annual employee surveys (Martin, 1991) or a company sponsored employee suggestion program.

Research by Lascelles and Dale (1994) indicates that the customer is the main driving force for the implementation of TQM followed closely by the need to reduce costs and improve quality. Woodruff, Schumann and Gardial (1993) define customer satisfaction as the positive or negative feeling about the value received through the use



of an organisation's product or services. This reaction applies to both immediate use situations and to overall reactions from a series of use situations.

The following are key sources of information for monitoring customer satisfaction and requirements:

- a) Customer surveys and trials
- b) Trade surveys and trials
- c) Working with key customers
- d) Competitor analysis
- e) Customer complaints and compliments

Customer satisfaction researchers have estimated that the cost of attracting a new customer is three to five times more than retaining an existing customer. Although a satisfied customer tells up to twelve other people about the company, its products and services, a dissatisfied customer tells as many as 25 people (DiPietro, 1993).

### **3. Quality Costs**

Monitoring the cost of quality is an important performance indicator. The costs resulting from poor quality are costs of non-conformance. These are often large, non-productive costs and are avoidable through the implementation of TQM. According to Feigenbaum (1991) quality costs on average amount to between 25 to 30% of annual sales. This is three to four times the average profit margin. Scrap and rework account for a significant part of these costs of non-conformance. Appraisal activities are commonly found in companies with high costs of non-conformance, and are present because the system produces so many errors. These unnecessary costs can be eliminated by identifying the causes of non-conformance and failure through the implementation of prevention activities, which is an important aspect of TQM. Simply employing more quality inspectors, tightening up standards, developing correction, repair and rework teams do not promote quality. A different strategy of prevention through better design and process control must be employed. Ultimately, the goal must be to do the right things right, first time, every time, and with zero defects.

BS6143: Guide to the Economics of Quality, Parts 1 and 2, provides guidelines on quality costs. Data can be collected on an activity basis following BS6143: Part 1 or categorised using the Prevention-Appraisal-Failures categorisation of BS6143: Part 2.



Other forms of categorisation can be used such as cost of conformance and price of non-conformance but the method must be tailored to the needs of the organisation (Pursglove and Dale, 1995).

The British Standards Institution (BSI) claims that between 5% and 25% of turnover is spent on quality related costs (Dale, 1994). About 95% of this is expended on appraisal and failure, most of which can be saved if a company has a good quality system such as BS5750 (Williams, 1993). Crosby (1980) estimated that this could be reduced to “less than 2.5% of sales”.

A number of researchers suggest that quality cost reduction is the second most important reason, next to customer satisfaction, for companies to implement TQM (Dale, Wiele, Timmers, Williams and Bertsch, 1992; Dale, Boaden and Lascelles, 1994). It can be postulated that for SMEs quality cost reduction can be the most important reason for implementing TQM. Compared to large companies, SMEs are usually closer to their customers and know their requirements. Hence they will have attained a significant level of customer satisfaction, rendering it less important to address than quality cost reduction. A further reason to support this proposal is that quality cost reduction can have an immediate effect on profitability (Cullen, 1991), whereas customer satisfaction does not produce immediate results. The earlier mentioned cash flow problems facing SMEs can be alleviated immediately by quality cost reduction. Huxtable (1995) writes that the cost of quality is one of the major benefits for SMEs implementing TQM. Dale (1994) classified the uses of quality costs into four categories that have important application to SMEs:

1. Quality costs may be used to promote product and service quality as a business parameter.
2. Quality costs give rise to performance measures.
3. Quality costs provide the means for planning and controlling quality costs.
4. Quality costs act as motivators.

Crosby defines cost of quality as the price of conformance and non-conformance, where the price of conformance is that which is needed to ensure things turn out right, and the price of non-conformance is the expense incurred in doing things wrong. This concept is more readily understood by the manufacturing sector because of the need to comply with specifications and standards set by the company or customers. When



management in SMEs realise TQM can reduce their cost of quality from 25% to 2.5% in a relatively short time, it makes them sit up and take notice. This aspect of TQM has not been given much publicity because of the concept that TQM is a long term process. Furthermore immediate savings from quality costs are comparatively less significant to large companies than to SMEs. In large companies the cost of quality is important to justify the considerable investment incurred in a process of continuous quality improvement (Dale, 1991).

SMEs often have no formal cost of quality records although both employees and management are fully aware of the problems caused by rejects, rework, non-compliance to specifications and suppliers who supply the wrong materials. It is therefore important for SMEs in the manufacturing sector to maintain simple records of quality costs that will enable them to identify and correct or eliminate the major contributing factors. This important step to TQM builds on the ability of SMEs to quickly implement improvements. In a survey of British manufacturing companies, 93% of the companies reported the need for a “user-friendly method of analysing and reporting” quality costs (Kumar and Brittain, 1995).

Having cost of quality data allows SMEs to develop plans to reduce quality costs both immediately and in the long term. These plans range from skills training to capital investment in equipment. The data also allows actual targets to be set for the reduction of quality costs, leading to a planned approach to problem solving. Wevill (1992) writes that a quality strategy must deliver measurable improvements as soon as possible if the commitment of managers and staff is to be maintained. The adage “Nothing succeeds like success” applies. Picking the low hanging fruits of the cost of quality will be a strong motivator for them to embark on the route to TQM (Hollins, 1995).

For SMEs, the danger is that management may rush headlong into implementing TQM tools and techniques without the necessary commitment to cultural change and training. It is important that tangible benefits are emphasised, especially to SMEs. Whilst large companies have the resources to allow them to see the bigger picture and plan for the long term benefits of TQM, SMEs often need to conduct a cost benefit analysis to determine the short term tangible benefits from their investment of time and resources. This is the main drive for the development of a tailor-made model of



TQM for SMEs and a low cost implementation framework using the Uncle Concept. This is also the rationale for including quality costs as one of the 5 Pillars of TQM for SMEs.

#### **4. Quality Systems**

Any company can develop its own quality systems to ensure that principles, procedures and processes are appropriate and adequate for its business operation. Almost all companies have written or unwritten procedures. These procedures are necessary because of the mobility of workers and to ensure that procedures and practices are improved upon and updated. Unlike the division of work in scientific management, TQM requires the integration of tasks and work into a distinct stage or process carried out by individual workers or by a group or team when the process is complex. Oakland (1993) conceptualised an organisation as quality chains that cut across conventional internal boundaries, where each process in the quality chain has an internal customer.

Employees must be trained to use the seven quality tools, which are: process flow charts, tally charts, histograms, pareto analysis, scatter diagrams and control charts. When problem solving teams such as quality control circles, work improvement teams and cross-functional teams are formed, team members must be trained in the appropriate techniques and tools as well as team-building (Dale and Boaden, 1994b). Facilitators need to be appointed to ensure the successful operation of teams. Management must include statistical and quantitative control methods, quality tools and problem solving teams in its quality system.

BS5750 published by the BSI in 1979 is a quality system that any company can adopt. It is broadly written for application to companies with any size of workforce. A company certified to BS5750 is automatically registered to the equivalent International Standard ISO9000, which is recognised world-wide. When this research was conducted in 1993, about 23,000 British businesses had been certified to BS5750 (Harris, 1993). At the time of research, BS5750 was the standard that the Sheffield SMEs sought or attained certification to, hence the reference to BS5750 in this phase of the research instead of ISO9000.

There is competitive market advantage placed on BS5750. A DTI (1992) publication suggested certification to BS5750 is “particularly valuable in marketing”. An increasing number of customers require suppliers to be certified to BS5750 before they can tender for business. This pressure has a negative aspect because some companies apply for BS5750 just to meet the market demand without fully understanding or being committed to the procedures and guidelines. Often, the manuals and guidelines developed are stored in cabinets till the next audit. Holliday (1994) commented “the motive for obtaining BS5750 status is often simply to increase sales. It is a marketing device which allows small firms to tap into vital larger or more up-market customers and more profitable markets. Thus there is no incentive to improve real quality within the company, rather this choice is based on a desire to present a quality image”.

For SMEs there are obstacles to adopting BS5750 because of the bureaucracy and costs associated with certification. Williams (1993) reported that “for small companies with only a few employees the problems associated with the standard are now well publicised. They find the cost of registration prohibitively high, the level of paper work required over the top”. This is confirmed in Chapter 3 in the results of the TQM survey of Sheffield SMEs conducted by the author.

BS5750 is an important element of TQM. Although it does not meet the TQM objective of delighting the customer, it is an important step that can be expanded into a TQM system (Askey and Dale, 1994).

## **5. Continuous Improvement**

This is the continual search for excellence and customer satisfaction. Both of these escalate and evolve into ever higher standards and greater expectations so that any company wanting to rank among the market leaders must actively engage in this Pillar of TQM to improve growth and productivity. Employees need to actively participate in “weeding out the last bug from a produce and process” and management must give “workers the opportunity to use their brains and make a contribution to the improvement of their companies” (Lillrank and Kano, 1989).

The search for excellence involves the constant review and improvement of all management and planning activities, products, processes and service. The standard is



best practice in the industry and relevant practices outside the industry. One method of achieving this is benchmarking. Any business aspect can be benchmarked, such as, customer satisfaction, financial performance, market share, distribution, design and management practice. Benchmarking provides an insight of what can be achieved and sets a target for excellence and world class status.

Innovation is another essential characteristic of a market leader in a competitive environment. Innovation is not limited to new products and processes. It can apply to all aspects of the company's business operations and management. The focus is on new markets, new products and processes, and new ways of doing things leading to improvements, growth and profitability.

Continuous improvement requires a company-wide effort to improve quality performance at all levels and in every job. All employees need to participate in quality improvement and be motivated to do so (Hand, 1993).

## **2.5 Total Quality Management Survey**

Despite the international acclaim accorded to the successful implementation of TQM in many large enterprises, research has shown that little attention has been given to the needs of small and medium sized companies (Dale and Plunkett, 1990; Hakes, 1991; Oakland, 1989b). SMEs have been overlooked and there is little available to assist them to implement TQM and reap the benefits enjoyed by their larger counterparts. This thesis has argued that large companies and SMEs do not operate with the same level of management skills, incentives, and financial and human resources. In an effort to assist and meet the specific needs of SMEs in their implementation of TQM, the author developed the Total Quality Management survey.

### **2.5.1 Objective of TQM Survey**

The objective of the TQM survey is to assess the quality management system in SMEs and their readiness to implement TQM. This is an important first step to ensure successful TQM implementation (Weeks, Helm and Etkin, 1995; Glover, 1993; Crosby 1980). It is critical for SMEs owing to their limited resources, especially in time, finance and people. The survey results will:

- Provide a baseline assessment of quality management

- Identify the company's strengths and weaknesses
- Highlight potential problem areas for attention and action
- Show the company's readiness for TQM, the efforts required and whether an alternative quality management initiative is more appropriate
- Bring to light other issues to be studied in greater detail if necessary
- Provide a benchmark for the company along the route to TQM
- Provide a benchmark for comparing different companies' TQM status

### **2.5.2 Development of TQM Survey Questionnaire**

The questionnaire is based on the 5 Pillars of TQM, which are:

- Management Commitment (Commitment to Quality)
- Customer Focus
- Quality Costs
- Quality Systems
- Continuous Improvement

The questionnaire rates the company's performance against each Pillar which comprises questions that are rated on a scale of 1 to 5. The highest rating of 5 is given when the company has attained TQM status. A copy of the questionnaire is found in Appendix A.

The layout of the questionnaire is similar to Crosby's Maturity Grid (Crosby, 1980) which indicates the five stages on the path to TQM, starting from "Uncertainty" to "Certainty" and uses a scale of 1 for 'Uncertainty' and 5 for 'Certainty'. However, the Crosby Maturity Grid is too brief with only six measurement categories and does not cover the full scope of the 5 Pillars.

### **2.5.3 Quality Awards**

The American Malcolm Baldrige National Quality Award (MBNQA) and European Foundation for Quality Management's (EFQM) European Quality Award (EQA) Model for Self-Assessment were reviewed and found to be too complex for SMEs.

#### Malcolm Baldrige National Quality Award

The MBNQA started in 1987. The award is made annually to three categories of businesses – manufacturing companies, service companies and small businesses. A





maximum of two awards are made each year per category. Applicants for the award have to conduct self-assessment, and provide a 75 page report describing their TQM processes, whereas for small companies the report is about 50 pages (Garvin, 1991). The MBNQA definition of small companies is less than 500 employees (Storey, 1987). The assessment is based on the seven categories shown in Table 2.5.2a. These categories are grouped into four elements of driver, system, measure of progress and goal, as shown in Figure 2.5.2a. The weighting of the seven categories totals 1,000 points. The scoring for each category is based on three factors, namely, approach, deployment and results.

There are many criticisms of this system, three of which are the huge effort and expense involved in the preparation and assessment, the weighting system given to each of the seven categories, and the absence of financial measurement of business performance (Garvin, 1991). Garvin's comment is that the "Baldrige Award and short term financial results are like oil and water: they don't mix and were never intended to." Although participants of the award include large corporations like Motorola, Cadillac, Corning, Xerox, Federal Express and as well as small enterprises, the assessment is considered by the author to be too complex for SMEs.

#### European Quality Award

The European Foundation for Quality Management (EFQM) Total Quality Management European Quality Award Model for Self-Assessment was introduced in 1991 and has many similarities to the MBNQA assessment. As it was developed after the MBNQA and Deming Prize in Japan, it had the "benefits of the experience of the forerunners" according to Tito Conti, President of the European Organisation for Quality at the International Congress held in Singapore in 1994. The assessment is therefore more comprehensive than the MBNQA and addresses the criticism of the MBNQA in its lack of measurement of business results. There are a total of nine categories in two groups titled Enablers and Results as shown in Figure 2.5.2b. A weighting system is used for the nine categories with a total of 1,000 points. This is similar to the MBNQA but these 1,000 points are divided equally between Enablers and Results. The criteria for each category is shown in Table 2.5.2b.



## **MALCOLM BALDRIGE AWARD**

### **1. Leadership (100 points)**

1.1 Senior Executive Leadership (40)

1.2 Quality Values (15)

1.3 Management for Quality (25)

1.4 Public Responsibility (20)

### **2. Information and Analysis (70 points)**

2.1 Scope and Management of Quality Data and Information (20)

2.2 Competitive Comparisons and Benchmarks (30)

2.3 Analysis of Quality Data and Information (20)

### **3. Strategic Quality Planning (60 points)**

3.1 Strategic Quality Planning Process (35)

3.2 Quality Goals and Plans (25)

### **4. Human Resource Utilisation (150 points)**

4.1 Human Resource Management (20)

4.2 Employee Involvement (40)

4.3 Quality Education and Training (40)

4.4 Employee Recognition and Performance Measurement (25)

4.5 Employee Well-being and Morale (25)

**Table 2.5.2a: Scoring for the Malcolm Baldrige Award**

(Source: National Institute of Standards and Technology, 1991)

**MALCOLM BALDRIGE AWARD**

**5. Quality Assurance of Products and Services (140 points)**

5.1 Design and Introduction of Quality Products and Services (35)

5.2 Process Quality Control (20)

5.3 Continuous Improvement of Processes (20)

5.4 Quality Assessment (15)

5.5 Documentation (10)

5.6 Business Process and Support Service Quality (20)

5.7 Supplier Quality (20)

**6. Quality Results (180 points)**

6.1 Product and Service Quality Results (90)

6.2 Business Process, Operational, and Support Service Quality Results (50)

6.3 Supplier Quality Results (40)

**7. Customer Satisfaction (300 points)**

7.1 Determining Customer Requirements and Expectations (30)

7.2 Customer Relationship Management (50)

7.3 Customer Service Standards (20)

7.4 Commitment to Customers (15)

7.5 Complaint Resolution for Quality Improvement (25)

7.6 Determining Customer Satisfaction (20)

7.7 Customer Satisfaction Results (70)

7.8 Customer Satisfaction Comparison (70)

1,000 Total Points

**Table 2.5.2a: Scoring for the Malcolm Baldrige Award (continued)**

(Source: National Institute of Standards and Technology, 1991)



## **EQA Assessment Categories and Criteria**

### **1 Leadership**

- 1.1 Visible Involvement in Leading Total Quality
- 1.2 A Consistent Total Quality Culture
- 1.3 Timely Recognition and Appreciation of the Efforts and Success of Individuals and Teams
- 1.4 Support of Total Quality by Provision of Appropriate Resources and Assistance
- 1.5 Involvement with Customers and Suppliers
- 1.6 Active Promotion of Total Quality Outside the Organisations

### **2 Policy and Strategy**

- 2.1 How Policy and Strategy are Based on the Concept of Total Quality
- 2.2 How Policy and Strategy are Formed on the Basis of Information that is Relevant to Total Quality
- 2.3 How Policy and Strategy are the Basis of Business Plans
- 2.4 How Policy and Strategy are Communicated
- 2.5 How Policy and Strategy are Regularly Reviewed and Improved

### **3 People Management**

- 3.1 How Continuous Improvement in People Management is Accomplished
- 3.2 How the Skills and Capabilities of the People are Preserved and Developed through Recruitment, Training and Career Progression
- 3.3 How People and Teams Agree Targets and Continuously Review Performance
- 3.4 How the Involvement of Everyone in Continuous Improvement is Promoted and People are Empowered to take Appropriate Action
- 3.5 How Effective Top-Down and Bottom-Up Communication is Achieved

### **4 Resources**

- 4.1 Financial Resources
- 4.2 Information Resources
- 4.3 Material Resources
- 4.4 Application of Technology

### **5 Processes**

- 5.1 How Processes Critical to the Success of the Organisation are Identified
- 5.2 How the Organisation Systematically Manages its Processes
- 5.3 How Process Performance Measurements, Along with Relevant Feedback are Used to Review Processes and to Set Targets for Improvement
- 5.4 How the Organisation Stimulates Innovation and Creativity in Process Improvement
- 5.5 How the Organisation Implements Process Changes and Evaluates the Benefits

## **EQA Assessment Categories and Criteria**

### **6. Customer Satisfaction**

How external customers perceive the organisation and its products and services.

Areas to address could include customer perception of the organisation with respect to:

- Product and Service Quality.
- Additional Indications of Customer Satisfaction.

### **7. People Satisfaction**

What the peoples' feelings are towards the organisation.

A Total Quality approach will satisfy the needs and expectations of its people.

Areas to address could include the peoples' perception of the organisation.

### **8. Impact on Society**

How society at large perceives the organisation. This includes views of the organisation's approach to the quality of life, the environment and to the preservation of global resources.

A Total Quality approach will progressively satisfy the needs and expectations of the community at large.

Areas to address could include perceptions of the local and wider community with respect to the following:

- The organisation's active involvement in the community.
- The organisation's activities to reduce and prevent nuisance and harm to neighbours as a result of operations, business related transportation and products.
- The organisation's activities to assist in the preservation of global resources.
- Additional indications of its impact on society.

### **9. Business Results**

What the organisation is achieving in relation to its planned business performance:

#### **a) Financial Measures**

Areas to address could include profit, cash flow, sales, value added, working capital, liquidity, shareholder returns, long term "value for shareholders".

#### **b) Non-Financial Measures**

These will relate to achievement in other critical business targets and objectives and will include internal efficiency and effectiveness measures that are vital to the organisation's continuing success.

**Table 2.5.2b: EQA Assessment Categories and Criteria (continued)**

(Source: EFQM, 1993)



<b>Steps Towards 100% Achievement for the Enabler Criteria</b>		
<b>Approach (What We Do)</b>		<b>Deployment (How Widely We Do It)</b>
Role model approach totally integrated into normal operation	<b>100%</b>	Approach used in all potential areas
Clear effective approach, refined as a result of review of business effectiveness	<b>75%</b>	Approach used in three quarters of potential areas
Regular review of approach is part of normal operation	<b>50%</b>	Approach used in half the potential areas
Sound approach with occasional review	<b>25%</b>	Approach used in one quarter of potential areas
No systematic approach	<b>0%</b>	Little effective usage

**Table 2.5.2c: Scoring the Enablers**

(Source: EFQM, 1993)

The scoring for Enablers and Results is different, as shown in Tables 2.5.2c and 2.5.2d. The scoring for Results would have to be modified if this self-appraisal is used for SMEs. Three years' of "trends and/or good performance" and "some comparison to other organisations" is required to score 50%. The scoring becomes more stringent above 50%, with "5 years' best in class" required for 100%. Without modification, SMEs would at most score 0% to 25%.

Conti (1994) said the EQA model could be "adapted to local situations and needs ... for example, SMEs". The author is of the opinion that such adaptation would involve a major effort in order to reduce the scope of the categories to exclude 'Impact on Society' and 'Business Results' as these are not vital to SMEs. The criteria for each of the other categories would need to be drastically simplified for SMEs. The same would have to be done for the scoring procedure.

<b>Steps Towards 100% Achievement for the Results Criteria</b>		
<b><u>Results</u></b> <b>(Our Actual Performance)</b>		<b><u>Scope</u></b> <b>(The Range of Performance Measures)</b>
Strong positive trends and/or excellent performance for 5 years, "best in class", confidence of maintaining improvement	<b>100%</b>	Results for all relevant activities
Most results show positive trends and/or excellent performance over three years and compare well to other organisations	<b>75%</b>	Results for most relevant activities
Many positive trends and/or good performance over three years, some comparisons to other organisations	<b>50%</b>	Many relevant results
Some positive trends and/or satisfactory performance and comparisons with targets	<b>25%</b>	Some relevant results
Few positive results	<b>0%</b>	Few relevant results

**Table 2.5.2d: Scoring the Results**

(Source: EFQM, 1993)



#### **2.5.4 Self-Assessment using the Quality Awards**

A survey of TQM self-assessment in the UK conducted by Finn and Porter (1994) reported that 26% used Baldrige self-assessment, 63% used EQA self-assessment, and 11% used others. Most of the 33 companies surveyed had less than one years experience in self-assessment showing that UK companies are slow in using the technique. Only 55% of the companies reported that the benefits outweighed the cost of self-assessment. The other companies had yet to evaluate the benefits. The objectives for self-assessment are listed below. Most companies reported more than one objective:

1. Continuous Improvement	29 companies	(88%)
2. Measuring TQ progress	24 companies	(73%)
3. Increase TQ awareness	15 companies	(45%)
4. To involve employees	14 companies	(42%)
5. To win an award	3 companies	(9%)

The results show that the main objectives for self-assessment are continuous improvement and measuring TQ progress which indicate that companies using self-assessment are already practising TQM. The survey did not include the use of self-assessment by companies planning to implement TQM although there is much support for this (Weeks, Helms and Ettkin, 1995).

Dale and Boaden (1994a) stated: “In our opinion MBNQA and EQA (self-assessment) are only applicable to organisations that have been undertaking quality improvement for at least three years, and are of little help to those organisations just starting out”. Furthermore, “the image surrounding self-assessment tends to be that it is a tool available only to those with plenty of resources” (Hewitt, 1997).

In view of these, and because of the significant changes that need to be made to the MBNQA and EQA self-assessment models when used in SMEs, the author developed the TQM survey questionnaire for SMEs that takes into consideration their strengths, weaknesses and characteristics.

### **2.5.5 Survey Methodology**

Fifty manufacturing companies were selected from a list of Sheffield SMEs obtained from the University of Sheffield Regional Office. The companies were selected based on two primary factors: 1) They had to be SMEs, and 2) They had to be actively involved in manufacturing. This is in line with the focus of the thesis, which is the regeneration of Sheffield SMEs. Hence the type of product manufactured was not an issue. Each company was sent a letter followed by a phone call explaining the purpose of the survey. The survey was conducted on-site and involved a personal interview with the Managing Director, Quality Director or Quality Manager. Based on the interview, each survey question was objectively rated on a scale of 1 to 5.

This method of questionnaire interview with a member of the senior management team is a more vigorous and robust research method than a postal questionnaire survey (Dale, 1992). Face to face interviews based on questionnaires eliminate the possibility of misinterpretation of questions by the respondent and also allows the author to seek clarifications and investigate the reasons, motivations and strategies behind the decisions and practices. The respondents were very helpful with their comments and actively participated in the interviews. This allowed the author to develop a better understanding of the company's quality management and the rationale for certain actions (Burgess, 1984).

Twenty-three companies agreed to participate in the survey. This constituted 56% of the 50 manufacturing companies invited, excluding nine companies that could not be contacted as they had either relocated or closed down. This figure of 56% is encouraging and indicative of the high level of interest exhibited by SMEs towards TQM. A further seven companies were contacted from a list of University collaborators and agreed to participate, bringing the total number to 30.

During a return visit to Singapore, the same survey was conducted with ten SMEs from the manufacturing sector. This allowed a very useful comparison to be made of the performances, practices and views on quality and TQM between the Sheffield and Singapore groups, bearing in mind the differences in cultural, political and economic backgrounds. It was felt that it would be useful to analyse the results of both countries in tandem as this could throw some light on the nature of problems encountered.



## Chapter 3: Results of TQM Survey

### 3.1 Survey Results

Based on the results of the survey, the companies were grouped into the following categories to facilitate analysis:

- No plan for BS5750
- Planning for BS5750
- Have implemented BS5750
- Planning for TQM
- Have implemented TQM

The results of the above-mentioned categorising for individual companies are shown in Tables 3.1b and 3.1c. A summary of the results from both tables is shown below:

Categories	Sheffield		Singapore	
	Number of Companies	Percentage of Total	Number of Companies	Percentage of Total
1. No Plan for BS5750	1	3.3	1	10.0
2. Planning for BS5750	11	36.7	4	40.0
3. Have BS5750	11	37.7	4	40.0
4. Planning for TQM	6	20.0	1	10.0
5. Have TQM	1	3.3	None	0
Total	30	100%	10	100%

**Table 3.1a: Summary of TQM Survey Results**

There was one company in Sheffield, British Steel Stainless, which had successfully implemented TQM for the past five years. There was no TQM company among the ten Singapore companies studied. As seen from Table 3.1a, there was one company in both Sheffield and Singapore with no plan for BS5750. Case studies of the best company from Sheffield and Singapore are found in Sections 3.4 and 3.5 respectively.

Table 3.1b: Quality Progress of Companies in Sheffield

Company	Category	No Plan for BS5750	Planning for BS5750	Have BS5750	Planning for TQM	Have TQM
Chapmans Agricultural Ltd					Working on IIP. Seen as necessary step to TQM.	
Footprint Tools Ltd				Claims to be starting TQM but no idea of benefits		
Paramo Tools Group Ltd				Not all lines certified. In process of full certification.		
Eclipse Magnetics *			Initial certification problem due to sister company. Year end target.			
Springline Spares				Certified 18 months ago but quality level still low.		
S Hardy Engineers Ltd *			BS5750 standards used but company is not certified due to financial constraints.			
Allform Tools Ltd *			Planning to get over next 18 months.			
Forged Rolls (UK) Ltd					Just started, directives from parent co. BS5750 – 5 yrs	
Impact Carbides Ltd *			Intend to apply over next few months.			
Dynamic Die & Steel Ltd *			In process of laying groundwork.			
British Steel Stainless - Cyclop Works						Full TQM company for over 5 years.

(continued overleaf)



<b>Category</b>	<b>No Plan for BS5750</b>	<b>Planning for BS5750</b>	<b>Have BS5750</b>	<b>Planning for TQM</b>	<b>Have TQM</b>
<b>Prime Engineering *</b>		Year end target to obtain certification.			
<b>Hattersley &amp; Davidson Ltd</b>				MD is keen and aware of TQM requirements. BS5750 – 1 yr.	
<b>Technicut Ltd</b>			Accredited for 1 year.		
<b>P Howard Group</b>		Plan to begin this year. Has BS4871/72 & British Steel Standard.			
<b>John Holding &amp; Co Ltd</b>			Certified for 5 years. Excellent quality practices but MD feels TQM not appropriate.		
<b>E A Drabble &amp; Co Ltd *</b>		Currently laying groundwork.			
<b>Rotabroach Ltd</b>			Certified to BS5750.		
<b>Dormer Tools Sheffield Ltd</b>			BS5750 – 7 yrs Good quality practices but company not ready for TQM.		
<b>Marshalls Hard Metals Ltd</b>				Planned TQM 18 months ago but now on hold "till market picks up".	
<b>Forgemasters Engineering Ltd</b>			View TQM as gimmick but have extensive quality management program.		
<b>GT Tubes Ltd</b>		Quality manager laying groundwork.			

**Table 3.1b: Quality Progress of Companies in Sheffield (continued)**

Table 3.1b: Quality Progress of Companies in Sheffield (continued)

Category	No Plan for BS5750	Planning for BS5750	Have BS5750	Planning for TQM	Have TQM
Jessop Saville Ltd				Courses are being planned by external consultant.	
Meco International			Certified to BS5750 since Dec 1992.		
Oilseal Services (Engineering) Ltd			Certified for past 2 years.		
Neville Roe Industries		Planning to in "near future". On hold due to finances, also seen as waste of time.			
G&J Hall Ltd	Own quality manuals. Feel BS5750 not needed also financial considerations.				
McCalls Special Products				Past 12 months MD working towards TQM. Aware of requirements.	
Tempered Spring Co Ltd		Staff laying groundwork.			
Stanley Tools Ltd			Not all lines certified. In process to get all certified.		

**Summary:**

No. of Companies per Category	1	11	11	6	1
Percentage	3.3	36.7	36.7	20.0	3.3

\* Denotes company has engaged an external consultant to lay BS5750 groundwork



**Table 3.1c: Quality Progress of Companies in Singapore**

<b>Category</b>	<b>No Plan for BS5750</b>	<b>Planning for BS5750</b>	<b>Have BS5750</b>	<b>Planning for TQM</b>	<b>Have TQM</b>
<b>Imperial Steel Drum Manufacturers</b>			Certification obtained in 1992.		
<b>Smith Valve Asia Ltd *</b>		Target is for certification by April 94. Plan communicated to employees.			
<b>Tri-M Technologies</b>				Company is currently preaching TQC, and have TQC induction program. Management aware of advantages and requirements.	
<b>Seng Heng Engineering Pte Ltd</b>			Certified in April 1992.		
<b>Central Package</b>	Engaged external consultant 2 yrs ago but now on hold. Feel co not ready for commitment.				
<b>Berger Paints</b>			Obtained certification in January 1993.		
<b>Ace Plastic Technology Pte Ltd</b>		Groundwork begun in June '93 by staff. Aiming for certification by Nov '93.			
<b>MC Packaging Pte Ltd *</b>		Presently in process. Move communicated to all by management.			

Table 3.1c: Quality Progress of Companies in Singapore (continued)

Category	No Plan for BS5750	Planning for BS5750	Have BS5750	Planning for TQM	Have TQM
<b>Company</b>					
<b>Drew Ameroid *</b>		Aim to be certified by Dec '94. Company-wide action employed.			
<b>Singapore Oxygen Air Liquide (SOXAL) Pte Ltd</b>			Not all sites certified yet. Top management is very committed and MD is keen to start TQM.		

**Summary:**

<b>No. of Companies per Category</b>	<b>1</b>	<b>4</b>	<b>4</b>	<b>1</b>	<b>0</b>
<b>Percentage</b>	<b>10.0</b>	<b>40.0</b>	<b>40.0</b>	<b>10.0</b>	<b>0</b>

\* Denotes company has engaged an external consultant to lay BS5750 groundwork.



Of the Sheffield companies, 97.6% were either planning for BS5750, had implemented BS5750, were planning for TQM or had implemented TQM. In Singapore, 90% of companies fall within the fore-mentioned categories. These are very high percentages, and indicate that almost all companies surveyed realise the importance of quality improvements.

Among the companies in Sheffield, 36.7% were planning for BS5750, with a further 36.7% certified to BS5750. Similar results are shown for Singapore. Companies planning for BS5750 should be certified in about two years.

Only 20% of Sheffield companies were planning for TQM. This figure of 20% is low but it can be improved if the 73.4% of BS5750 companies can be encouraged to advance to TQM.

The majority of the 30 Sheffield companies surveyed did not have any plans to proceed to TQM. During the interview, enquiries as to whether TQM was in their future plans drew a look of astonishment from the interviewees. Most of the companies felt that TQM was simply not applicable to their company's operations, their common misgiving being that TQM was only for large multi-national corporations. These companies have between seven to 250 employees. It is unfortunate that the eleven BS5750 certified companies see it as an end point in their company's quality drive and are now resting on their laurels (Long, Dale and Younger, 1991). They do not realise that although BS5750 results in the installation and maintenance of work procedures and processes it neither guarantees an improvement in product quality nor enables the company to become and remain truly competitive and successful in the highly competitive market. BS5750 lays out how a company set up, documents and maintains an effective quality system. It however falls short of the TQM objective of total quality delighting the customer, which is the most important aspect of any business. Without the customer, a highly effective quality process is futile when there is no one to purchase the product. These companies should use BS5750 as a "springboard" to TQM (Long, Dale and Younger, 1991).

The companies surveyed were still recovering from the costs of implementation and the newly imposed paperwork associated with BS5750 (Long, Dale and Younger, 1991) and hence were apprehensive about becoming involved in yet another round of

quality campaigns, employee talks, training and meetings. Most of the companies interviewed reported widespread resistance from employees to the increased amount of paperwork associated with maintaining BS5750.

Of the eleven Sheffield companies that were BS5750 certified, five have had BS5750 for between one to two years. None of those five companies had any plans of proceeding to TQM. Another three companies with BS5750 for at least five years were similarly not keen to embark upon the TQM route. A brief insight into the thinking of these three companies will shed some light on their resistance.

#### Company A

The company had maintained BS5750 for five years but the Managing Director felt TQM was not appropriate for his company. The company had so far performed well and had excellent quality practices. The MD was convinced TQM was for large companies and not his, which had 38 employees.

#### Company B

The company had been certified to BS5750 for seven years. However the MD felt the company was not ready for TQM and the new TQM culture.

#### Company C

The company had been BS5750 certified for at least five years. The MD viewed TQM as a “gimmick”. He decided that as the company had to date performed well, there was no need for change.

All three companies had good quality practices and placed strong emphasis on satisfying customers. Based on their TQM survey results, their good performance was attributed to employing some TQM principles. Therefore, unknown to them, their companies were on the TQM route. What they determined as mere gimmicks or being applicable only for large companies was actually the cause of their continued success.

When the interviews were conducted in 1993, a major reason cited by the companies for not considering TQM was the economic climate in the UK. With many companies uncertain about their future, they were understandably unwilling to venture into yet another quality program. BS5750 was what their customers demanded and BS5750



was what they got. No one was demanding TQM yet, so it would just have to be put on hold. The general outlook was that the efforts and costs of getting BS5750 certification were investment enough (North, Curran and Blackburn, 1993).

It is important therefore to provide companies with a cost effective TQM framework to show that TQM is not a high cost quality program but a new company culture that must be adopted by all management and employees to ensure the company's competitiveness, continued progress and success.

### **Average Rating**

The average ratings of each of the five categories are tabulated against the 5 Pillars of TQM in Table 3.1d for Sheffield companies and Table 3.1e for Singapore companies.

#### Calculation of Average Rating

The average rating is obtained by first calculating the average rating per section of the questionnaire. The average value for the Pillar is subsequently calculated based on the average of averages for the sections of that Pillar. The value that appears in Table 3.1d is calculated by grouping the companies according to the relevant category and then calculating their average rating for each Pillar.

Weighting is not used in the calculations as all sections are equally important for the successful implementation of TQM in SMEs.

As an example, the average rating of Sheffield companies are certified to BS5750 for the Pillar Customer Focus is obtained by first calculating the average rating for 'Section 4: Customer Requirements and Expectations' and 'Section 5: Customer Satisfaction' respectively per company. The overall average is then calculated for all Sheffield companies that are BS5750 certified. From Table 3.1d, this value is 3.95.

#### Calculation of Average Rating per Pillar

As the number of companies per category is different, for each Pillar the average rating is calculated by first multiplying the average per category of the Pillar in question with the number of companies in that category, and then dividing the sum of the values by the total number of companies. The calculation for the Pillar of Management Commitment for Sheffield is provided:

$$\begin{aligned}\text{Average Rating} &= \{(3.6*1) + (4.11*11) + (4.61*11) + (4.51*6) + (4.83*1)\} / 30 \\ &= 4.38\end{aligned}$$

#### Calculation of Average Rating per Category

This value is obtained by taking the average of the average ratings for each Pillar. Hence the average rating for the Category 'Have BS5750' is:

$$\begin{aligned}\text{Average Rating} &= \{4.61 + 3.95 + 3.81 + 4.39 + 4.15\} / 5 \\ &= 4.18\end{aligned}$$

For Sheffield companies, the average ratings ranged from 3.31 for the company with no plans for BS5750 to 4.81 for the TQM company. For Singapore companies, these average ratings ranged from 2.98 to 4.73. Taking the general average rating as 3, all Sheffield companies are performing above average.

The Sheffield companies with no plan for BS5750 had the lowest average rating of only 3.31. For these companies the highest rating is Customer Focus (3.70) followed closely by Management Commitment (3.60) and Quality Costs (3.50). The ratings were all above the average rating of 3 owing to the awareness of the companies about the importance of quality improvements and the strengths of SMEs described in Chapter 1. This also explains the complacency of SMEs who are resting on past laurels. Their attitude being that past satisfactory performance will continue into the future. They fail to realise that the future is neither the same as the past nor a mere extrapolation of it. There is an exponential rise brought about by rapid changes in technology, communications and global markets.

The increase in the average rating as the companies moved from the starting category of 'No Plan for BS5750' to 'Have TQM' shown in Table 3.1d strongly supports the need for companies to move to the highest category 'Have TQM'. The increase from 3.31 (No Plan for BS5750) to 4.81 (Have TQM) is a 45% increase and warrants serious consideration by SMEs about the implementation of TQM. The benefits of TQM are described in the case study in Section 3.4 which documents the only TQM company from this survey of 30 Sheffield and 10 Singapore SMEs.



**Table 3.1d: Average Ratings of Companies in Sheffield**

<b>Pillars</b>	<b>Category</b>	<b>No Plan For BS5750</b>	<b>Planning for BS5750</b>	<b>Have BS5750</b>	<b>Planning For TQM</b>	<b>Have TQM</b>	<b>Average Rating per Pillar</b>
<b>1. Management Commitment</b>		3.60	4.11	4.61	4.51	4.83	4.38
<b>2. Customer Focus</b>		3.70	3.96	3.95	4.11	4.40	3.99
<b>3. Quality Costs</b>		3.50	2.89	3.81	3.75	5.0	3.49
<b>4. Quality Systems</b>		2.77	3.44	4.39	4.47	5.0	4.02
<b>5. Continuous Improvement</b>		3.0	3.43	4.15	4.32	4.80	3.90
<b>Average Rating per Category</b>		<b>3.31</b>	<b>3.57</b>	<b>4.18</b>	<b>4.23</b>	<b>4.81</b>	

Table 3.1e: Average Ratings of Companies in Singapore

Pillars	Category					Have TQM	Average Rating per Pillar
	No Plan For BS5750	Planning for BS5750	Have BS5750	Planning For TQM	Have TQM		
1. Management Commitment	3.50	4.42	4.76	4.84	-	4.51	
2. Customer Focus	3.50	4.10	4.53	4.69	-	4.27	
3. Quality Costs	1.0	2.81	3.75	4.25	-	3.15	
4. Quality Systems	2.92	3.67	4.75	5.0	-	4.16	
5. Continuous Improvement	4.0	4.29	4.75	4.88	-	4.50	
Average Rating per Category	2.98	3.86	4.51	4.73	-		



**Table 3.2: Strengths and Weaknesses**

**This table shows the performance of the Sheffield and Singapore companies from their strongest points, to their weakest.**

	Sheffield		Singapore	
<b>Strongest</b>	<b>Commitment to Quality</b>	<b>4.38</b>	<b>Commitment to Quality</b>	<b>4.51</b>
	<b>Quality Systems</b>	<b>4.02</b>	<b>Continuous Improvement</b>	<b>4.50</b>
	<b>Customer Focus</b>	<b>3.99</b>	<b>Customer Focus</b>	<b>4.27</b>
	<b>Continuous Improvement</b>	<b>3.90</b>	<b>Quality Systems</b>	<b>4.16</b>
	<b>Quality Costs</b>	<b>3.49</b>	<b>Quality Costs</b>	<b>3.15</b>
<b>Weakest</b>				

### 3.2 Strengths and Weaknesses

This analysis looks at the average rating of each TQM Pillar to determine the strengths and weaknesses of the companies. The average ratings are shown in Table 3.2. In the ratings between the range of 4 and 5, which are classified as strengths, Sheffield had 3 Pillars and Singapore had 4 Pillars. Detailed explanation is provided in Section 3.3.

#### 1) Strengths (Ratings between 4 and 5)

<u>Sheffield</u>	<u>Singapore</u>
Management Commitment (4.38)	Management Commitment (4.51)
Quality Systems (4.02)	Continuous Improvement (4.50)
Customer Focus (3.99)	Customer Focus (4.27)
	Quality Systems (4.16)

Although Sheffield and Singapore companies are strong in the above Pillars, there is still room for improvement. Greater attention has to be given to the weaker Pillars with ratings of less than 4, shown below.

#### 2) Weaknesses (Ratings less than 4)

<u>Sheffield</u>	<u>Singapore</u>
Continuous Improvement (3.90)	Quality Costs (3.15)
Quality Costs (3.49)	

There is much in common between the Sheffield and Singapore companies, with the exception of Continuous Improvement. This Pillar requires the participation of everyone in the company to continuously improve quality performance. The difference in this Pillar results from the socio-economic differences of the two countries. The higher rating of 4.5 for Singapore compared to the lower rating of 3.90 for Sheffield is because Singapore companies are much younger and have a very small home market, compelling them to compete in the international export markets. This is in contrast to Sheffield companies which are more mature and have a large home market.



**Table 3.3: Comparison of Companies in Sheffield and Singapore**

**Significant Differences**

<b>Pillars</b>	<b>Sheffield</b>	<b>Singapore</b>	<b>Difference</b>
<b>Continuous Improvement</b>	<b>3.90</b>	<b>4.50</b>	<b>+0.60 (Singapore)</b>
<b>Quality Costs</b>	<b>3.49</b>	<b>3.15</b>	<b>+0.34 (Sheffield)</b>
<b>Customer Focus</b>	<b>3.99</b>	<b>4.27</b>	<b>+0.28 (Singapore)</b>

**Marginal Differences**

<b>Pillars</b>	<b>Sheffield</b>	<b>Singapore</b>	<b>Difference</b>
<b>Quality Systems</b>	<b>4.02</b>	<b>4.16</b>	<b>+0.14 (Singapore)</b>
<b>Commitment to Quality</b>	<b>4.38</b>	<b>4.51</b>	<b>+0.13 (Singapore)</b>

### **3.3 Comparison of Companies in Sheffield and Singapore**

A comparison is made of the average ratings of Sheffield and Singapore companies and the main reasons for the differences are discussed. The ratings are shown in Table 3.3. The analysis looks at the Pillars with significant differences in ratings followed by the Pillars with marginal differences.

#### **3.3.1 Significant Differences: (in decreasing order)**

##### **a) Continuous Improvement (+0.60, Singapore)**

###### **Sheffield**

- Only eight of the thirty companies were actively monitoring and striving to continuously improve their product quality and production processes. Four companies had no plans at all to improve upon any aspect of their operations. This is a sharp contrast to the fact that all ten Singapore companies were working on continuous improvement programs.
- Some companies claimed they had been operating their plants well for the past decades and hence saw no need to consider new improvements. Many companies were family businesses that had been operating with the same methods and procedures since the start of business.

###### **Singapore**

- Singapore is a young industrial and export economy. Hence companies actively seek to improve their production process and product quality in order to be competitive internationally. With a population of under four million, Singapore has a very small home market that necessitates her heavy reliance on export to neighbouring countries, Europe and the United States of America. Since the emphasis by the Trade and Development Board in Singapore on local manufacturing companies attaining ISO9000, many companies realised the importance of this international recognition for product quality and have sought to attain certification.

This is a major contributing factor to the difference of 0.6 points in Singapore's favour in this area of continuous improvement.



- Singapore companies were continuously seeking improvement opportunities for their processes so as to be competitive in both quality and price in the international market, and to reduce the costs associated with poor quality products thereby increasing profits. This was done throughout all levels of the company by both management and workers. A report by the Singapore National Productivity Board (Walker, 1994) showed that between 60.4% to 100% of the workforce of 1994 National Productivity Award winners participated in productivity improvement programs such as Quality Control Circles, Work Improvement Teams and other company-wide quality programs.
  
- An example of the attitude of a typical Singapore establishment towards quality and international competitiveness is the national airline, Singapore Airlines (SIA). Despite having one of the highest airfares in the market, the company is still among the top and most popular airlines worldwide and is renowned for passenger service. This is because management has provided intensive training and has imbedded into the thinking of all staff at all levels their responsibility to provide quality service that not only meets but exceeds customer expectations to ensure total customer satisfaction. The airline changes the fleet of aircraft on average every seven years, giving the airline the youngest fleet worldwide. Flights depart and arrive punctually, and any delays are reported to top management for review and immediate corrective action.
  
- Singapore companies conduct both internal and external quality audits on a regular basis. Survey results show this figure to be 90% compared to 57% of Sheffield companies. The one company in the Singapore group not actively conducting quality audits was working on implementing it. In contrast, three Sheffield companies made it clear they had no intention of implementing any quality audits.
  
- A larger percentage of Singapore companies monitor their own performance trends. They realise the importance of trends to enable them to closely and fully monitor the performance of their company, be it with regard to customers or productivity. It is only through this monitoring that a company is fully able to identify and improve its weaker aspects.

**b) Quality Costs (+0.34, Sheffield)****Sheffield**

- The percentage of total sales lost to poor quality is generally lower than the Singapore companies. The reason is the majority of Sheffield companies are established companies, having been in the trade for decades. Many of their employees had been with the company for years and were hence very skilled in their craft. As a result, there were fewer defective products.
- Being more established, the companies were more aware of the necessity of maintaining cost of quality records. There were comparatively more companies in Sheffield keeping records of the costs of scrap, rework, inspection and testing.
- Another reason for the higher average rating was communication with employees. Of the companies, 50% had fewer than 50 employees. Owing to the smaller workforce, the levels of scrap and rework and lost sales due to poor quality were very easily and rapidly communicated to all staff, resulting in employees becoming more personally involved in the day-to-day running of the company. Many companies had a family-like environment with open communications where the cost of quality (scrap and rework) was well understood by all concerned.

**Singapore**

- The companies being young industrially had not fully understood the significance of quality costs. Most only had a rough estimate of the cost of rejects as a percentage of total sales. These cost estimates were lower than that of Sheffield companies as they were more limited in scope and hence less accurate.
- The majority of companies did not maintain records of the cost of quality. The concept of the cost of quality was a recent introduction to the manufacturing sector by the Trade and Development Board which had yet to catch on with the local companies who were just getting to grips with ISO9000 certification.
- All the companies interviewed had at least 50 employees, with at least two departments in each company. Unfortunately inter-departmental communication was not well maintained resulting in the cost of quality not being communicated



throughout the company. Often only management received all the data regarding quality costs. This information was then conveyed to the shop floor supervisors but not the shop floor workers. Consequently the workers do not realise how much the company actually loses to scrap and rework.

Overall, only a very small percentage of companies maintained complete and detailed cost of quality records. The majority only recorded the cost of scrap. Full quality cost records include prevention, internal appraisal, internal and external failure costs. Scrap is only a part of internal failure costs.

**c) Customer Focus (+0.28, Singapore)**

Interviews in Sheffield and Singapore revealed that, with the exception of three of the 40 companies, customer surveys were not conducted to either determine customer expectations and requirements or customer satisfaction with the company's products and services. Essentially, the companies relied on receiving customer feedback, both positive and negative feedback, through customer compliments or complaints, and through the company's sales teams which served the dual function of also being the customer contact department.

If the companies conducted formal customer surveys on a regular basis they would know their customers' satisfaction, requirements and expectations, allowing them in turn to improve their products and services to meet these needs thus giving the company an edge over competitors. Without getting the true picture of their needs from the customers themselves, the company might not be producing goods and services to satisfy their customers.

The difference in the average rating between the Sheffield and Singapore companies with regard to Customer Focus is not high, being only 0.28 in Singapore's favour out of a total of five points. This was because Singapore companies all acknowledged that the customer is the most important and without the customer the company would cease to exist. The companies consequently concentrated more effort to establish good customer relationships. The response time of the companies to customer complaints was generally very good. However this is merely a reactive and not a preventive move. The main setback arises because companies do not actively conduct customer surveys to determine the real and future needs of existing and potential customers.

The following are shortcomings of Customer Focus more unique to the two groups of companies:

### Sheffield

- The companies as a whole did not do as well as Singapore companies in Customer Relationships because the sales personnel did not undergo as much formal training and did not have as many training programs scheduled for them as the Singapore sales personnel. Management felt that the experience gained through the course of their work was sufficient, that on-the-job training far outweighed any classroom training. This approach is not recommended because the lessons learned from on-the-job training might well have cost the company customers. This loss may seem minimal, but it is important to remember that “it takes months to find a customer, seconds to lose one”. Furthermore, the fact that a bad reputation spreads much faster than a good reputation should more than reinforce the need for formal training methods.
  
- Eighty percent of the Singapore companies benchmarked customer satisfaction with both industry and competitors. This is in contrast to 46% of Sheffield companies. The majority of Sheffield companies either conducted only limited comparison with their competitors or monitored trends within their own company. Most of the companies had the tendency to be inward-looking and were contented with just ensuring that they were performing better than their neighbouring competitors. They had not realised the importance of comparing their performance with the best in industry.

### Singapore

- Singapore was stronger than Sheffield in monitoring customer satisfaction. More companies (50% compared to 20% in Sheffield) monitored customer satisfaction trends obtained through informal feedback from their sales teams. Although limited in scope, it is still advantageous as it enables companies to know for a fact how customers feel about the company and whether customer satisfaction is actually increasing or decreasing.

In Sheffield, most companies determined this mainly through ‘gut feel’ and by making occasional enquiries into the number of complaints or returns received over the past months or year.



### 3.3.2 Marginal Differences: (in decreasing order)

#### a) Quality Systems (+0.14, Singapore)

##### Sheffield

- Eleven of 30 companies (36.7%) were BS5750 certified. A further eleven (36.7%) were planning for BS5750 and in the process of writing up the necessary quality manuals. A significant number had engaged external consultants.
- Fourteen companies (47%) had at most 20% of their employees trained in quality systems, tools and techniques relevant to the company's operations. Generally management felt their employees were sufficiently skilled to do their job as their companies had performed satisfactorily for the past ten to twenty years at least, there was no pressing need or justification for any quality training programs to be considered or implemented now.

##### Singapore

- The results are marginally better than that of the Sheffield companies (0.14 of 5 points) because of the higher level and amount of training employees receive with regard to quality systems. The companies conducted a high level of quality training especially at shop floor level. This is because of the high emphasis the Ministry of Trade and Industry places on the need for training in productivity improvement and quality control circles. These were further encouraged by numerous campaigns and subsidies given by the Government for the training and retraining of workers. Most first line supervisors are highly trained and support senior management's quality efforts.
- Being a young and export oriented industry, management relied on quality training programs to compete regionally and internationally.
- Only two companies (20%) had fewer than 20% of their employees trained in quality awareness or other quality practices relevant to the company's operations. These two companies however were working on training schedules for their employees.

**b) Commitment to Quality (+0.13, Singapore)****Sheffield**

- Comparatively, more senior management were directly involved in the day-to-day operations of the company than in the Singapore companies. This was largely attributed to the fact that 50% of the Sheffield companies have fewer than 50 employees whereas none of the Singapore companies interviewed have fewer than 50 employees. In these smaller companies, the Managing Director often worked together with his men on the shop floor so problems encountered were reported directly to him. This direct communication of problems in the production process is advantageous as it allows immediate action to be taken. It eliminates the normal series of channels of communication before management finally learns of the problem.
- Although many companies had quality policies, these policies were not actively communicated to all employees. As a result, the importance of the quality policy was not felt as strongly as in the Singapore companies which ensured all employees were fully aware of the company's stand on quality through the continual emphasis of the policy and its significance. The Sheffield companies felt that they were established with a regular customer base and were therefore more complacent in this regard.

**Singapore**

- Although the Managing Director and Directors visited the shop floor on a regular basis, they were not directly informed of the problems in the production process. Problems were only communicated directly to them if the problems were of a considerable magnitude and severity. This resulted in senior management being distanced from the day-to-day running of the company. However the companies displayed management commitment to the company's quality policy and had formal Supplier Rating Systems.
- Company quality policies were established and actively communicated to all employees. This was to ensure employees know that excellent quality is of utmost importance to the company's survival, continued success and competitiveness.



### **3.4 Case Study 1 - Best Company in Sheffield.**

**Company** : Cyclops Works  
Armour and Associated Products  
Avesta Sheffield Limited

**Number of Employees:** Approximately 73

The Cyclops Works of Armour and Associated Products has been around for 148 years and is part of a larger company, Avesta Sheffield Limited, which has over 2000 employees. Cyclops Works (CW) is a TQM company with a well communicated quality policy that is very closely linked to the company's business objectives. The company has active Quality Control Circles and Work Improvement Teams.

The company attained BS5750 certification in 1987 and for the next five years was engaged in implementing and sustaining Total Quality Management. Within the first two years of TQM implementation, progress was good and the company benefited greatly. However, a plateau was reached and TQM seemed in danger of dying a natural death. This is a common tendency identified by Cook and Baxter (1991) and Roy (1991) and experienced by many companies. CW prevented this through the company's engaging the services of an external consultant to help identify and eliminate the causes. Since then TQM has been self-perpetuating. Before becoming a TQM company, the company scheduled and conducted a full training program for every employee to ensure that all employees were fully aware of the principles of TQM, and of the benefits to be gained. The training sessions lasted between two to four days per employee.

The company has cost of quality records that are well maintained. The company's cost due to defects, off-standard work and customer returns was reduced to 0.2% per annum. At the time of research the company was not looking to bring this figure down to 0% as they felt the costs involved in would exceed the current loss of 0.2%.

Top executives are fully committed to quality which is realised by all employees as well as customers and suppliers. The company gives their suppliers TQM literature in the hope that the suppliers themselves will become TQM companies, benefiting not only the suppliers but CW. The company maintains long-term relationships and forges strong partnerships with suppliers with whom they have major contracts.

The company was working on developing its Supplier Rating System. Although the company never had a formal Supplier Rating System, they were fortunate as their suppliers were very familiar with the company's needs and expectations. The company realised that the development of a formal rating system would be beneficial as it would enable them to better monitor their suppliers and the consistency of the quality of goods received. Though their suppliers were aware that the company would not tolerate poor quality goods, this development of the company's own rating system would serve to further reinforce this fact.

CW was considering conducting formal customer surveys to better determine their customers' satisfaction, requirements and expectations. The company had not fared too poorly in this aspect because this short-coming was compensated by the Business Manager himself personally visiting customers to find out what they thought of the company, and how the company could further improve their performance to meet the future requirements of their customers. The development of a formal customer survey will enable the company to determine customers' satisfaction and needs in a more efficient manner, and plans were in place to commence the surveys the following year.

Customer contact employees are well trained in dealing with customers, and all problems pertaining to customer relationships are dealt with promptly and corrective actions implemented immediately. The company has well defined customer service standards that are derived from customer requirements. Despite customer complaints being at a minimum, a good process is maintained to collect, analyse and resolve all complaints that may arise. Customer satisfaction with the company is closely monitored, and so far the trends have been continuously improving.

All employees are trained to varying degrees in quality management and Statistical Process Control, depending on the extent to which these are relevant to their work. The level of quality awareness among employees is very high. The company rewards good suggestions and contributions made by employees to the company's improvement suggestion schemes. CW also has Steering Groups which are made up of nine members comprising shop floor operators, shop floor facilitators, and management facilitators. The group meets for brainstorming sessions to look into possible problem areas on the shop floor, evaluate these problems, and draw up a priority listing. Working groups are set up to find solutions to these problems. The



solutions are reported to the steering committee for the relevant actions to be taken. The Steering Group is changed every 18 months to ensure that everyone in the company has an opportunity to be a part of the group.

All quality manuals are reviewed six monthly and are amended when necessary. Internal and external quality audits are conducted on a regular basis. When complex designs are received from customers, representatives from the departments involved in the actual production will meet to assess the correctness of the drawings and to determine how the product can be produced in the most cost effective manner before sending the drawing to the production department.

With regard to goods inspection and testing, all incoming materials must be certified fit for use. A rejection bay ensures non-conforming raw material is not inadvertently used. Inspection basically comprises first-off inspection. At least 10% of every batch is inspected at the end of each stage of production. Goods requiring 100% inspection will receive a hard stamp identity. Also, all parts loaded for delivery are counter-checked against a loading list to ensure no part is left out.

The company does not practise benchmarking in the truest sense because of the limited market for proper comparison. Furthermore, the steel industry is a very secretive industry. Despite this, the company actively gathers as much information as possible on their competitors.

The company eliminated the need for inspectors, instead giving employees responsibility for their own work. The company assured employees from the start that although improvements would result in some positions becoming redundant it would not mean employees themselves being made redundant. When the need for inspectors was eliminated, those previously working as inspectors were retrained and given positions in more productive jobs. This sense of job security encourages employees to actively work towards increasing productivity.

An excellent scheme that CW was implementing was the shared bonus. In addition to their basic salary employees received quarterly bonuses. These bonuses were from the savings that the company made over the last quarter as a direct result of reduced costs. The money saved through on-time deliveries, reduced customer returns, reduced scrap

and defective products, reduced off-standard work, increased productivity, etc, was handed out as bonuses. This greatly increased productivity in the company.

On the whole, TQM paid off for CW. Off-standard work decreased from £0.25M to £20,000 and defects from 3.5% to 0.05% during the period from 1987, when CW began its TQM initiative, to 1993, when the case study was conducted.

CW is not resting on its laurels and is continually looking for new ways to further improve productivity. It was actively working on the following:

- 1) Improving customer response, i.e., faster preparation of quotations.
- 2) Better communication between management and shop floor employees.
- 3) Faster order entry.
- 4) Developing a better planning process.
- 5) Reducing lead-time.
- 6) Development of a computer data system.



### **3.5 Case Study 2 - Best Company in Singapore**

**Company** : Tri-M Technologies (Singapore) Limited

**Number of Employees** : 200+

Tri-M Technologies, established in 1987, is a manufacturing firm producing printed circuit boards. Tri-M won the first International Procurement Office Asean Supplier Excellence Award from IBM Singapore in 1989.

Tri-M received the Singapore Institute of Standards and Industrial Research (SISIR) ISO9002 certification in May 1992. In the run up to certification, Tri-M engaged the help of an external consultancy company. The consultants helped organise an ISO9002 awareness seminar to educate key staff about the requirements. An initial assessment of the company's existing quality systems was conducted and a detailed work plan was established to guide the design of the quality system and its implementation through various procedures and work instructions.

Upon attaining certification, there was initial resistance from employees who saw ISO9002 as another quality gimmick that offered nothing more than additional paperwork. However, as a result of the very strong commitment shown by the Managing Director and Directors, these 'teething problems' were quickly overcome as the benefits became apparent.

Tri-M has very strong senior management commitment especially in the area of quality and this is evident to employees. Monthly publications distributed to employees carry very firm yet gentle reminders from management about the need to excel in quality to secure a competitive advantage. All publications are bilingual in an effort to foster a closer working environment and to ensure no one feels left out.

Every employee's identification badge has the company's quality policy printed on the back in the language medium of the employee as a reminder of the company's commitment to quality and of their role in ensuring quality products. Management also encourages open communications between themselves and all levels of employees. The Managing Director visits the shop floor daily, and the company operates an open-door policy.

Tri-M has its own formal Supplier Rating System that assesses the supplier's product quality, technical support, product cost and performance. The company conducts quarterly reviews of its suppliers and updates its list of approved suppliers according to their performance. The company's partnership program with suppliers has benefited the company as suppliers have given suggestions which have helped the company in its drive to reduce costs while simultaneously improving product quality.

Tri-M does not have formal surveys to assist them in the determination of customer satisfaction, requirements and expectations. Feedback is obtained mainly through their sales team and through customer complaint reports. This is an area that the company needs to improve upon. The sales personnel, who are also the company's customer contact personnel, are well trained, having attended both in-house training and external training courses on quality. All customer relationship problems are looked into promptly and immediate corrective actions are taken to eliminate the problems and to ensure similar problems do not occur again. Full records are kept of all complaints and the corrective actions taken.

The company was also working towards establishing partnerships with their key customers. Customer quality and service standards are well defined and communicated to employees. The company first began monitoring the satisfaction levels of its key customers in 1992. Subsequent trends have proved favourable.

Tri-M performs benchmarking against both local and foreign industries, closely monitoring their competitors' market share and new production technology. Customers also provide the company with feedback on competitors performance.

All new employees undergo a quality induction training program. In addition all employees attend training programs to further increase their levels of quality awareness. As a result, the level of quality awareness in the company is very high. All employees are trained in quality tools and techniques although the degree of training may vary according to the nature of their work.

Tri-M has active Quality Control Circles (QCCs) and Work Improvement Teams. All new leaders of QCCs have to attend the "QCC Techniques for Leaders" course conducted by the Singapore National Productivity Board. The company holds in-



house QCC conventions where teams present their projects after six months of active involvement in QCC activities. A prize is presented to the winning team. The efforts put in by all other participating teams are not forgotten and consolation prizes are awarded to them. These is an effective means of encouraging employees to get together for brainstorming sessions and problem solving meetings where they can effectively analyse root causes of problems and find solutions to these problems. This is part of Tri-M's pursuit of excellence through teamwork.

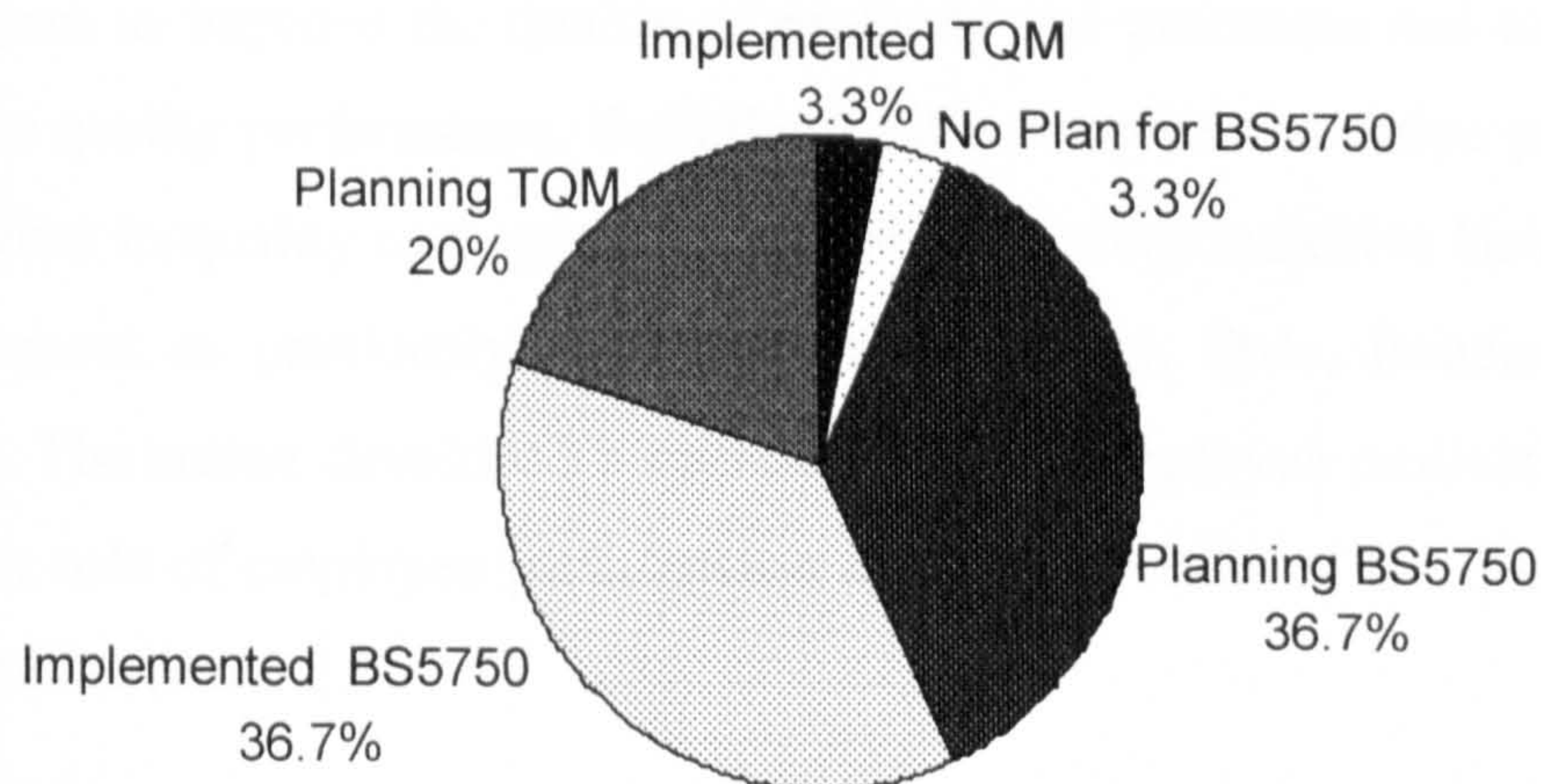
Tri-M's main emphasis is to reduce the cost of quality to increase profitability and competitiveness. In the financial year ending 31 March 1993, the company incurred almost S\$3M on the cost of quality alone. Recognising that a reduction of this cost would have an immediate effect on their bottom line profits, the company was turning their attention towards reducing this cost. According to the Managing Director, approximately 60% of the company's cost reduction targets can be derived from the reduction in the cost of quality. Since the cost of quality comprises both internal and external failure costs, appraisal costs and prevention costs, projects planned to reduce these costs included reducing scrap and rework, improving productivity, increasing yields of selected operations, ensuring timely delivery of good quality incoming materials, and ensuring effective preventive maintenance.

Tri-M has an award system for both individuals and departments who come up with suggestions which contribute significantly to the company's drive for continued excellence. In light of the company's new emphasis for reducing the cost of quality, the Suggestion Scheme was modified to award more recognition, in the form of bonus points, for suggestions which help reduce the cost of quality. Similarly, the QCCs are directed to undertake projects relevant to reducing these costs. Management feel that by aggressively pursuing the goal of reducing wastes such as scrap, rework, downtime, etc., there would be greater job satisfaction and increased morale amongst employees which would in turn contribute towards increased profitability.



### 3.6 Conclusions

1. Of the 30 small and medium sized companies in Sheffield, 96.7% were either planning for BS5750, had implemented BS5750, were planning for TQM or had implemented TQM. As shown in Figure 3.6, 36.7% were actively planning for BS5750, with another 36.7% already certified to BS5750, giving a projected total of 73.4% involved in BS5750 certification. This shows a high awareness by SMEs of the importance of quality management and supports the conclusions of Curran and Blackburn (1992).



**Figure 3.6: Percentage of Sheffield Companies per Category**

2. Only 20% of the companies were planning for TQM and 3.3% (one company, British Steel Stainless) had implemented TQM. This percentage is low because the companies see BS5750 as an end instead of using it as a “springboard” to TQM as identified by Long, Dale and Younger (1991). It also shows that SMEs do not fully understand the principles, concepts and benefits of TQM. Companies also felt that TQM was only for large multi-national corporations because many TQM success stories are of large companies with lots of human and financial resources.



3. The average ratings for the 5 Pillars, i.e., Management Commitment, Customer Focus, Quality Costs, Quality Systems, and, Continuous Improvement, for the 5 categories of companies in Sheffield, i.e., 'No Plan for BS5750', 'Planning for BS5750', 'Have BS5750', 'Planning for TQM', and 'Have TQM', were above the average rating of 3. This was because even the company with no plans to implement BS5750 had its own systems and informal procedures to produce quality products to meet customer requirements. This is due to the strengths of SMEs discussed in Chapter 1 of this thesis and their high awareness of quality management systems.
4. TQM Pillars with the lowest ratings are Quality Costs (3.49 of 5), followed by Continuous Improvement (3.90 of 5). These two Pillars require the participation of employees to improve the quality of products and processes and to continuously improve quality performance. Both these Pillars require the active participation of employees in quality management and the low rating indicates lack of employee involvement as previously identified by McQuater, Dale, Boaden and Wilcox (1996). The author developed a questionnaire on employee motivation to address this key role of employee participation in TQM. Details of the questionnaire are found in Section 4.2.4.
5. Customer Focus is the Pillar with the third lowest rating of 3.99. The study showed that only three of the 40 companies conducted customer surveys. Companies mainly relied on customer feedback, complaints and the company sales teams. This need led to the development of a customer focus questionnaire the details of which are found in Section 4.2.2.
6. The benefits of TQM are well illustrated through the experience of CW which successfully implemented TQM. The benefits gained are summarised:
  - a) Increasing trend of customer satisfaction.
  - b) Significant improvements in product quality and cost reduction.
  - c) Off-standard (non-conforming) work decreased from £0.25M to £20,000 and defectives from 3.5 to 0.05% in 6 years.
  - d) Cost of Quality is 0.2% of annual sales.
  - e) Good Teamwork.
  - f) High Employee Morale and Motivation.

- g) Strong quality awareness among employees.
7. Two concerns highlighted through the TQM survey were the efforts and costs of implementing BS5750 and TQM. Two companies planning for BS5750 did not obtain certification due to financial constraints. For similar reasons, another company's TQM plan was put on hold. This reinforces the need for the development of a cost effective TQM Framework for SMEs.
  8. There is mistrust in consultants by SMEs based on their experiences with BS5750. Consultants are seen to be costly and bureaucratic and not flexible to the requirements of SMEs.
  9. Finally the results of the TQM survey confirm Hypothesis 1, that SMEs do not understand the definition or implications of TQM. Most felt that TQM was for large companies and only one company was practising TQM. The lowest three ratings were for the Pillars of Quality Costs, Continuous Improvement and Customer Focus. These, together with their lack of understanding about the fundamental TQM principles of customer requirements, employee participation and continuous improvement, are the gaps that companies need to bridge in order to successfully implement TQM. Most disappointing were the eleven companies (36.7%) with BS5750 certification that were stopping their quality initiative at BS5750. It can be postulated that all or most of the eleven companies (36.7%) planning for BS5750 would similarly stop at BS5750. This is a loss of 22 companies (73.4%) with the potential to implement TQM.

There is a need to encourage and assist these companies to progress to TQM. They display the strengths of SMEs discussed in Chapter 1 but they also suffer from the weaknesses. The TQM Framework for SMEs must therefore address their needs and provide incentives for SMEs to proceed to TQM. Due to the limited availability of funds in SMEs, they are most reluctant to spend scarce resources of time and money unless they can realise returns and benefits almost immediately or in a relatively short term.



## **Chapter 4: Development of a TQM Framework**

*Hypothesis 2: SMEs Can be Encouraged to Implement TQM Using a Framework of Training and Mentoring (Uncle Concept)*

---

### **4.1 Development of a TQM Framework**

The results of the TQM Survey indicate the need for a cost effective Framework to assist SMEs in their implementation of TQM. This Framework must neither be complex nor contain management jargon as SMEs do not have the privilege of an abundance of management skill, resources and time.

A low cost Framework is important because investment and cash flow are two main weaknesses of SMEs. This is supported in a study on barriers to change in small companies carried out by Joyce, Woods, McNulty and Corrigan (1990) which identified the major barriers as market demand and finance. This was the case especially in manufacturing companies where market demand was seen as more significant in impeding change than the lack of capital. The TQM survey showed that SMEs were forced into BS5750/ISO9000 certification by the customer but were not planning for TQM because this was not required of the customer. By meeting customer requirements, the companies have taken care of the market barrier. If the TQM framework does not require much financial commitment SMEs can be encouraged to look beyond it being another quality initiative and recognise the full benefits to the company.

The experience of the author through many hours spent interviewing senior management from SMEs is they are very practical, down to earth people who know the need to continually improve in order to survive. In fact many companies already possessed qualities important for the successful implementation of TQM. An example is the close working relationship and good communications between management and employees. This close working relationship fosters teamwork, not as a defined objective but as a natural process in the solution of problems and difficulties encountered. The employees in these companies derive both personal and job satisfaction, and develop a very strong sense of commitment and loyalty to the company. Their work attitude is that of working together for the common good of the company and they often remain with the company throughout the course of their

working life. This is supported by a study by Nagpal, Twamley and Vallis (1989) which reported that small companies may not encounter the same difficulties of implementation as large companies owing to their size which means all employees and management know and trust the other.

As mentioned in Chapter 3, the general attitude of SMEs is that TQM is not suitable for them. Their main reason for this being that available literature relates success stories of large companies that have at their disposal vast amounts of both money and manpower. Furthermore, the general impression among Sheffield senior management was that TQM was an American import and flavour of the month. They felt it was more management jargon developed by large consultancy firms to generate income. Essentially, they were not familiar with the principles of TQM, and had based their opinions on hearsay. Unfortunately, their experience with BS5750 certification and the cost of consultants had left a bitter taste. It had disrupted work schedules and resulted in discontent among employees as they found themselves loaded with more paperwork. More significantly, management felt forced into obtaining certification through the demands of customers and personally did not feel it brought any significant improvements. It was merely the documentation of existing company procedures and processes.

The development of the TQM Framework seeks to address these issues, misconceptions and prejudices.

## **4.2 The Uncle Concept**

The main feature of the TQM Framework is the concept of the Uncle. This is a novel approach to training and mentoring in the implementation of TQM.

During the TQM survey of the 30 Sheffield companies, it became apparent that one company (Cyclops Works) was performing better than all the others. The case study of this company is found in Section 3.4. Although the company operated as an autonomous SME, it was in fact part of a larger organisation Avesta Sheffield Ltd. During the TQM implementation Avesta had provided considerable help to Cyclops Works by providing facilitators and general consultancy advice. It became apparent



that Avesta had acted as an Uncle to Cyclops Works. As this was so successful a decision was made to replicate this concept of the Uncle with other companies.

The Uncle Concept has as the Uncle a company that has implemented and sustained TQM. The Uncle will provide guidance, training and encouragement to SMEs implementing TQM. In this way, SMEs have available assistance from those who themselves have first hand experience of the problems that might be encountered and the pitfalls to avoid. It importantly eliminates the need for consultants, which is key reason cited for not considering TQM. The concept of learning from successful TQM companies is advocated by Coulson-Thomas (1992) who reported that companies are not tapping into the knowledge gained through experience of other companies regarding implementation problems. The Uncle Concept builds on “learning by association and sharing information through networks” as described by Dale, Boaden and Lascelles (1994). The companies implementing the TQM framework have the Uncle not only as a trainer but also as a mentor. In addition, they have the opportunity to establish a network with other companies implementing TQM.

#### **4.2.1 The Uncle**

Cyclops Works which had been actively practising TQM since 1988 was chosen to be the Uncle based on its outstanding results. It had experienced the best and worst situations that might arise in the implementation of TQM, and more importantly it is living proof that TQM is beneficial. Within its first two years of TQM implementation, the company saw significant improvements and reaped many benefits. However, TQM reached a plateau and seemed in danger of dying a natural death. This was overcome when the company engaged an external consultant to help in the identification and elimination of the cause. Since then, TQM has been self-perpetuating. A very significant point to note is the Cyclops Works had a TQM champion in their Business Manager, and the senior management team was also fully committed to the initiative.

The author approached the Business Manager with the proposal of Cyclops Works becoming the Uncle. He was very enthusiastic and saw it as a very good approach for helping SMEs. However, he felt that this project would benefit more if it were under the guidance of its head office, Avesta Sheffield Limited.

Avesta Sheffield Limited (ASL) was formed in 1992 following a merger between the former British Steel Stainless, a division of British Steel Plc, and Avesta AB of Sweden. The UK operation employs approximately 2,500 people and is based in Sheffield. The company is made up of a number of business units that act as profit centres, one of which is Cyclops Works. These business units correspond to the main manufacturing areas which produce stainless steel slabs, wide coils and sheets, long products, plates, precision strips, armour and tubes.

Their customers demand products that are of a very high quality and produced to tight specifications. Furthermore, the steel industry is one where technology is continually developing and competition is ever increasing. ASL has successfully met these demands through their commitment to Total Quality in every area of operation. Vital to their success is a structured quality and skills training programme designed to fully equip all employees with the skills and knowledge necessary to fulfil their job requirements. In addition, all employees are provided with the opportunity for self-development through numerous training schemes.

ASL has a Company Philosophy which is well communicated to all its employees. This philosophy focuses on Customers, Employees, Suppliers and the Local Environment. The following are the principles and guidelines referring to Local Environment which motivated ASL to become the Uncle:

“Local Environment:

We will establish a responsible attitude towards the environment and local community.

To achieve this we must:

- Control pollution – noise, fumes and waste in line with BS Plc policy.
- Show an ‘open face’ to and support for the local community.
- Support and promote local initiatives and develop appropriate recreational facilities.
- Establish a forum for exchanging information and expertise with local education and research institutions.”

It was this philosophy on Local Environment, especially regarding local community support, coupled with the fact that they were confident of the Uncle Concept being a



winning formula for TQM implementation in South Yorkshire SMEs that led to ASL agreeing to assume the role of the Uncle.

ASL, as the Uncle, agreed that its responsibility would be to provide training for facilitators from the participating companies. The training would be conducted over a period of 3 days during office hours by a qualified TQM facilitator from ASL. The training manual used would be adapted from the training material that ASL themselves used in their implementation of TQM.

A report by Newcastle Breweries (Williams, 1992) revealed that they met with local SMEs to explain their quality initiatives and implementation methods to them. Newcastle Breweries would be a capable and willing Uncle to SMEs in Newcastle. The author believes other TQM companies would likewise be willing to be the Uncle to SMEs in their vicinities.

Another report from the EFQM 3<sup>rd</sup> European Quality Conference for Education, Training and Research in 1992 (EFQM News, 1992) confirmed the willingness of successful large TQM companies to be Uncles to SMEs.

### **4.3 Prerequisites for TQM Framework**

The results of the TQM Survey conducted with the 30 Sheffield companies and 10 Singapore companies highlighted two key aspects that required further study, namely Customer Focus and Employee Motivation. Survey questionnaires were thus developed to allow actual feedback to be obtained from both customers and employees in order to accurately identify the company's strengths, weaknesses and needs, and also to highlight the areas requiring emphasis when implementing the TQM Framework.

The following sections explain the development and contents of the questionnaires.

#### **4.3.1 Customer Focus**

The TQM survey results revealed that the majority of companies (37 of 40 companies) did not conduct formal surveys with their customers to determine satisfaction levels of products and services, expectations of the company and future needs. Were customer

surveys conducted at least annually, the company would know their customers' actual requirements and expectations, and be able to take appropriate action.

This need for awareness of customer requirements is supported in a study by Roper, Hewitt-Dundas and McFerran (1997) involving 15 small UK companies employing between 20 to 70 employees, two thirds of which were ISO9000 certified. The study demonstrated that the relative importance attached to the various attributes of product quality by the companies and their customers was significantly different. In particular, smaller companies had the tendency to over-emphasise the importance of intrinsic quality attributes (product uniqueness, image, appearance, durability and flexibility) while underestimating the importance of extrinsic (the absence of faults, product returns and maintenance costs) and service quality attributes (repairs, delivery delays, replacement of faulty products and the supplier's credit terms). The authors suggested that the general tendency for suppliers to over-emphasise intrinsic qualities was consistent with a rigid conformation to manufacturing standards such as ISO9000. The implication is not that ISO9000 is irrelevant, rather that its implementation is insufficient to meet customers' aspirations. Customers match high manufacturing quality standards with high levels of service and design quality.

It was in response to this need for companies to conduct formal customer surveys that a Customer Survey Questionnaire was developed based on the 5 Pillars of TQM. This is supported by Oakland (1989b) and Flood (1993).

#### **4.3.2 Customer Survey Questionnaire**

The objective of the Customer Survey is to enable the company to determine its performance in meeting customer satisfaction and requirements, hence identifying areas of weakness that require action or immediate attention. It is recommended by Huxtable (1995) that the survey is conducted at 6 to 12 monthly intervals.

The questionnaire has six sections. The first five sections are based on the 5 Pillars, namely Quality Management, Customer Focus, Quality Costs, Quality Systems and Continuous Improvement. Customers are provided with ratings of 4 to 1, with '4' representing "Very Good", '3' representing "Good", '2' representing "Needs Improvement" and '1' representing "Not Acceptable". Four ratings are provided to



avoid customers taking the easy option and choosing the middle rating. The final section is qualitative, asking customers for their comments and opinions.

The questionnaire was not rigidly applied to every company. Each company was asked to customise the questionnaire to meet its individual needs. Questions were added, modified and/or removed as the company saw fit. This is important as companies operate differently, and more importantly, the survey results are for internal use and not for comparison with other companies.

The Quality Management section asks how well quality and delivery meet customer requirements and about the performance of the product with regard to consistency and durability. Tenner and Toro (1992) define durability as the amount of use obtained from a product before it deteriorates to the point that replacement is preferred over repair.

The Customer Focus section is structured to determine how customers rate the quality of service provided with regard to sales and the accuracy and timeliness of invoices. The efficiency of response to customers' orders and enquiries is also queried. Finally, the customer is asked to rate the company in terms of its ability to satisfy.

The Quality Costs section seeks to determine how the company fares when compared to competitors with regard to product quality, value, delivery and price. The customer is asked to rate the performance of the product as well as the technical backup provided.

The Quality Systems section asks the customer to rate the level of importance placed on suppliers being certified to ISO9000. Customers have to rate the company with regard to its ability to meet specifications and requirements, the resolution of complaints, the level of technical support and assistance provided, and the general quality awareness of employees. Customers are asked for their input concerning improvements or changes to the company's quality system that will be beneficial to them.

The Continuous Improvement section asks the customer to rate the company's response to product and service needs, and how well these needs and requirements are

met compared to competitor's products. Also asked is how well product and service innovations meet customer needs.

The qualitative section is used to obtain additional information about what customers like most and least about the products, service and delivery, and the improvements they want to see. Customers are asked if they will purchase from the company again and whether they will recommend the company to others. If the reply is negative in either situation, the customer is asked for an explanation. Finally they are asked for any other comments and suggestions, and to leave their name and contact number if they wish to be contacted about any issues. A copy of the questionnaire is found in Appendix B.

Being a postal survey, the questionnaire is kept short and to the point. Too detailed a questionnaire has the adverse effect of the customer not bothering to read through pages of questions or not responding (Huxtable, 1995). No incentive is offered for participating unlike surveys that offer token gifts. This was decided upon as SMEs have a regular base of long term customers who presumably will help the company to help themselves. This close customer relationship is a strong characteristic of SMEs.

### **4.3.3 Employee Motivation**

TQM requires the active participation of every employee from all functions, processes and operations to continually improve the quality of products and services. The human factor is vital for successful TQM implementation. Dale and Boaden (1994b) write that the process of quality improvement cannot be successful without the efforts of people, both as individuals and teams. The absence of company-wide employee commitment accounts for 80% of TQM failures (Tyrrell, 1991).

Wilkinson (1994) identifies TQM as having two sides – a “hard” and “soft” side. Whilst the “hard” side emphasises TQM tools and techniques, the “soft” side emphasises employee involvement and commitment. The human factor is responsible for the culture change required for successful TQM implementation. Hill (1991) defines the TQM culture as that which nurtures trust and respect for individuals, building a shared belonging to the company and drive for continuous improvement for the benefit of the company and individual.



Management practices in non-TQM companies vary considerably although they are often based on the specific roles and responsibilities of employees. Since the introduction of scientific management by Taylor, worker involvement in work planning, process improvement and quality improvement has been minimal as these are considered management responsibilities. However, companies that have started quality improvement strategies such as Quality Control Circles, Work Improvement Teams and other productivity programs have begun to change their management practices by giving employees more responsibilities for work planning and improvements. Oakland (1989b) describes employee participation as the involvement of every single person in the company regardless of position or location. He maintains there is a pool of expertise, experience and knowledge which offers a tremendous source of ideas and innovations when everyone works towards the good of the company.

Conducting the Employee Motivation Survey prior to the implementation of TQM is important because it accurately identifies the company's position in relation to the requirements of TQM and the changes needed to secure TQM success through employee motivation (Kondo, 1994).

Although not directly identified as one of the 5 Pillars of TQM, motivating employees to actively participate in TQM is a vital aspect for the Pillars of Quality Costs, Quality Systems, Customer Focus and Continuous Improvement.

The cost of quality comprises costs of conformance and non-conformance. As shown in Section 2.4.1, quality costs on the average amount to between 25% to 30% of annual sales. The bulk of quality costs are incurred through putting things right after they have gone wrong. An associated cost is therefore the cost of appraisal. Hence, a significant sum of money can be saved through prevention. The best approach is to ensure all employees are trained in the relevant quality and technical skills needed to do their job well. Employing more quality inspectors merely adds to the cost and does not serve any long-term quality improvement goal. Employees must be motivated to ensure quality in their own work. This, coupled with management's commitment to make resources available to help employees improve their work processes and quality, will lead to a definite and permanent decrease in the cost of quality.



Within the Pillar of Quality Systems, it is important for employees to be trained in quality awareness and the application of the seven TQM tools. The operation of any machinery or process to produce quality goods at maximum efficiency is dependent on the operator. Providing the operator with the necessary training to do the job well will motivate him.

Successful implementation of the Pillar on Customer Focus relies on employee motivation. All staff must be committed to ensuring customer satisfaction.

Employee motivation is also vital in the Pillar of Continuous Improvement which focuses on the continual search for excellence and customer satisfaction, both of which are not static factors. They escalate and evolve into ever higher standards and greater expectations such that any company wanting to rank among the market leaders and to improve market share and profitability must actively engage in this Pillar of TQM. Innovation is another aspect of this Pillar. Innovation is not limited to the development of new products and processes. It applies to all aspects of the company's business operations and encompasses new markets, new ways of doing things and the search for new ideas and improvements. All these can be achieved only through the participation and motivation of employees.

The above-mentioned findings led to the development of an Employee Survey Questionnaire. Interviews with the companies indicated that they had never conducted an employee survey. In fact, the only time management received any form of feedback from employees was if a situation arose that provided them with the opportunity to air their grievance.

#### **4.3.4 Employee Survey Questionnaire**

The objective of this survey is to determine existing levels of employee satisfaction and motivation in order to identify how the company can motivate employees to work for the good of the company and to actively participate in TQM. Conducting the surveys on a regular basis will serve as a good indication of employee motivation and commitment levels as the company implements and sustains TQM. The recommendation to the company is to repeat this survey every 6 to 12 months (Huxtable, 1995).



The employee survey is a confidential survey that looks at Work Environment, Performance, Job Satisfaction and Participation. The final section seeks employee comments. Ten questions are asked in each of the four sections and respondents give their opinions using one of 4 ratings – Strongly Agree (4), Agree (3), Disagree (2) and Strongly Disagree (1). A choice of 5 ratings is not given because the objective is for positive (agreement) or negative (disagreement) responses. Hence the choice of a middle or average rating was not provided (Huxtable, 1995). A copy of the questionnaire is found in Appendix D.

The Work Environment section asks the employee to rate questions pertaining to his work environment and conditions. Questions are asked to determine the employee's opinion about salary and benefits, working hours, the location of the company, staffing levels, and the adequacy of the training provided. The employee's opinions are also sought about the level of co-operation among fellow workers, job security and work conditions.

The section on Performance is designed to determine how employees feel about their work performance. Each employee is asked to rate how well the company communicates job responsibilities, quality goals and performance standards, and performance feedback. Also of interest is the employee's opinion of whether the company provides the necessary information, tools and equipment to do the job well. The employee is asked to rate the competence, fairness and consideration of management.

With regard to Job Satisfaction, the questions are aimed at identifying motivational factors such as achievement and recognition through challenging work, job responsibility, teamwork, respect from other employees, and the full utilisation of skills and capabilities. Questions ask about the emphasis placed on improving quality, productivity and performance, and the levels of recognition, reward and incentives awarded for doing good work. Employees are to rate whether management trusts them to do good work. The answers will provide management with feedback about employee morale, job satisfaction and motivation.

The section on Participation is geared towards determining employee motivation through the achievement of self-realisation. This is the highest level of motivation that



stimulates superior performance. This section rates the style of management. The employee is asked about promotion, personal growth and development opportunities, as well as if management encourages the proposal of new ideas and suggestions for improvement, the implementation of changes to improve productivity and quality, and employee participation in problem-solving and goal-setting. The questionnaire ends with the question "I am satisfied working for the company". This answer indicates exactly how the employee feels about working for the company as the earlier 39 questions invokes his thoughts about all issues relating to the job and the work environment.

The Employee Survey questionnaire was given to the participating company with the understanding that the senior management team would organise a meeting with employees from all levels of the company to explain the reason for conducting the survey, and to subsequently provide employees with feedback of the results. Respondents were told they were not required to write their names on the questionnaires. To assure employees that only the author would receive the completed questionnaires, envelopes were placed beside the questionnaires and upon completion, the questionnaires were sealed in the envelop and placed in a designated box. The results were compiled, analysed and a report presented to management.

The results of the Customer and Employee Surveys are presented in Chapter 5.

#### **4.4 TQM Framework Implementation**

The second hypothesis is that SME's can be encouraged to implement TQM by a combination of training and mentoring (Uncle Concept). For this hypothesis to be tested the Uncle Concept and Framework were implemented as described in the following sections.

Avesta Sheffield Limited agreed to fulfil the role of the 'Uncle'. However, prior to the companies commencing facilitator and employee training they were required to conduct the Customer and Employee Surveys. If the company did not want to conduct either or both surveys, it was clear the company was not prepared for the culture change that invariably must happen for the successful implementation of TQM. The reason behind this is fundamental. If the company did not know, nor want to know,



how their customers and employees perceived the company and its products, then correct and appropriate measures and steps to bring about quality improvements cannot be made.

This however was not a problem encountered with any of the companies who welcomed the surveys.

The author met on-site with the company's senior management team member responsible for spearheading their TQM implementation. At the first meeting, copies of the customer and employee questionnaires were presented and discussed to give management the opportunity to make any changes they deemed necessary, such as to modify, add or remove questions. This customised the questionnaires making them relevant to the company as no two companies are alike in their management goals, operations, customers and employees. A second meeting was arranged, usually within a week of the first meeting for the customised questionnaires to be collected and amended to reflect the changes. Two companies made slight changes to the customer questionnaire. None of the companies made changes to the employee questionnaire.

The customer survey was conducted first because it would take longer for customers to receive the survey questionnaire and return it by mail. The employee survey was conducted by management themselves to convey to employees the commitment that management accorded the survey. This was to help overcome employees' attitudes of it being another 'flavour of the month' exercise. The results of both customer and employee surveys were to be communicated to employees.

The methods for how the surveys were conducted are discussed in the following sections. The same procedure was applied to all six. For both surveys, expenses were fully borne by the University. The methods used to analyse the results are discussed in Chapter 5.

#### **4.4.1 Customer Survey Methodology**

The company gave the author a list of 'Category A' or key customers to whom they wanted the questionnaire posted. A copy of the customer survey questionnaire is found in Appendix B. The questionnaires were posted together with a letter on University letterhead explaining the purpose of the survey and the joint work with the

University as the company started on its route to TQM. The letter explained that the customer survey was developed as an integral part of the company's progress towards TQM to enable the company to accurately determine their customers' perception of the company, its products and services, and their customers' needs and how well the company was meeting these needs. The letter proceeded to explain that this feedback would greatly help the company to identify and correct or eliminate aspects of its operations that do not work in line with their goal of fully satisfying their customers. Although the University conducted the survey, the letter emphasised that senior management of the company were actively involved. Customers were assured the information received would be used for the mutual benefit of themselves and the company as their supplier.

A stamped self-addressed envelope was included and sent to the customer via first class mail to convey the importance of their feedback.

Most of the questionnaires were returned within two weeks of posting. In the third week, the author contacted the remaining customers personally by telephone to determine why the questionnaire was not returned.

It is of interest to note there were many instances where, despite the company providing the author with its list of current key customers, the following situations arose:

- The address provided by the company was an old address.
- The company no longer existed.
- The company had stopped being a customer for many years.
- The customer contact provided by the company had long since left the company.

This strongly reinforces the need for the company to know its customers better. It was especially disturbing to learn the customer address was incorrect. It brings to the fore questions of delivery to the wrong address, return of incorrectly delivered products, delays in payment and the actual size of its customer base.

After four weeks from the posting of the questionnaires, the results were compiled and presented to the company in a report, a sample copy of which is in Appendix C. The



company was also given the original questionnaires returned by their customers. The method used to analyse the results is described in Section 5.1.

#### **4.4.2 Employee Survey Methodology**

From the beginning, management was informed that the employee survey would be conducted on a strictly confidential basis for all employees including management, and that this fact was to be clearly communicated to employees. No participant would be asked to write his/her name on the questionnaire. This was to allow employees to express their true feelings and opinions without fear of reprisals. Management was informed they would neither receive the originals nor photocopies of the completed questionnaires. Instead a report analysing the results with all comments typed out exactly as they appeared would be given to management. This course of action was taken to avoid the situation arising where handwriting was analysed to determine what was said and by whom (Huxtable, 1995). A confidential survey is necessary to provide the company with actual and accurate information about the satisfaction and motivation levels present in the company, as well as any other problems. The only time any comment was edited by the author before inclusion in the report was when a specific person was named. The edited comment merely omitted the name.

The employee survey was conducted three weeks after the customer surveys were posted as the employee survey takes a much shorter period to complete. The whole process, from the time the questionnaires were given to the employees to the collection and analysis, was completed within a week.

Another prerequisite of the employee survey was for management to agree to organise a company-wide meeting to communicate to employees the reason for conducting the survey. The meeting would be led by the CEO or Managing Director with all management staff present, and will emphasise the confidentiality of replies, and convey the message that results will be analysed independently by the University. Management was advised to reassure employees the survey was not intended as a witch-hunt but as a means to help the company as it sought to improve, and that the results would be communicated to employees.

Employee participation was not compulsory. Management left the questionnaires at the back of the room so that those who were interested could collect one as they left

the meeting. This was to avoid the employee feeling coerced into participating which might have happened had he been handed the questionnaire personally by a member of the management team. Envelopes bearing the University name were placed with the questionnaires and employees were asked to seal the envelope containing the completed questionnaire and place it in a designated box. Employees were given three days to return the completed questionnaires.

A sample copy of the analysed results and report to management is found in Appendix E. A copy of the employee questionnaire is found in Appendix D.



## Chapter 5: Results of TQM Framework Implementation

The TQM Framework was implemented in six South Yorkshire manufacturing SMEs.

### 5.1 Method for Analysis of Customer Survey Results

The objective of the Customer Survey is to enable the company to accurately determine their level of customer satisfaction and to assist them in determining their strengths and weaknesses so that corrective action can be taken. It also serves as a baseline against which the company can compare and monitor the trend as it progresses to a TQM company. The reports given to management explain the method of analysis so that the company can conduct the survey themselves on a regular basis.

A sample result, based on twenty respondents, is given in Table 5.1a to illustrate the method of analysing the results.

Quality Management	Number of Customers per Rating				
	Rating	Very Good	Average	Needs Improvement	Not Acceptable
1a. Quality of Product		10	7	3	-
1b. Delivery		9	4	5	2
1c. Quality of Service		6	4	5	4
2a. Consistency of Product		8	12	-	-
2b. Durability of product		-	5	7	8
Total Number of Customers per Rating		33	32	20	14

**Table 5.1a: Number of Customers per Rating for Section 1 (Quality Management)**

As seen in Table 5.1a, the horizontal summation does not always equal the total number of respondents. This is because not all respondents answered every question. This is illustrated in question '1c. Quality of Service' where the horizontal summation is 19.

The results were the classified in two columns indicating the ‘Number of Satisfied Customers’ and ‘Number of Dissatisfied Customers’. Each question is classified according to whether it is ‘High Strength’, ‘Strength’ or ‘Weakness’ as shown in Table 5.1b.

The classifications ‘High Strength’, ‘Strength’ and ‘Weakness’ are defined as:

- High Strength is awarded only when all participants rate the question as ‘Satisfactory’ and there are NO dissatisfied customers for the question.
- Strength is awarded when more than 80% of customers are satisfied.
- Weakness is awarded when 20% or more customers responded with dissatisfaction. Alternatively, it applies when 80% or fewer customers are satisfied.

<b>Section 1: Quality Management</b>	<b>Number of Satisfied Customers</b>	<b>Number of Dissatisfied Customers</b>	<b>Classification</b>
<b>Question</b>			
2a. Consistency of Product	20	-	High Strength
1a. Quality of Product	17	3	Strength
1b. Delivery	13	7	Weakness
1c. Quality of Service	10	9	Weakness
2b. Durability of Product	5	15	Weakness
Percentage of Customers	65.0%	34.0%	

**Table 5.1b: Classification of Customer Satisfaction Levels for Section 1 (Quality Management)**

The columns ‘Number of Satisfied Customers’ and ‘Number of Dissatisfied Customers’ are obtained by summing the number of customers in the ‘Very Good/Average’ and ‘Better/Same’ columns and the ‘Needs Improvement/Not Acceptable’ and ‘Worse/Much Worse’ columns per question respectively.

The percentages for the satisfied and dissatisfied customers are obtained by dividing the total number of responses in each rating by the product of the total number of survey respondents and the number of questions for that section. This is illustrated for ‘Number of Satisfied Customers’:



$$\begin{aligned}\text{Percentage of Satisfied Customers} &= (20 + 17 + 13 + 10 + 5) / (20 * 5) \\ &= 65\%\end{aligned}$$

The percentages for satisfied and dissatisfied customers do not always add up to 100% because not all respondents answer every question.

The question concerning the customer's requirement of ISO9000 found in the Quality Systems section is not taken into consideration in the calculations as it is a request for information about the customers' requirement for the company to be certified to ISO9000.

The customer survey report concludes by highlighting the areas with the highest levels of customer satisfaction, the lowest level of satisfaction and those that need improvement.

An important feature included in the questionnaire concerns Customer Retention. The customer is asked if he will re-purchase from the company and if he will recommend the company to others. A reason is requested if the response to either or both of the questions is negative. This feedback though important to all companies is of vital significance for SMEs because of their smaller customer base and lower resources. Huxtable (1995) supports this, writing that the loss of a key customer for the small company could well mean the end of the company.

## **5.2 Method for Analysis of Employee Survey Results**

The employee survey aims to provide management with information on staff morale and the problems and dissatisfactions present among staff. On a positive note, the survey lets management know what they are doing correctly. It serves as a baseline for the company to compare and monitor the trend along its progress to TQM. The report explains the method of analysis so the company can conduct future employee surveys.

A sample size of 40 employees is shown in Table 5.2a. The ratings represent the following:

Strongly Agree (4)                      Agree (3)                      Disagree (2)                      Strongly Disagree (1)

Similar to the customer survey, the horizontal summation per question does not always equal the number of respondents because employees did not answer all questions.

Part A: Work Environment  Rating	Number of Employees per Rating			
	4	3	2	1
1. I am paid a fair and competitive salary.	4	11	15	8
2. Company benefits are fair and competitive.	-	16	18	6
3. Working hours are suitable to me.	3	25	10	2
4. It is convenient to travel to and from work.	6	28	3	3
5. Company employs enough employees to operate productively.	-	10	18	10
6. Company provides adequate training.	-	12	22	6
7. Co-workers are friendly and helpful.	7	23	8	2
8. I have good work relationships with people in the company.	2	30	8	-
9. I have job security and stability.	3	10	15	8
10. I am satisfied with conditions at work.	-	15	14	10
Percentage of Employees in each Rating	6.3%	45.0%	32.8%	13.8%
	Percentage Motivated 51.3%		Percentage Demotivated 46.6%	

**Table 5.2a: Number of Employees per Rating for Part A (Work Environment)**

The percentage of employees per rating is calculated by dividing the total number of responses per rating by the product of the total number of survey participants and the number of questions. The calculation is shown for rating 4:

$$\begin{aligned} \text{Percentage of Employees for Rating 4} &= (4 + 3 + 6 + 7 + 2 + 3) / (40 * 10) \\ &= 6.3\% \text{ (to one decimal place)} \end{aligned}$$

The Percentage Motivated and Percentage Demotivated is obtained by taking the sum of the percentages for ratings 4 and 3, and ratings 2 and 1 respectively. The Percentage



Motivated and Percentage Demotivated do not always add up to 100% due to the earlier mentioned fact that employees did not answer every question.

The report presents the final results according to the levels of employee satisfaction. The classifications are 'High Satisfaction' and 'Dissatisfaction' as shown in Table 5.2b.

<b>Part A: Work Environment</b>	<b>Number of Motivated Employees</b>	<b>Number of Demotivated Employees</b>	<b>Classification</b>
It is convenient to travel to and from work.	34	6	High Satisfaction
I have good work relationships with people in the company.	32	8	High Satisfaction
Co-workers are friendly and helpful.	30	10	High Satisfaction
Working hours are suitable to me.	28	12	High Satisfaction
I have job security and stability.	17	15	
I am paid a fair and competitive salary.	15	23	
I am satisfied with conditions at work.	15	24	<b>Dissatisfaction</b>
Company benefits are fair and competitive.	13	23	<b>Dissatisfaction</b>
Company provides adequate training.	12	28	<b>Dissatisfaction</b>
Company employs enough employees to operate productively.	10	28	<b>Dissatisfaction</b>

**Table 5.2b: Classification of Employee Satisfaction Levels for Work Environment**

The table is arranged in descending order of the number of motivated employees.

The classifications '**High Satisfaction**' and '**Dissatisfaction**' are defined as:

- High Satisfaction is awarded only if 60% or more employees are motivated.
- Dissatisfaction is awarded when 60% or more employees are demotivated.
- Classifications left blank represent areas with Lower Satisfaction levels. These areas can be worked on and transformed into areas of High Satisfaction at the discretion of the company, as opposed to the areas of Dissatisfaction which require immediate attention and action by the company. Measures to improve these areas of lower satisfaction may require minimal effort by management as opposed to the time,



### Percentage of Satisfied Customers per Pillar

Company & Response Rate	Quality Management	Customer Focus	Quality Costs	Quality Systems	Continuous Improvement
<u>Triten International</u> 15 Customers (50%)	81.3	84.0	64.0	71.7	65.3
<u>Allform Tools</u> 8 Customers (53%)	92.5	100.0	90.0	93.8	87.5
<u>Cintride</u> 9 Customers (30%)	84.4	82.2	82.2	77.8	81.5
<u>Street Cranexpress</u> 10 Customers (10%)	68.0	66	73.3	67.5	63.3
<u>Burnand XH</u> 10 Customers (27%)	90.0	84.0	86.7	77.5	90.0
<u>Crane &amp; Hoist</u> 5 Customers (9%)	96.0	84.0	86.7	90.0	86.7
<u>Standard Piston Ring</u> 14 Customers (23%)	90.0	88.6	81.0	83.9	89.8
<u>Edward Pryor &amp; Son</u> <u>MME Division</u> 20 Customers (33%)	73.3	72.0	58.3	73.8	61.3
<u>Consumables Div.</u> 16 Customers (57%)	85.4	90.1	84.4	92.2	71.8
<b>Average Percentage</b>	84.5%	83.4%	78.5%	80.9%	77.5%

**Table 5.3.1: Summary of Customer Survey Results**



effort and possible financial commitment needed to effectively and permanently transform the areas of Dissatisfaction into areas of High Satisfaction.

The employee survey report concludes by reiterating the key findings of the survey. Employee comments provide invaluable insight into the workings of the company and the areas that need management's attention.

### 5.3 Summary of Survey Results

A total of six SMEs participated in the Customer and Employee Surveys. Of these six companies, Allform Tools had participated in the TQM survey conducted with the 30 Sheffield companies. Triten International and Stand Piston Ring's management learned of the TQM Framework and expressed their interest in participation. The other 3 companies are University collaborators.

#### 5.3.1 Customer Survey Results

The results of the Customer Surveys are shown in Table 5.3.1 for each of the six companies. A total of 107 of 368 customers (total number of customers from the six companies) completed and returned the questionnaire. The average percentage per Pillar based on the 'Number of Satisfied Customers' is:

▪ Quality Management	84.5%
▪ Customer Focus	83.4%
▪ Quality Costs	78.5%
▪ Quality Systems	80.9%
▪ Continuous Improvement	77.5%

These values are calculated based on the 'Percentage of Satisfied Customers' shown in Section 5.1. The percentages obtained per company are presented in Table 5.3.1. The average percentage is obtained by taking the overall average per Pillar:

Average Percentage for the Pillar Quality Management

$$= (81.3 + 92.5 + 84.4 + 68.0 + 90.0 + 96.0 + 90.0 + 73.3 + 85.4)/9$$

$$= 84.5\%$$



**Percentage of Employees per Classification**

<b>Company &amp; Participation Rate</b>	<b>High Satisfaction</b>	<b>Low Satisfaction</b>	<b>Dissatisfaction</b>
<u>Triten International</u> 36 Employees (80%)	45.0	30.0	25.0
<u>Allform Tools</u> 16 Employees (100%)	40.0	27.5	32.5
<u>Cintride</u> 35 Employees (87.5%)	30.0	20.0	50.0
<u>Street Cranexpress</u> 41 Employees (75%)	60.0	25.0	15.0
<u>Standard Piston Ring</u> 68 Employees (76%)	30.0	55.0	15.0
<u>Edward Pryor &amp; Son</u> <u>MME Division</u> 48 Employees (58.5%)	27.5	40.0	32.5
<u>Consumables Division</u> 69 Employees (73.4%)	32.5	35.0	32.5
<b>Average Percentage</b>	37.9%	33.2%	28.9%

**Table 5.3.2a: Summary of Employee Survey Results**

Note:

‘High Satisfaction’ – 60% or more employees ‘Strongly Agree’ or ‘Agree’ with the question.

‘Dissatisfaction’ – 60% or more employees ‘Strongly Disagree’ or ‘Disagree’ with the question.



The Pillar Management Commitment is referred to as Quality Management because the emphasis when used in the questionnaire pertains the management of quality, which is an aspect of Management Commitment.

Customers generally gave the companies high ratings for Quality Management, Customer Focus and Quality Systems. Lower ratings were given for Quality Costs and Continuous Improvement.

Some customers were so dissatisfied they clearly stated they would not repurchase from the company. As the companies were asked to select their key customers to participate in the survey, this loss is very serious and requires urgent action to prevent further loss of customers. Despite all six companies having ISO9000 certification, it is clearly not enough to ensure satisfied customers.

The customer survey results are consistent with the strengths and weaknesses of SMEs discussed in Chapter 1. They confirm the high awareness of SMEs with regard to quality management, the need to meet customer requirements, and the importance of a good quality system. However to remain competitive SMEs need TQM to achieve improvements in quality costs and continuous improvement.

### **5.3.2 Employee Survey Results**

A total of 313 employees participated in the Employee Survey, giving a participation rate of 74%. The result from each company is shown in Table 5.3.2a. The average employee profile is summarised:

▪ High Satisfaction	37.9%
▪ Low Satisfaction	32.3%
▪ Dissatisfaction	<u>28.9%</u>
Total	<u>100.0%</u>

The top fifteen questions classified as 'High Satisfaction' together with the number of employees who rated them, and the percentage based on the total of 313 participants are listed in Table 5.3.2b. Most of the 'High Satisfaction' questions come under Herzberg's hygiene factors (Herzberg, Mausner and Snyderman, 1959) which correspond to the

Questions	Number of Employees	Percentage of Employees
1. Management trusts me to do a good job.	268	85.6
2. I have good work relationships with people in the company.	265	84.7
3. I am working towards the future of the company.	261	83.4
4. It is convenient to travel to and from work.	250	79.9
5. Co-workers are friendly and helpful.	242	77.3
6. Working hours are suitable to me.	240	76.7
7. I have enough authority to do my work.	232	74.1
8. I am satisfied working for the company.	177	56.5
9. I find my job interesting and challenging.	174	55.6
10. I work a reasonable amount of overtime.	167	53.4
11. I know my quality goals and performance standards.	150	47.9
12. I can learn new skills at work.	107	34.2
13. I have job security and stability.	103	32.9
14. I have enough information to do my job.	100	31.9
15. People in the company treat me with respect.	89	28.4

**Table 5.3.2b: Top 15 Questions Classified as 'High Satisfaction'**



three lower level needs of Maslow (1943), namely physical, safety and social needs. Reviews of Herzberg's and Maslow's works are found in Sections 6.5.2 and 6.5.4.

The top ten questions classified as 'Dissatisfaction' are listed in Table 5.3.2c. Again, these are mostly Herzberg's hygiene factors. The issue with the most dissatisfied employees is the lack of reward and recognition for good work. The next issue is the lack of training. Both these very clearly indicate that employees want to positively contribute to the company and by so-doing will attain high levels of job satisfaction. The surprising revelation to management was that the level of pay was not the greatest source of dissatisfaction as they had predicted. This reveals the gulf between management's perception of employees and the true aspirations of employees. Management must change their mindset to acknowledge that employees want to contribute to the success of the company and want the opportunity to achieve this.

Implementing TQM's organisational culture change with its open positive style of management, teamwork and employee participation will motivate employees and lead to the continuous improvement of product and service quality. The solution is to remove dissatisfaction so that employees can meet the higher level needs of esteem and self-realisation through participation in a company with an open, flexible, supportive and co-operative style of management.

Questions	Number of Employees	Percentage of Employees
1. There is enough reward and recognition for doing good work.	254	81.2
2. Company provides adequate training.	200	63.9
3. Everyone is working to their full ability and capability.	196	62.6
4. Management is competent in doing its job.	164	52.4
5. My salary increase is based on how well I do my job.	148	47.3
6. I receive feedback on my performance.	121	38.7
7. Company benefits are fair and competitive.	121	38.7
8. There is good team spirit and co-operation in the company.	94	30.0
9. I am paid a fair and competitive salary.	93	29.7
10. There are promotion opportunities.	92	29.4

**Table 5.3.2c: Top 10 Questions Classified as ‘Dissatisfaction’**

#### 5.4 Overview of Survey Results

The results of the customer and employee surveys showed the companies the areas needing improvement. All six companies need to make improvements in product quality, delivery and service although product quality received a better rating. Delivery and service were very poorly rated with numerous customer complaints. Three companies have customers who would not re-purchase from them.

All the companies need to motivate their employees who want and require training to do more challenging and satisfying work, as well as recognition for doing good work.



These companies need to change their traditional management style to the open, co-operative and supportive management style of TQM with its emphasis on teamwork, problem solving and continuous improvement. They must recognise they have vast untapped resources in their employees, and that their employees want to be given the opportunity to contribute actively to the company's success.

The survey results yielded a long list of problems requiring urgent attention, confirming that the companies made the right decision to implement TQM. These results and the response of management support the urgent need for the development of a cost effective framework which consists of the customer and employee surveys, and facilitator and employee training.

## **5.5 Facilitator Training**

Upon completion of the prerequisite customer and employee surveys, the companies commenced facilitator training which was conducted by the Quality Training Manager of Avesta Sheffield Limited.

### **5.5.1 Background**

An integral part of the TQM Framework is Facilitator Training. Facilitators are the TQM champions of the company. The facilitator training enables them to provide training for their fellow employees in the principles, tools and techniques of TQM. It is important for facilitators to guide and sustain the TQM initiative although the ultimate responsibility for the successful implementation of TQM rests with management.

The method of selecting facilitators is left to the discretion of the company. It is preferable for one facilitator to be selected from each level of the company so that no group will feel underrepresented. Facilitators must have the respect of fellow workers and be able to lead by example.

Most of the companies selected facilitators by short-listing staff who possessed interpersonal and communication skills and were committed to quality improvement. The short-listed employees were not forced into becoming facilitators. They were told the scope of responsibilities and the level of involvement and given the final say

concerning their participation because successful implementation can only be attained through total commitment and the conviction that TQM is the only way forward. The worse scenario is to have an unwilling facilitator as it can effectively halt or jeopardise the success of the initiative.

Some companies used a volunteer system in their facilitator selection. Although it did not occur, a possible setback with this method is an overwhelming response whereupon people have to be turned down. This can have a demotivating effect on the unsuccessful volunteer and will bring into question the reasons for rejection. A volunteer system will also raise the issue of the suitability and qualifications of volunteers. As previously mentioned, it is vital for facilitators to possess interpersonal and communication skills and to have the respect of fellow employees.

Avesta Sheffield Limited, having accepted the role of the Uncle, offered to conduct the Facilitator Training sessions in their own purpose built Training Centre. The Training Centre was built to meet their training needs when Avesta was itself undergoing the process of TQM implementation. Avesta used its own facilitator training manual but adapted it to cater to the needs of SMEs.

The training was scheduled for three half-day sessions and conducted during office hours to show the commitment of management to the TQM initiative. A dinner was planned to mark the end of the training. The cost of the dinner was borne by the respective companies as a further indication of management commitment. The Director or Managing Director responsible for the TQM initiative was required to attend the first session to support the facilitators and to familiarise himself with the training techniques and topics to be covered. He was also required to be present on the last day to address any issues raised by his facilitators during the training. The dinner was in a restaurant agreeable to all. This consensus was reached on the first day of training and provided a good example for participants of how to reach collective agreement.

Three Facilitator Training courses were conducted. The training was conducted on a "least formal interactive discussion style" (Oakland and Waterworth, 1995) to encourage active participation from trainees. The reasons for not conducting one training course for all six companies were, firstly, owing to individual company



schedules it was not possible to conduct the surveys at the same time, and, secondly, it is more effective to conduct the training with smaller groups of facilitators. As recommended by Oakland (1993), the number of trainees did not exceed 20. To elaborate the first reason, as the companies completed their customer and employee surveys, it was important to maintain the momentum by sending facilitators for training as soon as possible so that they could in turn train their fellow employees. It was essentially a case of striking while the iron was hot, and not letting employees become sceptical of what many perceived as the 'flavour of the month'.

The first training course held in February 1994 was attended by four facilitators from Triten International Limited and two facilitators from Allform Tools Limited. The second course held in April 1994 was attended by four facilitators from Cintride Limited, four facilitators from Street Cranexpress Limited and six from the Machinery Division (MME) of Edward Pryor and Son Limited. The final course was held in August 1994 with five facilitators from the Consumables Division of Edward Pryor and Son Limited and seven facilitators from The Standard Piston Ring Company Limited.

All the training courses were similarly structured and all used the same training manual. The following are the areas covered during the training course:

- What is Total Quality (TQ)?
- Customer First, Quality First.
- Managing for TQ.
- Teamwork for TQ.
- Putting TQ into practice.
- People make quality.
- Overcoming barriers to implementation.
- Making TQ stick.

Details of the Facilitator Training are found in Appendix F.

### **5.5.2 Evaluation of Facilitator Training**

The facilitators found the training very useful as many did not have in-depth and formal knowledge of the principles and concepts of TQ. The facilitators knew that to remain successful and competitive in today's market, changes to their existing company culture

and systems were required. They were also aware that fellow employees were becoming increasingly demotivated about their inability to contribute actively because of the existing style of management. Hence when the opportunity presented itself, they volunteered to become facilitators or accepted the facilitator appointment as their opportunity to finally be able to improve the conditions and environment at work.

Trainees were required to give lecturates. This opportunity to give a presentation was given positive reviews by the facilitators who then felt much more confident of conducting good employee training courses in their own companies.

Facilitators found the course material very applicable, practical and interesting. In fact, the level of 'common sense' and practicality of the concepts and principles left facilitators feeling confident this initiative to implement TQM would be well received by their colleagues. The absence of complex methods and terminology was a positive feature.

Facilitators were motivated by management's commitment to hold the course during office hours. They felt the three sessions were adequate for familiarisation with the materials, and that the size of the group gave everyone the opportunity to practise their presentation skills.

There was however disappointment with the video by American quality guru Tom Peters. Although the video 'What is Total Quality' contains good concepts, principles and practical advice, the general feedback from facilitators immediately after the viewing was they had actually stopped listening about a third into the video. The reason was unanimously agreed upon by facilitators. They had found the video too 'American' for them and did not appreciate his "shouting" and almost "showman" performance. They agreed that this video would not be used in their employee training. This cultural difference was mentioned by Mortimer-Lee and Casbourne (1991) who reported TQM as being "too American to go down well with the people here". This incident is in line with feedback the author received during interviews - that TQM is an American flavour of the month, merely another transatlantic import destined to die a natural death, and that TQM is just a money making package dreamt up by American consultancy firms.



The Facilitator Training was very well received by the facilitators who especially appreciated the worksheets and exercises.

## **5.6 Employee Training**

### **5.6.1 Background**

Having completed the facilitator training course, facilitators were ready and competent to conduct their own employee training. The training is based on Avesta Sheffield's own employee TQM training manual that was adapted to suit the needs of SMEs.

Employee training was conducted only by the MME and Consumables Divisions of Edward Pryor and Son Limited. Unfortunately the other five companies that participated in the facilitator training did not proceed with employee training.

Allform Tools Limited was at the time undergoing a take-over so there was a change in management. Also, the management contact in Triten International Limited left the company which effectively marked the end of the company's commitment to the implementation of TQM.

For the remaining three companies, the disappointing response boiled down to one factor - Management Commitment, or rather, the lack of it. Management was not ready to deal with the 'revolution' they knew they would encounter if their employees were empowered. They did not see the need for empowered and motivated employees. Another reason was the consideration of time and financial resources. Having committed to facilitator training, management was not prepared to "lose" more money and time sending all employees for training. Management thus chose to halt the TQ initiative at Facilitator Training.

Edward Pryor & Son Ltd. named their TQM initiative 'In Pursuit of Excellence' (IPEX). The same employee training approach was used by facilitators from both Divisions.

It was decided by the management team that the Employee Training course would be conducted over two consecutive days as recommended in the Employee Manual, with

each course having between twelve to fourteen employees. Attendance for the training was voluntary.

The training was conducted off-site during office hours at the University of Sheffield which is a ten minute walk from the company, ensuring no inconvenience for the participants and showing them management's commitment to the success of this initiative. Participants were paid their full wages for the two days of training and were not required to attend work. In addition, all refreshments and lunches were fully paid for by the company. The course began at 9am and ended punctually at 4pm on both days.

Each group had a mix of staff from various levels and departments. This was to improve the level of communications and knowledge of other functions within the respective Divisions, which were shown as weaknesses in the survey results.

Both MD's were Adopter's for their respective Employee Training sessions. Each training course was conducted by two facilitators. The company conducted the training off-site to eliminate interruptions that might otherwise have arisen such as a participant being called to attend to something simply because he was on site. Furthermore, as the training was conducted division-wide, workers attending the training had their work covered by their colleagues so that they did not have to worry about returning to two days' backlog of work.

The program over the two days and the topics covered are found in Appendix G.

### **5.6.2 Evaluation of Employee Training**

The author attended two training sessions as an observer. The atmosphere on the first mornings were initially strained as employees found themselves amongst people whom they had only seen but did not personally know, and they were also apprehensive about the nature of the training. However as the morning progressed, the participants became more involved and enthusiastic. This was largely due to the informal nature of the training session. The exercises from the Training Manual also served to 'break the ice' as it required teamwork.



The facilitators developed a feedback form for participants to complete at the end of the second day. Employees were asked to rate the two day training on a scale of 1 (worthless) to 10 (excellent, of great value). The feedback was to enable facilitators to improve the training sessions and to address weaknesses before the next training course.

Participants on the whole rated the training and materials very highly. The average rating was 8.5 of 10 for both Divisions. Comments showed they found the training course very interesting and did not feel much improvement was needed. In fact, participants wanted more intensive training sessions to be scheduled in the future. Even those who started the course unsure about what they stood to gain found the training exceeded their expectations. Conducting the training over two working days was a surprise for employees who never imagined it would have happened as it cost the company two 'lost' days of wages per participant. The fact that management was paying for the refreshments and lunches was yet another surprise to participants.

The main scepticism among employees was what management would actually do about the issues raised, whether they would take any action. Participants felt that if management followed up on the suggestions, the two days would have been well worth the effort. Otherwise, it was a waste of everyone's time and effort.

### **5.6.3 Outcome of Employee Training**

Upon completion of the employee training courses management fulfilled their promise of meeting with employees. Management reiterated their support for IPEX and discussed the issues raised by employees, resulting in the short-listing of improvement projects.

The MME Division having conducted its employee training first naturally embarked on the projects earlier. The training course was attended by 89% of MME employees which is a very high percentage considering it was on a voluntary basis. The results of the improvement projects were very encouraging and a second wave of projects was soon underway with more employees joining improvement teams. The motivation level among employees increased as they found they were able to actively participate in improving their work.

A disadvantage of not conducting the TQ initiative on a company-wide basis was the demotivation among staff from the Consumables Division. They felt left out as they watched their colleagues in the MME Division begin the improvement process.

The Consumables Division had a lower attendance for the training course because one section did not want to participate. These were workers in their 40s and 50s who felt they were poorly regarded in the company. The MD considered the possibility of making attendance compulsory but decided against it as it might introduce 'disruptive elements' into the sessions. Moreover, the MME Division had conducted its training on a voluntary basis. The final attendance was 80% for the Consumables Division's employee training. This figure was very encouraging as the section that had intended to boycott the training made up 40% of the Division. The initial plan for six training courses had to be increased to seven midway through the training program as previously unconvinced employees wanted to join in.

An example of management's response to employee feedback about the lack of communication was the introduction of three notice boards displaying details of sales activities, customer feedback and new business opportunities. The TQ initiative also resulted in joint improvement projects between the two Divisions which otherwise would not have happened.

Unfortunately, the departure of the MD who spearheaded TQM brought the IPEX initiative of both Divisions to an abrupt end, resulting in employees becoming more demotivated than before. The effect of organisation change on TQM was reported by Bunney and Dale (1996). They confirmed their hypothesis that the change in leadership would see the halt or backslide of improvement processes. In their work, they also cited Juran's theory about the difficulty of maintaining the momentum of any improvement initiative after the departure of the original motivators.

Despite having tasted the fruits of success, management reverted to its old style of management and employees were left without a voice again. Management are aware that employees are more demotivated than before the initiative but have at present no intention to restart the initiative.



## **5.7 Conclusion**

The Framework is an effective low cost approach to helping SMEs implement TQM as evidenced by the results of the MME and Consumables Divisions of Edward Pryor and Son Ltd. which also clearly showed that the implementation and sustainability of TQM will happen only with the full support and commitment of senior management. The companies conducting the employee survey surprised employees because for the first time management showed an interest in them. Employees although doubtful about the outcome were encouraged when company-wide employee training began. A small number of employees remained unconvinced but the majority were eager to apply their training. As the sceptics witnessed the changes they too participated. Overall, tremendous improvements were made. This shows companies have rich untapped human resources. The results prove employee commitment can be harnessed through two-way communication and empowerment. Being able to actively contribute and participate is a very strong motivating factor.

The need for TQM is confirmed through the results of the customer and employee surveys. The customer survey results identified common problems of product quality, delivery and services. Half the companies had customers who would not repurchase from them. The employee survey identified the need for increased employee motivation to improve productivity, efficiency and quality. However, all the companies lost their management commitment along the route to TQM.

A TQM survey of British managers in 1992 (Wilkinson, Redman and Snape, 1993) reported firms with fewer than 500 staff were less likely to face a lack of commitment from middle management which is indicated in this research. It was not middle management but senior management who halted TQM. This was the situation with the other five companies who terminated their TQM initiative. The positive outlook is that they have all benefited from participation and can restart TQM implementation when they have the commitment and resources.

Regardless of how well the TQM initiative is organised and of employees' determination to contribute to its success, TQM will fail without senior management's commitment. The employees had contributed to the progress of the company and achieved good results but once senior management pulled out nothing more could be

done. Management from the six companies essentially wanted to cherry-pick. They wanted what they perceived as beneficial to the company at minimal cost, such as the Customer and Employee Surveys, Facilitator Training and the Employee Training Manual. They fail to acknowledge that unless employees are allowed responsibility for their own work, no level of training will lead to improvements in quality, product, service and customer satisfaction.

The results prove that the second hypothesis, that SMEs can be encouraged to implement TQM by a framework of training and mentoring (Uncle Concept), is incorrect.



## **Chapter 6: Benchmarking the Route to TQM**

*Hypothesis 3: Management Styles and the Relative Position of a Company on Route to TQM can be Benchmarked Using Cladistics*

---

### **6.1. Introduction**

This chapter reviews the development of management, which did not start with the Industrial Revolution but had its beginnings early in the history of man. In addition to the needs for food, drink and shelter, man has social needs of affiliation. These economic and social needs combined to develop the family, which is the basic human group. To ensure their survival the family formed groups or tribes for mutual benefit. Each of these groups or tribes had leaders or lords who were the early managers in feudal society. Other organisations were formed to serve the needs of man. As these organisations grew they needed more complex management. Hence, as civilisations emerged and evolved, management practices, concepts and theories too had to evolve accordingly (Wren, 1979).

The major change in management theories, principles and concepts occurred in the 19<sup>th</sup> century with scientific management, which essentially involves “thinking scientifically instead of traditionally or customarily about the processes involved in the control of the social groups who co-operate in production and distribution” (Urwick and Brech, 1959).

This chapter reviews the major contributions of the management pioneers up to the modern era which started after World War II and concludes with a study of the management aspects of TQM.

#### **6.1.1. Evolution of Management**

To understand modern management, the past needs to be studied to determine how management has evolved. Koontz and O’Donnell (1955) defined modern management as the function of getting things done through others.

The early groups or organisations formed by man to achieve his collective needs were the family and tribe. Even in these early groups, elementary management was in practise. Over time, these led to the development of the state, the church and the

military, of which the military was the most advanced. Many of the sophisticated principles developed by the military were applied to management. The most notable principles are the chain of command, delegation of authority, staff, and, unity of command (Aldag & Stearns, 1991) These are terms that are still used in management today.

Pre-industrialised society was characterised by low per capita income, economic stagnation, dependence on agriculture, a low degree of specialisation and very little geographical integration of markets. People worked in groups predominantly in agriculture where they were involved in the whole process from tilling the soil to harvesting.

Although technology had been evolving and advancing for thousands of years, a “revolution” occurred in late 18<sup>th</sup> century England that marked the beginning of a more rapid advance than ever before. The Industrial Revolution saw the substitution of machine power for human power and the movement of people from working on farms to factories in the towns and cities. This shift in England from a pre-industrial to an industrial nation was most obvious in 1750 (Deane, 1965).

The introduction of James Watt’s steam engine in 1776 provided cheap power for ships, trains and factories and revolutionised commerce and industry. Steam power reduced production costs and expanded markets that in turn required more machines, workers and larger scale production. Labour was divided with each worker specialising in a task to provide a part that would be made into a final product.

Industrialised society was characterised by rising or high per capita income, economic growth, low dependence on agriculture, a high degree of specialisation of labour and widespread geographical integration of markets (Deane, 1965). Workers were no longer involved in the whole production process but were just a part of it. The rapid growth of factories presented management problems different from those encountered in pre-industrial organisations. The state could operate without competition or having to show a profit; the church could organise and manage its activities because of the devotion of the faithful; and the military could control large numbers of troops through a rigid hierarchy of discipline and authority.



Managers of factories had to find a different set of principles and techniques to control the workers and make a profit. These became more difficult as the factories grew bigger. As the number of factories increased, so was introduced the concept of meeting competition. As people and the environment evolved, management principles, theories and concepts too had to evolve to meet the needs and address the associated problems.

The growth in the workforce made it increasingly difficult for one person to oversee the operations. The solution was to employ managers to oversee parts of the production process, the focus of management being to direct the workers. Thus begun the factory system and capitalism.

It was during this time several individuals began to address the issue of management. Two of the best-known theorists were Robert Owen (1771-1858) and Charles Babbage (1792-1871).

### **6.1.2. Robert Owen (1771-1858)**

Owen is widely considered the father of Personnel Management. He was the first to bring attention to the importance of human resources. He recognised that human resources were as valuable to the production of goods and services as financial and material resources. He believed that factory workers would be more productive if they were motivated instead of punished.

The mid 19<sup>th</sup> century was the period of rugged individualism. Labour was merely a factor of production, a commodity to be bought and sold. Any suggestion of improving the welfare or working conditions was rejected. Employers were incapable of seeing the broader and long-term view or of recalling the repeated dogma of Owen, that money invested in the well-being of employees would yield a return that no other form of investment can equal. Owen (1857) argued that it “would return you, not five, ten, or fifteen percent for your capital so expanded, but often fifty and in many cases a hundred percent”.

Owen (1857) developed his “silent monitor” to motivate workers. A wooden block with sides painted black, blue, yellow and white indicating the marks earned by the worker

was displayed to show the worker's performance. This can be compared to current sales and production data used in modern management.

Owen deplored the division of labour, in contrast to Babbage. In Owen's ideal system, each man would do a number of different jobs, changing easily from one to another.

### **6.1.3. Charles Babbage (1792-1871)**

Babbage was one of the pioneers of the classical school of management. He had propounded the essential principles of the scientific approach to business management long before Taylor (Urwick, 1956). He advocated profit-sharing plans and bonus systems as means to achieve better relations between management and labour, thus ensuring workers' interest in the profitability of the factory. Each worker received a fixed salary based on his work, plus a share in profits and a bonus for "applying any improvements he might discover" (Babbage, 1832). He perceived this combination of profit sharing and bonus for improvements and suggestions to reduce waste as meeting both the interests of workers and employers, benefiting both parties and bringing harmony to the factory.

Babbage was a firm believer in division of labour. He saw this as the most efficient way. To Babbage (1832), division of labour brought more efficiency because:

1. Of the time required for learning.
2. Of waste of material in learning.
3. Time is saved from not having to change from one job to another.
4. Time is saved from not having to change tools.
5. Skills are acquired through frequent repetition of the same processes.
6. The division of labour also suggests the contrivance of tools and machinery to execute its processes.

His other contribution was the use of machinery and tools to increase efficiency, and he foresaw the advantage of a larger factory with more capital investment.



## **6.2. Scientific Management**

Scientific Management employed scientific methods to improve efficiency in the management of work and workers in the factories of the Industrial Revolution. It emerged primarily among American scholars and managers and changed the way workers performed their tasks in the factories. Urwick and Brech (1959) described scientific management as “thinking scientifically instead of traditionally or customarily about the processes involved in the control of the social groups who co-operate in production and distribution”.

Scientific management is regarded as beginning with Taylor. However, the concepts of division of labour and increasing efficiency in industry had an earlier origin, especially in Great Britain through Charles Babbage who applied the scientific approach to management. By the time Taylor first outlined his principles, Great Britain was already an industrial country.

The Industrial Revolution which began in Great Britain in 1750 created a new cultural environment through the rapid advancement of technology. It replaced human power with machines and changed the feudal system and mercantile economy to a market economy. The heart of the Industrial Revolution was the invention of the steam engine which turned mills for grinding grain, replaced water power for cotton mills and operated the bellows for iron works. These factories needed to be organised and managed. As the factories grew managers were employed to supervise, control and ensure the proper utilisation of resources and to increase profits. Managers learned through experience as there was no formal training. James Montgomery of Glasgow advised managers in a management paper in 1832 to “always (be) on the alert to prevent rather than check faults after they have taken place”. Montgomery was so well respected that he was brought to be superintendent of York Mills, Maine, USA. He found that America had higher production costs, paid higher wages but paid less for raw materials. Great Britain was the complete opposite in these three aspects but had higher efficiency as the factories were better managed (Montgomery, 1840).

After the Civil war in the United States there was considerable study of managerial methods as a means to raising productivity and coping with the growing organisational scale and technological complexity. Discussion centred particularly on modes of

organisational control and structure, executive recruitment and training, new costing techniques and incentive wage payments. These developments and the socio-industrial changes which stimulated them formed the backcloth to scientific management.

The impetus for scientific management was the great need for skilled labour and management skills to increase efficiency. Scientific management brought together existing advances in managerial knowledge in the form of a complete system, based on a powerful philosophy of the “mental revolution” in industry, which sought to fuse management and labour’s interest for mutual benefit and to reduce friction between labour and management.

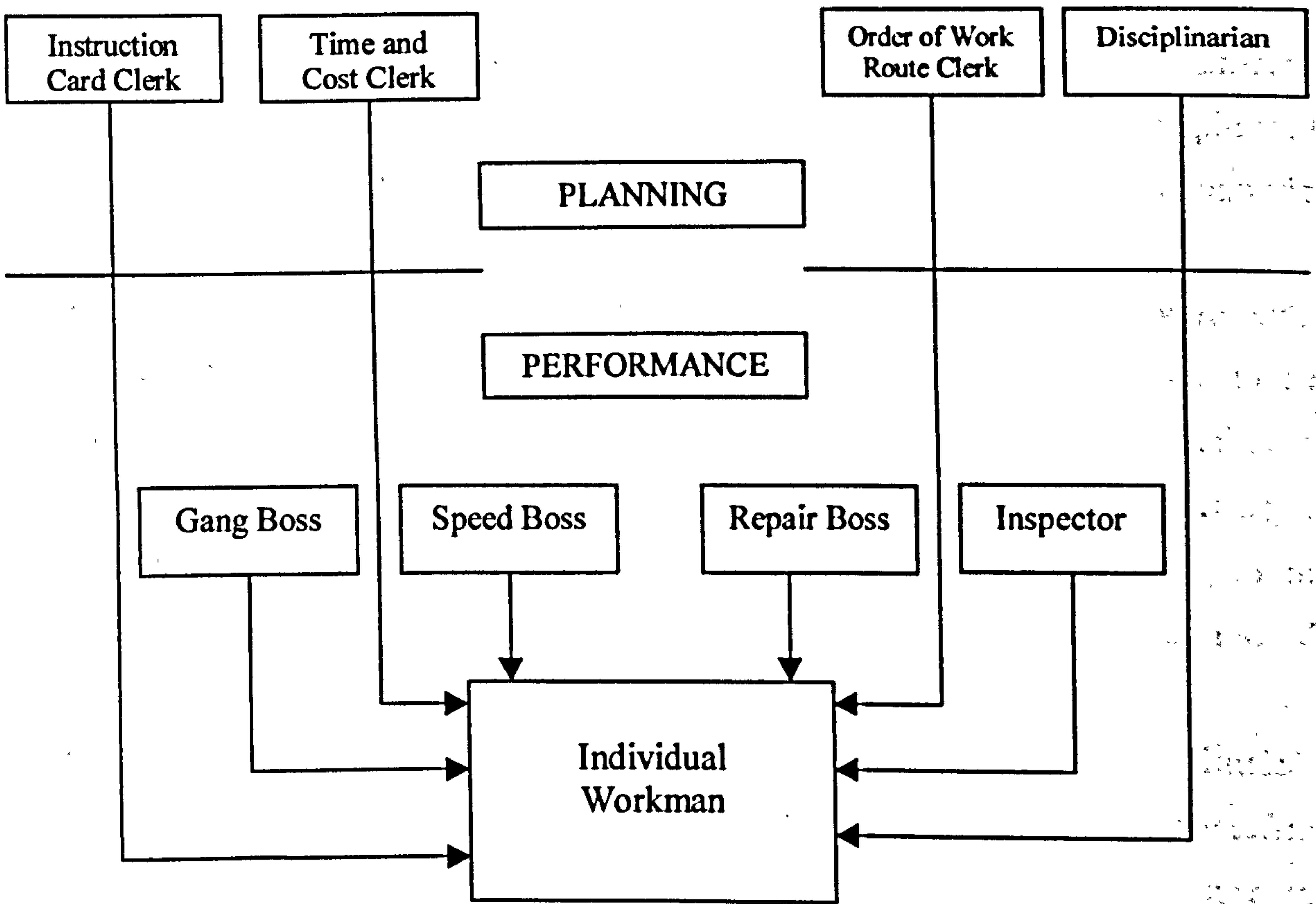
Scientific management analysed human as well as mechanical jobs to increase efficiency, productivity and the skill and wages of workers. America pioneered this movement largely due to its acute shortage of skilled labour. It was not until the 1890s that the technique was seriously developed, and not until the early 1900s that it reached maturity in Henry Ford’s motor works. Under the impact of Taylor scientific management became both a programme and a reality in the 1880s.

Other prominent contributors to scientific management were Frank Bunker Gilbreth, Lillian Gilbreth, and Henry Laurence Gantt.

### **6.2.1. Frederick W. Taylor (1856-1915)**

Taylor passed the Harvard law exams but his poor health forced him into an apprenticeship with a machine shop in Philadelphia. He completed his four year apprenticeship in 1878 and moved to Midvale Steel in Philadelphia that same year to work as a labourer. He quickly rose through the ranks to become chief engineer in six years (Copley, 1923). Midvale Steel had implemented a piecework incentive system that Taylor, based on his experience, knew was not effective. Contrary to management’s believe that this system would motivate workers, the workers were only working at one third their capability and were soldiering to protect their own interests and that of fellow workers. Taylor blamed management for the soldiering problems, not the workers. He deemed it management’s responsibility to design jobs and offer the right incentives to stop soldiering.





**Figure 6.2.1: Taylor's Functional Foremen**

(Source: Wren, 1979)

Taylor used time study to find the right way to perform a job. "Time study as its name implies, involves a careful study of the time in which work ought to be done rather than the time in which work was actually done" (Copley, 1923). Each job was broken into its basic steps. Useless steps were rejected and the fastest time for each step was determined by timing the most skilled workman. A percentage was added for unavoidable delays, another percentage for newness of the work and another for rest. This became the piece-rate system, scientifically determined by the planning department. The piece-rate was set at the pace of "first-class man" which Taylor defined as a worker who "can keep up for a long term of years without injury to his health. It is a pace under which men became happier and thrived" (Taylor, 1903). A differential piece-rate was developed consisting of the piece-rate and an incentive as encouragement for greater efforts. In addition, payment was not based on position but on the individual worker in an effort to overcome soldiering. Taylor's objective was to improve workers and motivate them.

Taylor (1903) stated each workman should be given as far as possible the highest grade of work for which his ability and physique fit him, and should be called upon to turn out the maximum amount of work that a first-class man of his class can do and thrive, and when he works at the best pace of a first-class man, he should be paid from 30% to 100% according to the nature of the work he does, beyond the average of his class.

Taylor stressed the responsibility of management to select the "first-class man" for the task that best suited him and to design the work system to obtain maximum productivity instead of depending on incentives. He separated work planning from work performance and developed the "functional foremen" shown in Figure 6.2.1 to carry out the planning and preparation of work instructions, work flow and time recording. The worker performed the task under the supervision of a "gang boss" and "speed boss". There was also a "repair boss" and "inspector" responsible for quality. This concept was accepted by workers but not bosses as it reduced their authority and responsibilities.

The authority of the factory manager or general manager was decentralised. He was to leave the running of the factory to the specialists, and would only be informed about "exceptions". This "exception principle" was another of Taylor's contributions to management. His believe was management should receive only summarised reports of



exceptions to past averages or standards, especially bad exceptions. This would free him to formulate policies and to study the character and fitness of the workers. To Taylor (1911) the principle objective of management was to ensure maximum “prosperity” for both his employers and workers, and that inefficiency could be overcome with “systematic management”.

Taylor’s call for a “mental revolution” to successfully implement scientific management has its counterpart in the ‘cultural change’ needed for successful TQM implementation. Taylor (1912) was convinced the essence of scientific management involved the total mental revolution of both workers and management. For workers it was in relation to their duties toward work, their fellowmen, and their employers, whilst for management it was in relation to their duty towards their fellow managers, their workmen, and daily problems. The aim of the mental revolution was to make both workers and management work together to increase profits instead of fighting over existing profits.

Scientific management was more accepted by workers than management who opposed decentralisation of their authority. The strongest antagonists were the Union leaders who opposed the co-operation between management and labour required by scientific management. However, scientific management was brought into disrepute by managers who abused time study. They increased worker fatigue and reduced workers to robots, while at the same time exploiting the incentive system.

Although there were many criticisms of scientific management, many of the theories and principles were well accepted. The obvious criticism was the lack of emphasis on the social aspect of people (Farquhar, 1924). Scientific management increased efficiency and production but failed to humanise the work place although Taylor did not forget about worker motivation. He proposed a scientific investigation to study the motives which influence men (Taylor, 1911). This investigation was conducted by psychologists of the Human Relations school, starting with the Hawthorne Study. It is assumed Taylor did not have the training and experience to investigate and formulate human motivation theories. More importantly the overwhelming emphasis on efficiency and the search for the ‘one best way’ for the factory culture would not have accepted any motivation theory other than that of money. This provides further evidence of how management was influenced by the environment and evolved with it.

### **6.2.2. Henry L. Gantt (1861-1919)**

Gantt was a teacher of natural science and mechanics who became a mechanical engineer. He joined Midvale Steel in 1887 as an assistant in the engineering department and worked with Taylor. They shared a mutual interest in the application of science to management. Gantt used scientific investigations in his search for the efficient use of labour and “harmonious co-operation” (Gantt, 1916) between labour and management. Gantt modified Taylor’s differential piece-rate to give an additional variable bonus as an incentive to workers who completed the job in the allowed time or less. This departure from Taylor’s differential piece-rate came about because of Gantt’s awareness of the human aspects of work.

Another change introduced by Gantt was the payment of a bonus to the foreman for each of his worker’s who met the standard. An additional bonus was given if all his workers succeeded in meeting the standard. These bonuses were incentives for the foreman to teach and train his workers. Gantt (1916) believed the past method of forcing people to work must give way to teaching and leadership, and that this will benefit both the worker and the foreman. Gantt sought greater harmony in the workplace.

Gantt’s lasting contribution to management is the concept of using charts to measure workers’ progress. The success of this expanded the use of horizontal bar charts to other areas such as production balance, cost control, and quantity of work. He finally expanded this bar chart to plan and control work. The Gantt chart is one of the tools of TQM for work scheduling and control.

### **6.2.3. Frank B. Gilbreth (1868-1924) and Lillian M. Gilbreth (1878-1972)**

Frank Gilbreth started as an apprentice bricklayer in Boston, USA, at the age of seventeen and became chief superintendent ten years’ later. She studied English and psychology at the University of California.

As a bricklayer apprentice, Gilbreth noticed the many different methods and speeds used by bricklayers and set out to develop the best way that would lower costs and pay higher wages to workers. This was the start of his motion study, his “quest for the one best way” (Gilbreth, 1924). He improved methods and eliminated unnecessary body



movements, his aim being to improve productivity by reducing effort, not by increasing speed. His analysis was that brick laying motions can be reduced and workers can increase productivity with no extra effort.

In 1907 Gilbreth met Taylor. Each continued with his own analysis, Taylor with time study and Gilbreth with motion study. However, Gilbreth started to include the dimension of time in his motion study. Frank worked with his wife Lillian on the study of work fatigue. In their book "Fatigue Study" (1916) they differentiated between unnecessary fatigue associated with unnecessary work and necessary fatigue of work. They proposed the elimination of unnecessary fatigue and minimising work fatigue through rest periods. Lillian Gilbreth published "Psychology of Management" (1914) which emphasised how management could fully develop the potential of the individual through training and job rotation to boost morale.

### **6.3. Administrative Management**

The focus of Administrative Management is organisation structure and management. The earliest British writer on this subject was F. Slater Lewis who wrote "Commercial Organisation of Factories" (1896). This was before the scientific management pioneers who applied scientific methods to develop theories and principles to define organisation structure and the work of management. The common objective of administrative management was to define the most efficient organisation and management because "only through proper organisation could machines, materials, and human efforts be directed to improve efficiency and reduce wastage" (Wren, 1979).

Prominent writers in this field were Henri Fayol, Max Weber, Chester Barnard, James Mooney and Lyndall Urwick.

#### **6.3.1. Henri Fayol (1841-1925)**

Fayol was an engineer who rose to the position of managing director of Commentry Coal Mines in France in 1918. His main contribution to management was from the executive point of view. His writings starting from 1900 were on concepts relating to organisational administration.

## 1. PLANNING

- Interpret site, functional and departmental objectives to work groups.
- Assist with the development of work group objectives.
- Collaborate with work groups to achieve consensus of plans.
- Support, facilitate and serve the group's planning.

## 2. LEADING

- Provide and interpret the vision and elaborate key organisational strategies for work groups.
- Nurture a positive work environment.
- Facilitate responsible risk taking.
- Be a role model.
- Provide feedback and recognition.

## 3. ORGANISING

- Educate and train work groups.
- Facilitate work group development.
- Encourage participation/cross training/flexibility.
- Manage work group boundaries.

## 4. CONTROLLING

- Develop and maintain steering committee structures.
- Regularly review work group objectives achievement.
- Establish and review work group charters.
- Interpret budget and other resource constraints.

**Table 6.3.1: TQM Management Functions**

(Source: Smyth, 1991)



He analysed the role of management and defined the five functions of management as Planning, Organising, Command, Co-ordination and Control. Fayol's five management functions are employed in TQM, as can be seen from Table 6.3.1. The Co-ordination function has been incorporated into the other four functions. The following is a description of the five functions: (Fayol, 1949)

- To plan is to examine the future and draw up the plan of action.
- To organise is to build up the material and human structure of the undertaking.
- To command means maintaining activity among personnel.
- To co-ordinate binds together, unifying and harmonising all activity and efforts.
- To control is to ensure everything conforms to established rule and expressed commands.

Fayol was concerned with the lack of management teaching in schools and colleges and the lack of formal management training. Management requires leadership and understanding of the principles of management. Managers, according to Fayol (1949), must fulfil the following:

1. Have a thorough knowledge and understanding of personnel.
2. Eliminate incompetent personnel.
3. Know the agreements binding the business and its employees.
4. Lead by being a good example.
5. Conduct periodic audits of the organisation.
6. Meet supervisors regularly to ensure there is unity of direction and efforts are focused.
7. Not become obsessed with details.
8. Ensure unity, energy, initiative and loyalty are prevalent among personnel.

Fayol also proposed 14 general principles of administration that he felt would provide managers with the necessary building blocks to serve as guidelines for managerial activities. His principles emphasise efficiency, order, stability and fairness. These principles were largely based on the military regime of authority and command. The principles of unity of command and centralisation conflicted with Taylor's functional foremen.

Fayol's 14 Principles for Effective Management are: (Fayol, 1949)

1. Division of Work
2. Authority
3. Discipline
4. Unity of Command
5. Unity of Direction
6. Subordination of Interests
7. Remuneration
8. Centralisation
9. Scalar Chain
10. Order
11. Equity
12. Suitability of Tenure
13. Initiative
14. Esprit de Corps

These bureaucratic principles of management were the earliest attempts to define the efficient organisation. They were largely based on the military and some of these were in conflict with management practices. Urwick updated them in his principles of management described in Section 6.3.5.

### **6.3.2. Max Weber (1864-1920)**

Weber was a German intellectual and scholar who focused primarily on organisation structure. He experienced the social upheaval of the Industrial Revolution and saw the emerging forms of organisation as having broad implications for society. This led him to study the relationship between organisations and society.

Weber (1947) propounded three types of authority: "legality", "traditional" and "charismatic". Of these only legality, that is, legal authority vested in the position, should form the basis of an organisation.

Adhering to a perspective that viewed society as becoming increasingly rational in its activities, in order to study this movement towards "rationality" of organisations, Weber



constructed an ideal efficient organisation in its most rational and impersonal form. The structural elements of Weber's ideal organisation are:

1. The division of labour, where authority and responsibility are clearly defined for each member and legitimised as official duties.
2. The positions will be organised in a hierarchy of authority resting in a chain of command or the scalar principle.
3. All employees are to be selected based on technical qualifications determined through formal examinations or by virtue of training or education.
4. Managers are appointed, not elected, unless election is mandatory.
5. Administrators have fixed salaries and were career officials.
6. The administrator does not own the unit he administers.
7. The administrator will be subject to strict rules, discipline, and controls when conducting official duties, though these rules and controls will be impersonal and uniformly applied in all cases.

Weber's bureaucratic organisation based on rational legal authority rather than tradition or charisma was widely followed by American organisation theorists from 1940 as organisations grew larger and more complex. Bureaucracy is not well received in modern management not only because of its red tape and resulting inefficiency, but it is not appropriate to the modern concept of a flexible, flat organisation. However, many of these principles are widely practised, especially the types of authority.

### **6.3.3. Chester Barnard (1886-1961)**

Barnard was a manager, executive and president of New Jersey Bell Telephone, USA, with a keen interest in organisational work. He defined the organisation as "a system of consciously co-ordinated activities or forces of two or more persons" (Barnard, 1938) and saw the organisation as a co-operative system of individuals embodying three essential elements:

1. Willingness to co-operate.
2. A common purpose.
3. Communication.

constructed an ideal efficient organisation in its most rational and impersonal form. The structural elements of Weber's ideal organisation are:

1. The division of labour, where authority and responsibility are clearly defined for each member and legitimised as official duties.
2. The positions will be organised in a hierarchy of authority resting in a chain of command or the scalar principle.
3. All employees are to be selected based on technical qualifications determined through formal examinations or by virtue of training or education.
4. Managers are appointed, not elected, unless election is mandatory.
5. Administrators have fixed salaries and were career officials.
6. The administrator does not own the unit he administers.
7. The administrator will be subject to strict rules, discipline, and controls when conducting official duties, though these rules and controls will be impersonal and uniformly applied in all cases.

Weber's bureaucratic organisation based on rational legal authority rather than tradition or charisma was widely followed by American organisation theorists from 1940 as organisations grew larger and more complex. Bureaucracy is not well received in modern management not only because of its red tape and resulting inefficiency, but it is not appropriate to the modern concept of a flexible, flat organisation. However, many of these principles are widely practised, especially the types of authority.

### **6.3.3. Chester Barnard (1886-1961)**

Barnard was a manager, executive and president of New Jersey Bell Telephone, USA, with a keen interest in organisational work. He defined the organisation as "a system of consciously co-ordinated activities or forces of two or more persons" (Barnard, 1938) and saw the organisation as a co-operative system of individuals embodying three essential elements:

1. Willingness to co-operate.
2. A common purpose.
3. Communication.



According to Barnard, the absence of any of the three will lead to the disintegration of the organisation. The organisation must be efficient in satisfying individual and group needs to achieve organisation goals.

Barnard defined executive work as the specialised work of maintaining the operations in an organisation through a system of co-operative effort, and not the managing of a group of people. He saw communication as important for giving people information to decide the balance between organisation incentives and personal efforts, as well as an important means to communicate authority.

Like Weber, Barnard viewed authority as an important process within the organisation. Whilst Follett postulated the Law of the Situation relating to authority (Section 6.4.1), Barnard believed that the source of authority does not lie with the person who gives the orders but with the subordinates who could choose to either accept or reject directives from their superiors. He maintained that people would accept authority when four conditions are satisfied:

1. They understand the communicated directive.
2. They believe the directive is consistent with the purpose of the organisation.
3. They believe the directive is compatible with their own interests.
4. They are mentally and physically able to comply with the directive.

This view of authority has become known as the Acceptance Theory of Authority.

Barnard incorporated the human element and communications into the organisation structure based on his executive experience at New Jersey Bell Telephone. His ideas are still relevant and are applied to modern management.

#### **6.3.4. James Mooney (1884-1957)**

Mooney, a mining engineer, joined General Motors, USA, in 1920 and rose through the ranks to head its Export Corporation. He left General Motors in 1942 to head the US Navy Bureau of Aeronautics, and was president and chairman of Willys Overland Motors after the war.

Mooney in 1947 revised the book “Onward Industry” which he co-wrote with Alan C. Reiley (1869-1947), an historian turned executive. The book was retitled “The

Principles of Organisation” and became an important part of classical management thought compatible with Fayol and Weber. Mooney and Riley (1931) defined the organisation as “the form of every human association for the attainment of a common purpose”. They developed the principles of organisation efficiency, and explained the relationship between organisation and management using the analogy of body and mind: “Management is the vital spark which actuates, directs, and controls the plans and procedures of organisation. With management enters the personal factor, without which no body could be a living being with any direction toward a given purpose. The relation of management to organisation is analogous to the relation of the psychic complex to the physical body. Our bodies are simply the means and the instrument through which the psychic force moves toward the attainment of its aims and desires”.

Mooney (1947) developed three principles of organisation. The first and primary principle is Co-ordination, which is the organisation of group effort to ensure the unity of action in the pursuit of a common goal. The second principle is the Scalar Principle, which concerns the degree of authority and its corresponding responsibility. The third principle is the Functional Principle, which distinguishes between different kinds of duties. Each of these principles has its own principle, process and effect to explain the objectives of organisation, leadership, delegation of authority, responsibilities and functional activities for the efficient operation of the organisation.

The primary concern of Mooney and Reiley was the structure and design of an organisation. Although they did not give high priority to the human aspect of the organisation, it was included in their analyses.

Although Mooney and Reiley’s principles are similar to Weber’s bureaucratic organisation, they made no reference to Weber. It can be assumed that they developed their principles independently and had no access to Weber’s work which had not been translated at that time (Wren, 1979).

### **6.3.5. Lyndall F. Urwick (1891–1983)**

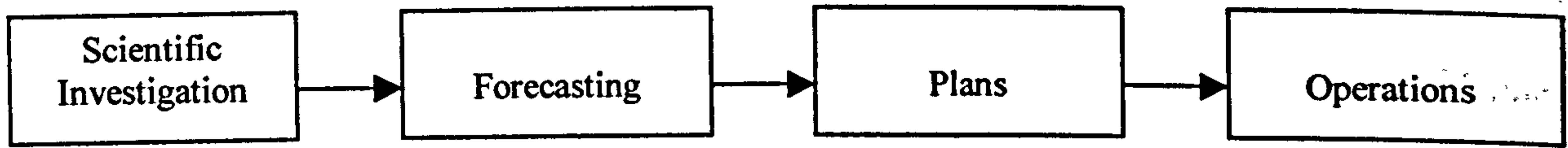
Lieutenant Colonel Lyndall Urwick served the British Army and government in the first and second World Wars. He was organising secretary at Rowntree and Company from 1920 till 1928, then director of the International Management Institute in Geneva from



1928 till 1933, and chairman of his management consultancy company Urwick, Orr and Partners in London until his retirement.

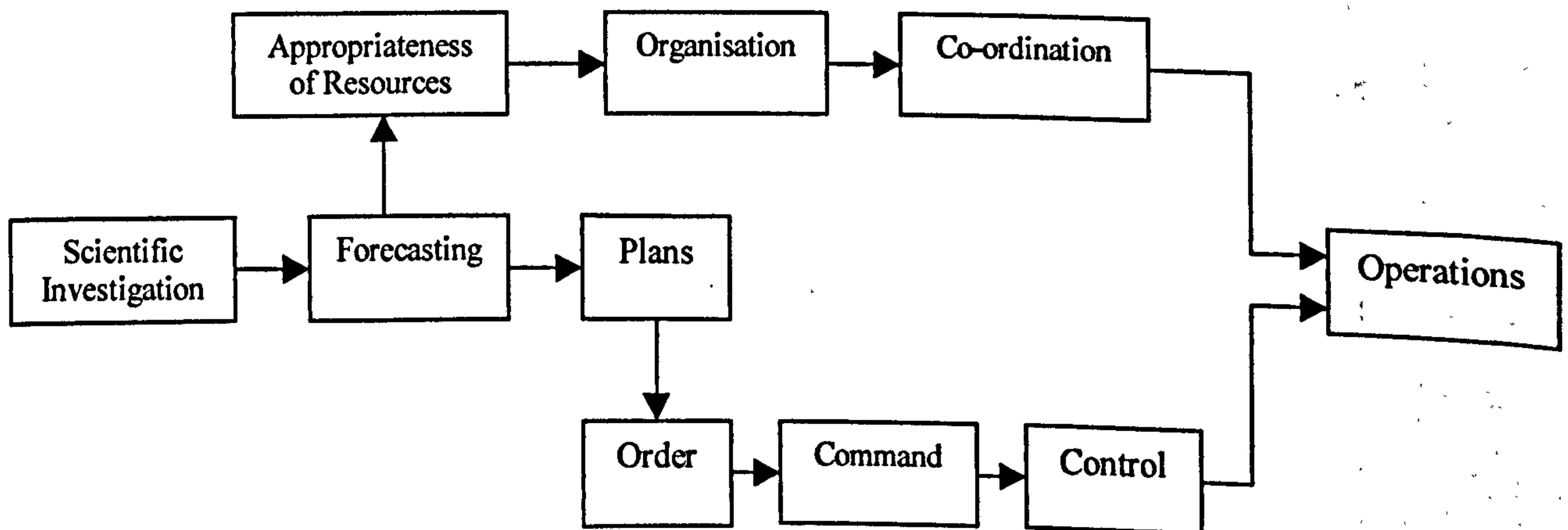
Urwick wrote extensively on various aspects of organisations. His most important work was "The Elements of Administration" (1944) which integrated the works of Fayol, Mooney and Taylor into Classical Management theory. He identified eight principles applicable to all organisations: (Urwick, 1938)

1. **Principle of the Objective**  
All organisations should have a purpose.
2. **Principle of Correspondence**  
Authority and responsibility must be equal.
3. **Principle of Responsibility**  
Responsibility of higher authority for the work of subordinates is absolute.
4. **Scalar Principle**  
Chain of Command from top to bottom.
5. **Principle of Span of Control**  
Supervisors cannot directly supervise more than five or six subordinates.
6. **Principle of Specialisation**  
Limiting a person's work to one function.
7. **Principle of Co-ordination**  
Relation of resources to activities.
8. **Principle of Definition**  
Clear description of duty.



**Figure 6.3.5a: The Fundamental Principle – Process – Effect of Management:  
The First Level of Analysis**

(Source: Donnelly, Gibson and Ivancevich, 1971)



**Figure 6.3.5b: Identification of Co-ordination and Control: The Second Level of  
Analysis**

(Source: Donnelly, Gibson and Ivancevich, 1971)



Urwick used Mooney's approach to develop a framework to describe the whole managerial process as shown in Figure 6.3.5a. The first level of analysis described the basic principle of management as scientific investigation. This investigation of facts is necessary to enable the organisation to forecast and subsequently plan their operations.

The next level of analysis is co-ordination, as shown in Figure 6.3.5b. Forecasting can only be successful with proper allocation of human and material resources through co-ordination, resulting in a structure of tasks and authority that excludes the human factor. However, this absence of the human factor is resolved in the control function.

The final level of analysis is control which is achieved through order and command, resulting in commitment by employees to the goals of the company. He proposed resolving conflicts through employing competent managers. This in turn would lead to esprit de corps in the organisation. Selection was important to ensure that staff employed had a sense of initiative. Urwick recognised that financial rewards alone did not necessarily motivate and proposed non-financial incentives as well. Finally, he proposed that equity would result in staff stability through the inclusion of discipline. Similar to Fayol, Urwick recognised the importance of staff stability in successful organisations.

Urwick applied Mooney's "principles, process and effect" to Fayol's 14 principles and found a correlation of these principles though they were developed independently. He continued to search for a general theory of administration. He developed 29 major principles and many sub-principles through integrating his ideas with those of Fayol, Mooney and Reiley, Taylor and Follett. Gulick and Urwick (1937) developed a series of papers to show the divergences in management thought in the classical period.

Urwick's principles of management updated Fayol's 14 principles of management based on the military and are widely accepted, except for the controversy regarding the principle of 'span of control' that states a supervisor can supervise at most six subordinates (Thomas, 1993).

## **6.4. Human Relations**

The human relations approach was popular from 1930 to early 1950. However Owen had in 1828 already propounded a human relations philosophy, observing the human factor and its influence on productivity. Mary Parker Follett, a forerunner of the human relations approach replaced Taylor's views of individualism with group theory. Other classical principles that were changed or modified by the human relations school include division of labour, scalar principle, specialisation principle and organisation theories on structure and span of control. Division of labour which had caused work monotony and isolation and which received the most criticism was replaced by the concept of group synergy.

The human relations approach focused its attention on the effects of work groups on the individual, in contrast to the classical writers and scholars who concentrated on the physical and economic environment. This concept does not invalidate the work of the classical movement but expands on it. Technical skills alone are not enough for managers who also have to satisfy the social needs of individuals and groups at work. There are many critics of this concept. Among them was Drucker (1955) who felt it did not take into consideration the dimension of economics.

A more accepted definition of human relations which took into account the economic and psychological aspects is "the integration of people into a work situation in a way that motivates them to work together productively, co-operatively and with economic, psychological and social satisfaction" (Davis, 1957).

The key contributors to the human relations approach were Mary Parker Follett and Elton Mayo.

### **6.4.1. Mary Parker Follett (1868-1933)**

Follett, born in Boston, USA, was trained in philosophy and political science and was interested in the emerging study of social psychology. She was a political scientist and business philosopher from the scientific management era but her philosophy placed her in the human relations era (Dainte, 1964).



Her book "The New State" (1918) contained innovative ideas on the importance of the group in organisation, maintaining that "true man" is only found through the group or organisation, that the real potentials of the individual are only released by group life.

Her next book "Creative Experience" (1924) expanded her "group" philosophy into "integration". The organisation is more than a co-operative system and through group interactions, the organisation is more than the sum of its parts. She hypothesised four ways of resolving conflicts: i) submission of one side, ii) victory of one side, iii) compromise, and iv) integration. Of the four, only integration was advocated because it reduced conflict and sought a solution satisfying both sides without the use of force or compromise. The first two ways were not accepted because force or power was used to dominate. Compromise was also not accepted because "truth does not lie 'between' the two sides".

Follett applied integration to the solution of other organisation and business problems. She was against bargaining as it was based on the balance of power and ultimately resulted in compromise. Bargaining was also not recommended as the parties may lose sight of their joint responsibility for the business. Her solution was collective responsibility because everyone would then be working for the common good of the organisation. Metcalfe and Urwick (1940) write that when employees feel they are in some sense partners in the business, will they improve the quality of their work and overcome time and material wastage.

Integration required a change in the way authority and power were perceived. Follett depersonalised authority and power by developing the concept of "law of the situation" which states that orders should not be given, rather they should be taken from the situation. This will eliminate the situation of someone giving orders and someone receiving them. Everyone is equal in law of the situation. Obedience is to the situation, not to a power or person. The integration concept was applied to other management functions, seeking always to reach decisions without force or domination.

Another aspect of Follett's business philosophy was the style of leadership needed for success. She attributed leadership not to power but a reciprocal relationship between management and worker. Management has to make workers realise they are working to

a common purpose that can only be attained through the collective activities of the group. The best leaders have not followers but men and women working with them (Metcalf and Urwick, 1940). Hence, the leader does not depend on commands and obedience but on skill to co-ordinate, define the purposes, and evoke responses from workers to the law of the situation (Wren, 1979).

Follett's concept of group synergy is part of the TQM principle of employee participation. However, her concept of integration for resolving conflict has been criticised for its feasibility (Fry and Thomas, 1996). Follett's ideas, though part of TQM philosophy today, were considered too idealistic then and were not successfully applied. Drucker called her "a prophet of management" (Graham, 1995).

#### **6.4.2. George Elton Mayo (1880-1949)**

Mayo, an Australian, taught logic and philosophy at Queensland University, Australia, before studying medicine in Edinburgh, Scotland. He also studied psychopathology which provided the background to his work on industrial research. He was an associate professor of industrial research at Harvard University.

Mayo's major contribution resulted from his participation in the Hawthorne Plant Study at Western Electric which employed 25,000 people. The purpose of the study was to determine the effect of illumination on efficiency. Two groups of female workers performing the same tasks of assembling telephone relays were located in two rooms with the same illumination. The control group illumination was not changed while that of the test group consisting of six female workers was varied. The researchers observed both groups and recorded their production. The illumination of the test group was increased as well as decreased, till it reached the intensity of moonlight (Roethlisberger and Dickson, 1939). Regardless of the intensity of illumination, production increased. This puzzled the researchers who concluded that illumination had little or no effect on productivity.

The researchers proceeded to study the effects of changes in wages, working conditions, working hours, incentive plans and rest pauses with refreshments. In all cases, production was increased. Frustrated at the results, the researchers, with the exception of individual piece rate, reverted to the same working hours and working conditions



thinking that this would affect the workers. However, the daily and weekly outputs continued to increase, reaching higher levels than before (Roethlisberger and Dickson, 1939). When rest pauses and refreshments were reinstated, there was another increase in production to the highest output level. During the study, production increased from 2400 relays per week per worker to 3000. The illumination hypothesis was proved wrong. No correlation could be found between wages, working conditions, working hours, and other variables and the output of the workers.

Mayo joined the study after it had started. He explained the Hawthorne Study results were due to “a remarkable change in mental attitude in the group. The most significant change that the Western Electric Company introduced into its test room bore only a casual relation to the experimental changes. What the Company actually did for the group was to reconstruct entirely its whole industrial situation” (Mayo, 1933).

During the study the researchers had moved the workers from the shop floor to a special test room and assisted in supervision. This changed the usual supervision of the workers. The researchers worked closely with the workers, advised and listened to them, and showed personal interests in them. As a result, the researchers had inadvertently created a better working environment, where the workers involved could discuss their problems with the researchers and fellow workers.

The Hawthorne study showed the need for new management skills to handle human relations at work. Technical skills alone were not adequate. Mayo referred to this as “human collaboration” to stress the importance of the group in the organisation. This was reaffirmed by Roethlisberger who stated that people need to feel important and to be recognised as doing important work. He emphasised that although the amount of pay was important, it was not always the primary concern of workers. Issues such as pay reflecting the importance of their jobs and their treatment by management were more crucial. Workers want to be an integral part of the company.

## **6.5. Modern Era**

Modern era management started from World War II and encompasses Management Science and Behaviour Science.

### **Management Science**

Management Science is characterised by the use of mathematical models. It started during World War II in Great Britain, was applied to industrial production after the war and spread rapidly, assisted by developments in high speed computers that made it possible to use mathematical models in decision making processes.

Most management sciences have the following characteristics: (Wagner, 1970)

1. A primary focus on decision making.
2. Appraisals using economic effectiveness criteria – comparing various decisions based on variables such as costs, raw materials, demand and revenue.
3. Reliance on formal mathematical models that are replicable.
4. Dependence on the computer because of the complexity of the model or volume of data to be processed.

The mathematical model must accurately reflect the actual system so that it can simulate and react like the real system. This makes mathematical models useful in business decision-making (Ackoff and Rivett, 1963).

Management science impacts mainly the planning/forecasting and controlling functions of management. It does not cover the full spectrum of management functions. In addition, it cannot be used for all management decisions. Management Science decision making processes commenced with Operations Research in World War II and includes Decision Theory, Systems Theory and Contingency Theory.

### **Behaviour Science**

Behaviour Science approach to management became popular in the early 1950s. It is a move away from human relations to human resource management. Behaviour science is defined as “the study of observable and verifiable human behaviour in organisations, using scientific approaches”. It is inductive and problem centred and draws on expertise from the fields of psychology, sociology and anthropology (Filley and House, 1969).



Although there are other ways to study human behaviour, such as using observation, reason or intuition, the scientific approach has been successfully applied. More importantly the scientific approach allows for “self-correction”. Built-in checks control and verify the researcher’s activities and conclusions (Kerlinger, 1964).

Prominent behavioural scientists are Douglas McGregor, Abraham Maslow, Chris Argyris and Frederick Herzberg whose theories and concepts are described in the following sections.

### **6.5.1. Douglas McGregor (1906-1964)**

McGregor taught social psychology at Harvard University. He was assistant professor of psychology at Massachusetts Institute of Technology from 1937 till his death, except for a short period from 1948 to 1954 when he was president of Antioch College.

Whilst at Antioch College, McGregor discovered the shortcomings of the human relations philosophy. He concluded that a leader had to exercise authority and accept responsibility for his decisions (McGregor, 1954).

McGregor (1960) made the transition from human relations to behaviour science. He developed Theory X as representative of the classical management assumption of human nature. His assumptions of Theory X are:

1. The average person inherently dislikes work and will avoid it if he can.
2. Their dislike of work means workers must be coerced, controlled, directed and threatened with punishment before they will work toward the achievement of organisational objectives.
3. The average person would rather be directed and avoid responsibility, and possesses relatively little ambition whilst wanting security.

McGregor developed Theory Y as a new theory managing human resources. Theory Y is the “people approach”, where the human element is important to the organisation (Donnelly, Gibson and Ivancevich, 1971). Employing the terminology of Follett and Argyris, McGregor (1960) referred to Theory Y as “the integration of individual and organisational goals”. He believed that by working towards the success of the company,

workers would be able to achieve their own goals. His basic assumptions of Theory Y are:

1. At work, engaging physical and mental effort comes naturally.
2. When committed to an objective, people will naturally exercise self-direction and self-control to attain it.
3. Rewards for achievements encourage commitment to objectives.
4. In the correct environment, the average person learns not only to accept but to seek responsibility.
5. There is a large human resource of imagination, ingenuity and creativity in the solution of organisational problems.
6. Modern industrial life does not fully utilise the intellectual potential of the average worker.

The task of management is to unleash the potential of their employees and in the process achieve the goals of the organisation.

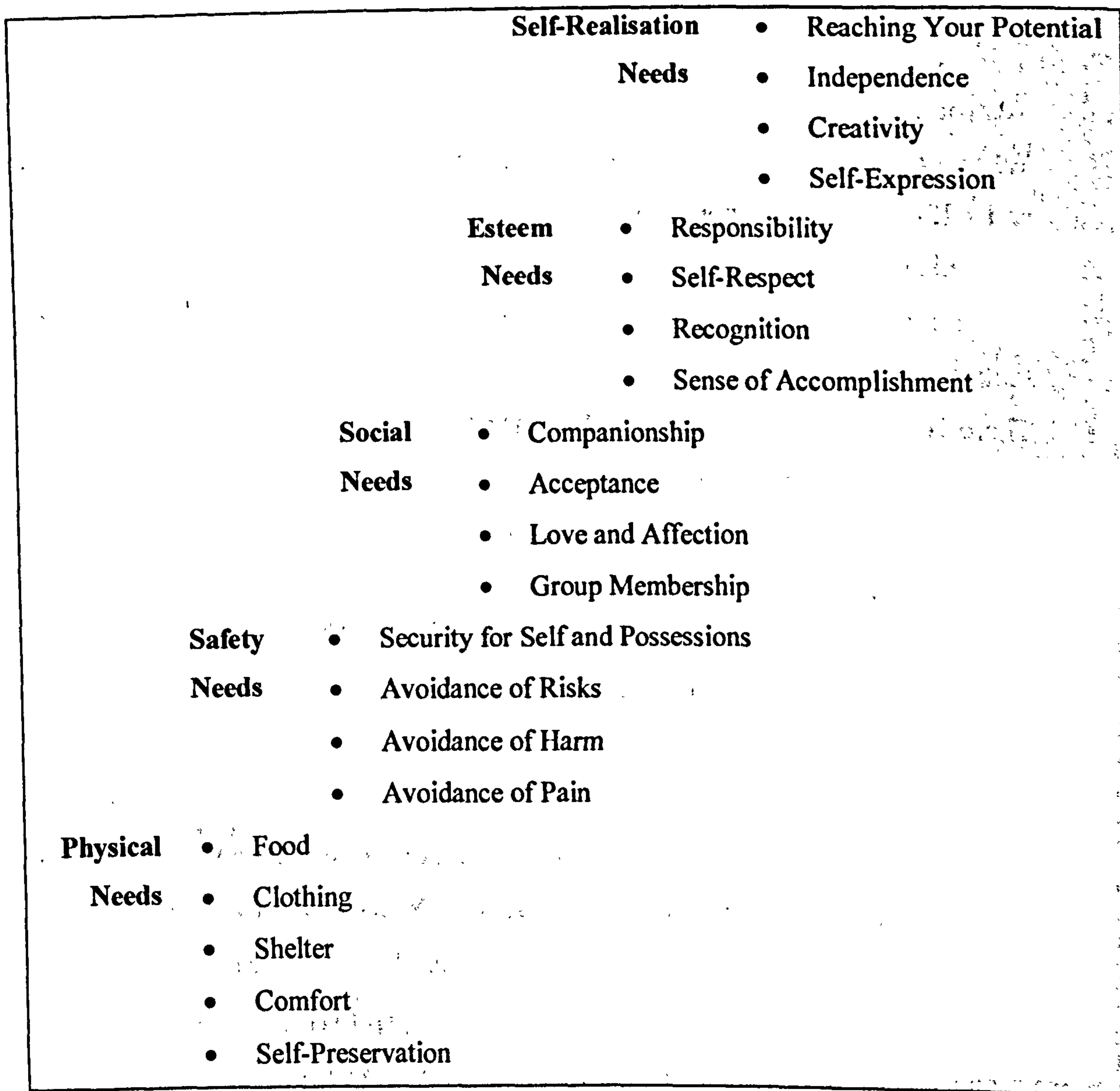
Theory X is reflected in the tightly controlled organisation structure of classical management and principles of organisation. Theory Y has similarities to Follett's Principle of Integration, in which everyone is working for the common good of the organisation. Is this an idealistic principle that cannot be practised in an organisation of imperfect men? The challenge to management is to fully utilise resources, both human and material. Theory Y together with the motivational theories discussed in the next sections, make this challenge attainable in the open participative management of TQM.

### **6.5.2. Abraham H. Maslow (1908-1970)**

Maslow, a psychologist, developed his theory of motivation based on a hierarchy of needs. This hierarchy is based on four premises: (Plunkett and Atther, 1992)

1. Behaviour is influenced only by an unsatisfied need.
2. Man's need is arranged in order of importance, starting with the most basic need (water, food, shelter) and progressing to the most complex (ego and self-actualisation).
3. As needs are met, the person advances to the next level of needs. This next level is sought only after the previous level of needs are minimally satisfied.





**Figure 6.5.2: Abraham Maslow's Hierarchy of Human Needs**

(Source: Maslow, 1943)

4. The loss of satisfaction from a previously satisfied need will cause it to become a priority need again.

The hierarchy of five levels of needs is shown in Figure 6.5.2. The five levels of needs are physical, safety, social, esteem and self-realisation (Maslow, 1943). The most basic need is physical and the highest level of need is self-realisation. Maslow (1954) defined self-realisation as the “desire to become more and more what one is, to become everything one is capable of becoming”.

Physical needs are primary needs such as food, water and shelter. The next level need, safety, is good health and protection from harm. The third level need is social which is due to the gregarious nature of man and the need for friendship, affection and acceptance. These three levels are usually present in most organisations.

The focus for motivation is therefore the two higher levels of needs: esteem and self-realisation. Management concepts that can meet these needs are job enlargement and participation. Worker participation can provide commitment, individual and group satisfaction and meet Follett’s ideal of integration and Barnard’s ideal of effectiveness and efficiency.

Maslow’s motivation theory neither provides a complete understanding of motivation nor does it provide the means to achieve motivation. However, it is easy to understand and is essentially common sense. As such, it has been widely accepted. Many have used this hierarchy in writings on motivation in business organisations (Haynes and Massie, 1969; Filley and House, 1969).

### **6.5.3. Chris Argyris (1923 -**

Argyris, Professor of Industrial Relations at Yale University, USA, expanded upon Maslow’s theory with his “personality versus organisation” hypothesis (Argyris, 1957). He argued the incongruency between the needs of the individual and the following organisation practices:

1. Division of labour which limits employee initiative and the use of his abilities.
2. Chain of command which makes employees passive and leaves them with no control over their environment.



3. Unity of direction which leads to goals that are determined by management, allowing no input from employees.
4. Span of control which decreases the employee's self-control and assumes his immaturity.

Argyris sought to achieve harmony between the individual and the organisation. He proposed job enlargement to give employees the opportunity to better utilise their abilities and to give them a sense of control over their work. He also proposed that management should encourage employee participation in order to remove employee indifference and to enable the employee to attain self-realisation. He encouraged management to provide employees with a range of experiences and to provide challenges for them through increased responsibility. He advised that management should allow for more employee self-direction and self-control. His objective was for the organisation to nurture employee maturity so that both the employee and organisation could fulfil their goals whilst increasing organisational effectiveness.

#### **6.5.4. Frederick Herzberg (1923 -**

Herzberg, a psychologist and Professor of Psychology at Western Reserve University, USA, developed a motivation theory called "two-factor" or "hygiene-motivation" theory based on research. Herzberg asked his survey sample of accountants and engineers to think of an occasion when they felt exceptionally good or exceptionally bad about their job, be it their present or previous job, and to relate the incident to him. From the responses to these semi-structured interviews and additional detailed surveys, Herzberg developed two lists of factors, "hygiene factors" and "motivation factors". He called it "hygiene factors" because these are analogous to the principles of medical hygiene which despite removing health hazards from the environment are merely preventive, not curative (Herzberg, Mausner and Snydermann, 1959).

The hygiene and motivation factors are: (Donnelly, Gibson and Ivancevich, 1971)

##### Hygiene factors

1. Company policy and administration.
2. Technical supervision.
3. Interpersonal relations with supervisors.
4. Interpersonal relationship with peers.

<b>Maslow's Hierarchy of Needs</b>	<b>Herzberg's Hygiene and Motivation Factors</b>
<p>1. Physical Needs</p> <p>2. Safety Needs</p> <p>3. Social Needs</p>	<p><b>Hygiene Factors (Job Context)</b></p> <ul style="list-style-type: none"> <li>• Salary</li> <li>• Personal Life</li> <li>• Work Conditions</li> <li>• Job Security</li> <li>• Company Policy</li> <li>• Work Conditions</li> <li>• Technical Supervision</li> <li>• Interpersonal Relations with Peers, Supervisors and Subordinates</li> </ul>
<p>4. Esteem Needs</p> <p>5. Self-Realisation Needs</p>	<p><b>Motivation Factors (The Work Itself)</b></p> <ul style="list-style-type: none"> <li>• Recognition</li> <li>• Achievement</li> <li>• Advancement</li> <li>• Possibility of Growth</li> <li>• Responsibility</li> <li>• Work Itself</li> </ul>

**Table 6.5.4: Correlation between Maslow's Hierarchy of Needs and Herzberg's Hygiene and Motivation Factors**

(Adapted from: Donnelly, Gibson and Ivancevich, 1971; Plunkett and Attner, 1992)



5. Interpersonal relationship with subordinates.
6. Salary.
7. Job security.
8. Personal life.
9. Work conditions.
10. Status.

Motivation factors

1. Achievement.
2. Recognition.
3. Advancement.
4. Work itself.
5. Possibility of growth.
6. Responsibility.

The preventive nature of hygiene factors means they cause dissatisfaction when absent, remove dissatisfaction when optimal but do not motivate. These factors are conditions of the work environment. They are external to the job.

The motivation factors are conditions relating directly to work, that is, the job itself. Herzberg warned that the lack of motivating factors at work will make employees more aware of real or perceived bad job hygiene, which can only be overcome through the constant improvement of both the amount and quality of hygiene.

Herzberg suggested the following as means to motivate workers: structure jobs to provide achievement, provide growth opportunity, provide jobs that give self-actualisation, provide recognition, and, give workers responsibility for their jobs (Pollard, 1974). These involve reviewing and restructuring jobs to provide motivation.

The close correlation between Maslow's Hierarchy of Needs and Herzberg's Hygiene and Motivation factors is shown in Table 6.5.4.

### **6.5.5. Operations Research**

Operations Research started in Great Britain during World War II to deal with the logistics of war. The first operations research team was formed by the British under the leadership of Professor P. M. S. Blackett, physicist and Nobel prize winner, with a team of “three physiologists, two mathematical physicists, one astrophysicist, one Army officer, one surveyor, one general physicist, and two mathematicians” (Trefethen, 1954). This variety of expertise in the group was necessary to address the complicated problems of the war.

Operations research applied scientific knowledge to the study of complex problems to develop a quantitative basis for decision making. The end of the war did not mean the end of operations research. Its applicability was recognised by industry. Its first industrial applications were to solve production problems such as production schedules, inventory control and production costs. Churchman, Ackoff and Arnoff (1957) wrote “operations research in the most general sense can be characterised as the application of scientific methods, techniques, and tools to problems involving the operation of the system so as to provide those in control of the operations with optimum solutions to the problems”.

Operations research gradually moved from production management to operations management in the 1950s using statistics and mathematics in techniques such as linear programming, queueing theory, decision trees, probability theory, quantitative methods and other simulations to determine the optimal decision under varying circumstances. These techniques and simulations were greatly assisted by the use of computers to handle masses of data to test the effect of changes in the variables or the model.

The efforts to develop a framework for operations research tools resulted in the development of Decision Theory, which is discussed in Section 6.5.6.

One major shortcoming of operations research is statistics and mathematical models cannot accurately account for the human factor because this is not easily quantifiable. However operations research has developed many models and techniques which are still used to solve present production and management problems such as break-even points, linear programming, queueing and probability.



### **6.5.6. Decision Theory**

Decision Theory combined the quantitative tools of operations research with the economic concepts of utility and choice in a framework to examine various objectives and solutions in decision-making.

In the decision making process, although the manager is able to choose the Strategy (S) to be used there are two variables that are uncontrollable which significantly influence the outcome of the selected strategy. These variables are the State of Nature (SN) and Competitive Action (CA). The outcome of the decision gives the decision maker some form of utility. This relationship in decision theory between the utility derived based on the interaction of Strategy, the State of Nature and Competitive Action can be expressed as follows: (Donnelly, Gibson and Ivancevich, 1971)

$$U = f(S, SN, CA)$$

where,    U = Utility or Outcome  
              S = Strategy  
              SN = State of Nature  
              CA = Competitive Action

Decision theory further takes into account three conditions related specifically to the State of Nature or Competitive Action as perceived by the decision maker. These three conditions are certainty, risk and uncertainty.

Decision theory is used when historical data about the State of Nature or Competitive Action is not available. Instead of the manager having to resort to the use of opinion about the probability of occurrence which is dependent on whether the manager's behaviour is optimistic or pessimistic, decision theory gives the manager a scientific procedure to analyse the problem (Archer, 1964). With the use of computers, the decision theory framework allows managers to study problems with many strategies, states of nature and competitive actions.

### **6.5.7. Systems Theory**

Ludwig von Bertalanffy (1968), a biologist, introduced the concept of Systems Theory at a University of Chicago Seminar in 1937 but it was only published after the war. The systems approach was a search for a theory of management, "a way of thinking about

the job of managing ... which provides a framework for visualising internal and external environmental factors as an integrated whole” (Johnson, Kast and Rosenzweig, 1963). A business organisation was compared to a system with many sub-systems, for example, departments and divisions, functioning as a whole. This systems approach was popular in the 1960s and was characterised by a search for the one best way to manage.

The systems view of a business organisation was that no sub-system or department was independent of the other. It could not act independently without affecting other departments and the system as a whole. Survival of the system depended on the interactions of the sub-systems and their contribution to the whole system. Activities in the production department would be dependent on the sales department which would in turn be dependent on the budget and so on.

The implication of systems theory on management was the need to understand the various factors that affect the organisation, such as workers, technology, work conditions and motivation. All these factors are interrelated and actions taken on one factor must be analysed so as not to disrupt others.

Interest in systems theory declined because of criticisms that it was abstract and too theoretical for decision-making. This led to the development of Contingency Theory.

#### **6.5.8. Contingency Theory**

The Contingency Theory school developed from systems theory in the 1970s as less credence was placed on ‘one best way of management’. The market was expanding through product differentiation because customers wanted more product varieties. Customers no longer accepted Henry Ford’s axiom from a previous generation that “you can buy a car of any colour as long as it is black”. With consumer demand becoming more diversified so did the problems of management. Writers were predicting the start of a post Industrial Revolution era (Bell, 1973). The new trend that emerged was situational management which basically stated that what worked in one situation may not necessarily work in another. This provided the basis for managing organisations individually.



Situational management gave way to contingency management which introduced three interrelated assumptions. These assumptions being: (Kast and Rosenzweig, 1973)

1. There is a relationship between organisations and their environments and between management systems and its various components.
2. This relationship exists for all types of organisations.
3. The best contingency plan requires management to determine what and how it is to be done, who is to do it, and the impact on the organisation of what is being done.

The contingency approach to management begins with “it depends” because the solution to any problem is dependent on the factors and the situations. No two situations are exactly alike and therefore no two solutions are the same.

Contingency theory draws upon classical management theory, behaviour science, management science, and other management theories and principles to provide possible solutions to a problem.

The strength of contingency management is that it takes account of the situation before a course of action is decided upon. However there is disagreement about whether it is a comprehensive theory of management. Some researchers credit the contingency approach as providing the framework for bridging the gap between management theory and practice (Luthans and Stewart, 1977) whilst others disagree on the grounds that the contingency approach is based on conceptual schemes, with no proposals to integrate various concepts (Longenecker and Pringle, 1978).

Contingency theory is particularly applicable to the rapid changes in technology and environment of the modern era which requires a flexible “it depends” analytical approach to management.

## **6.6. Total Quality Management**

Total Quality Management started in Japan as Total Quality Control after World War II when the country had to rebuild its industries following the devastation of the atomic bomb. Deming, a statistical consultant with a Ph.D. in Physics from Yale University, was recruited by the Supreme Command for the Allied Powers in 1947 to Japan. A group of Japanese scientists and engineers called the Union of Japanese Scientists and Engineers (JUSE) was reconstructing the country. In 1951, he visited a camera factory and reported, “a year ago they made 200 cameras per month, now they are making 400 and hope it will be 500 this month and hereafter, with no increase in workers or hours – simply better control of quality” (Deming, 1951).

Japanese TQM guru Kaoru Ishikawa in his book ‘What is Total Quality Control? – The Japanese Way’ (1985) explained that quality was all encompassing, and included the quality of work, service, information, process, division, company, objectives and quality of people, which included workers, engineers, managers and executives.

In America, TQM started with the television documentary “If Japan Can ... Why Can't We?” on June 29, 1980 (Walton, 1986). Waves of American quality and manufacturing executives visited Japan in the early 1980s following the documentary. One success story was Ford Motor Company's US\$3.25 billion project to develop a new quality car, the Ford Taurus, in 1981 with Deming as a consultant. At this time Ford posted a loss of US\$3.3 billion during the 1980-1982 period and the most it had spent developing a new car was US\$800 million for the Fiesta (Shook, 1990). Ford's management team set up a semi-autonomous group of developers called ‘Team Taurus’ with the following mission: (Doody and Bingaman, 1988)

1. The team was to create a world-class car, with quality second to none.
2. The customer would be the focal point in defining quality.
3. Product integrity would never be compromised.

To achieve the objectives, the team from the start involved people from both upstream and downstream in the car making process. This meant involvement from the CEO's office to the design studios to the end of the assembly line and beyond to the supplier, the advertising agency, the dealership and ultimately, the customer.



The team dismantled and examined 50 comparable cars to identify 400 'Best in Class' (BIC) items for the new car. The team listened to customers, employees, suppliers and dealers. For the first time, Ford solicited ideas from assembly line workers before the car was designed and found out about workers' complaints about problems when installing car doors because the body panels were formed in too many pieces. One employee suggested all bolts should have the same head size so there was no need to change wrenches. These changes were accepted and the results of this "company culture revolution" were spectacular. Of the 400 BIC features, the first Taurus was on target for 320 features. Mainly due to Taurus sales, Ford overtook General Motors in earnings in 1986 for the first time since 1924.

After a slow start in America in the 1980s led by the gurus Deming, Juran, Crosby and Feigenbaum the pace of TQM picked up in the 1990s. A 1989 Gallup survey of *Fortune 1000* executives in America showed only 26% achieved significant results from TQM, with 28% satisfied with the results (Gallup, 1989). By late 1991, a poll conducted with a similar sample of executives by Opinion Research Corporation for Arthur D. Little Inc. revealed that of the 93% of companies with a TQM program, 36% reported significant effects and 62% believed that effects would be significant in the future (Little, 1992). Other surveys were equally optimistic about TQM and its future in America. A joint survey by Development Dimensions International and Quality and Productivity Management Association in 1993 showed that 56% of a sample of 536 North American companies practised TQM. In other words TQM, far from waning, "is still an emerging business strategy" (Development, 1993).

Results of surveys have also shown the spread of quality management initiatives and TQM outside the USA (Binney, 1992; Witcher and Whyte, 1992; Witcher, 1993). TQM is the new management practice and business strategy that will give companies the competitive advantage. Changes in product markets, technology, customer demands, deregulation and increasing competition from imports have changed the competitive market environment. These changes signal the move to "flexible specialisation" (Piore and Sabel, 1984) or "lean production" (Womack, Jones and Roos, 1990). Under these conditions of production flexibility, product quality and customer responsiveness, it is necessary for both management practices and business strategies to change accordingly. Oakland (1993) stresses that regardless of the nature of the business, the competitive



market environment demands that companies incorporate total quality to maintain the competitive advantage and to maintain or increase their market share.

It is important not to think of TQM narrowly in terms of product and service quality. It is much more than producing quality products and services. TQM is a management philosophy to institutionalise quality in a business organisation to ensure that its customers receive what they expect. Traditional management must make the change to the new quality culture. Achieving cultural change is central to TQM (Wiggans and Turner, 1991; Williams, Dobson and Walters, 1991; Dale and Boaden, 1994a; MacDonald, 1994). Dale and Cooper (1992) explain that this culture change requires considerable thought, planning, motivation and persuasion on the part of management as it is not easy to change people's beliefs and attitudes.

Main (1994) emphasises that TQM is not a management tool but an overall way of managing. Ishikawa (1985) refers to it as the "thought revolution" of management.

This "cultural change" or "thought revolution" of TQM is not unlike the "mental revolution" of scientific management. Scientific management was a product of its environment. It was developed during the Industrial Revolution to meet the demands for efficiency. The "mental revolution" of scientific management required management and workers to shift their focus from division of the surplus of production to working together to create a greater surplus with resultant lower production costs for management and higher wages for workers.

Wilkinson, Redman and Marchington (1998) refer to TQM as the "innovation in management practice" of the late 1980s and 1990s. Indeed, TQM is a management system to continually improve quality in every aspect of the organisation involving everyone in the organisation to satisfy internal and external customers. The new culture is based on an organisation that is flatter, flexible, adaptable, responsive and proactively anticipating changes and innovations. Hill (1991) describes a quality culture as one that nurtures high trust social relationships where individuals are respected and have a shared sense of membership of the organisation together with the belief that continuous improvement is for the common good.



<b><u>Traditional Management</u></b>	<b><u>Total Quality Management</u></b>
<ol style="list-style-type: none"> <li>1. Looks for quick fix to problems.</li> <li>2. Firefights problems in a reactive style.</li> <li>3. Focuses short-term to meet production at any cost.</li> <li>4. Inspects for errors after product is produced.</li> <li>5. Decisions based on opinions of a few key people.</li> <li>6. Motivated by profit.</li> <li>7. Throws resources at a task.</li> </ol>	<ol style="list-style-type: none"> <li>1. Adopts a new management philosophy.</li> <li>2. Structured, disciplined operations which analyse for prevention.</li> <li>3. Stresses long-term, continuous improvement.</li> <li>4. Prevents errors and emphasises quality of design.</li> <li>5. Decisions on data-driven facts drawn from many people.</li> <li>6. Motivated by customer satisfaction.</li> <li>7. Uses people/resources to improve.</li> </ol>

**Table 6.6: Changes from Traditional Management to Total Quality Management**  
 (Source: Miller and Cangemi, 1993)

Traditional assembly line work is mechanised, automated or computerised and supervised by workers, except in countries without labour shortages or when manual or semi-automatic operation is more economical. TQM moves away from the scientific management assembly line concept of Taylor which broke down work to the smallest tasks in order to increase efficiency, and from the administrative management principles of Fayol. It emphasises work integration, teamwork, decentralisation of authority, empowerment of employees, employee participation, training, problem prevention, continuous improvement and customer focus. Walton (1985) argues that organisations are moving away from the human resource strategy based on compliance which incorporates narrowly defined jobs, limited employee discretion and involvement, and individual incentives, to one that is based on commitment, broader more flexible jobs, teamwork, involvement, group-based incentives, flatter organisation structures with less emphasis on hierarchical, positional authority.

Human resource management which is the “soft” aspect of TQM is an important factor in the successful implementation of TQM. The necessary motivation, attitude and behavioural changes, interpersonal skills and leadership, commitment, self-control and trust need to be developed and nurtured. Management needs to take McGregor’s “Theory Y” view of employees instead of the traditional “Theory X” view of classical management.

The changes from traditional management to TQM are summarised in Table 6.6.

## **6.7 Conclusion**

This chapter provides an overview of the key emphases of the management theories and principles from pre-Industrial Revolution through to present day Total Quality Management. This is necessary for the study of Hypothesis 3, which seeks to benchmark a company’s management style and its relative position en route to TQM.



## **Chapter 7: Benchmarking Management Styles**

---

### **7.1. Organisational Changes**

Management styles and human relations management are important aspects of TQM which tend to be overlooked. This is largely because of the emphasis placed on product quality which has a long documented history starting with the concept of quality inspection and evolving into quality control and quality assurance. Furthermore the name Total Quality Management lends the impression that the philosophy is solely based on managing quality. Hill (1991) wrote that this shortfall lay not with technical aspects, but with the “lacunae in the treatment of the social factors”. TQM is more than technical issues relating to the quality of products and processes. It is a management process involving everyone in the organisation working together to continually improve every aspect of the organisation’s quality to achieve customer satisfaction. It is not a goal but a way of life for everyone in the organisation. Dale (1996) stressed the importance of organisation culture and management style in sustaining TQM. Dale, Boaden, Wilcox and McQuater (1997) described TQM management style as “unitary”. A unitary style of management places emphasis on strong teamwork, and on employees working to common goals. MacDonald (1994) describes the management practice of TQM as one where the traditional style of command and control needs to be replaced with leadership where managers help employees to achieve improved performance and not demand compliance.

Dale, Lascelles and Boaden (1994) present the importance of social and human relations aspects of TQM in “six different levels of TQM adoption” based on research conducted over thirteen years. These six levels are “Uncommitted, Drifters, Tool-Pushers, Improvers, Award Winners and World Class”. The lowest level is “Uncommitted” and the highest is “World Class”. For the purpose of this thesis, the area of focus is “Level 5 – Award Winners”. Dale, Lascelles and Boaden state that companies at this level are not necessarily winners of internationally recognised quality awards. It does mean however that these companies have “reached a point in their TQM maturity where the kind of culture, values, trust, capabilities, relationship

and employee involvement in their business required to win such an award have been developed - a point at which quality improvement has become Total in nature”.

Award winners have the following characteristics:

1. A company-wide culture of leadership and improvement that is not dependent on a select few but involves all employees.
2. Successful organisational changes.
3. Effective and measurable cross-functional management processes and process stream improvements.
4. Conducting benchmarking and performance measurement at all levels.
5. An organisational culture that involves more employee participation.
6. Empowerment of employees to make decisions.
7. Employees acknowledge TQM as the new way of managing the business.

Only the third and fourth characteristics relate to systems and procedures. The other five characteristics relate to leadership, organisation culture, management styles and human relations. This supports Hill and other researchers who have voiced their concerns about this soft side of TQM. The benefits of TQM have been given much publicity and there are few companies that do not know about TQM. The problems arise when companies implement the systems, tools and techniques by dictate of management while only paying lip service to the supporting culture and infrastructure changes which are much more difficult and time consuming to implement. Wilkinson, Redman and Marchington in their book ‘Managing with Total Quality Management’ (1998) warned that TQM is too often incorporated into existing company cultures. This creates “Partial Quality Management” which is a common occurrence of TQM the UK. Partial Quality Management falls short of TQM and will not deliver the same benefits.

The need to change the organisation culture and style of management is highlighted in ‘BS7850: Part 1: Total Quality Management, Guide to Management Principles’ (1992). The standard states that the implementation of TQM requires “creating appropriate organisational structures”. It is necessary to conduct reviews to determine the relevance of the existing organisation structure. Changes to the style of management are most often needed in the following management processes:

- a) Employee recognition and reward.



<b>Organisational Culture Feature</b>	<b>Traditional Western Management</b>	<b>TQM Management</b>
1. The meaning and order of things.	Workers work, managers manage.	Shared responsibility and co-operation.
2. Organisational structure.	Hierarchy, much emphasis on authority related to one's place in the structure.	More flattened; less social distance between managers and workers.
3. Use of power with workers.	Coercion, "do it because I'm the boss".	Peer management, empowered.
4. Decision-making.	Unilateral, autocratic, not always objective.	Consensus, group participation based on facts.
5. Responsiveness to changes in markets, community and environment.	Closed, reactive, and constrictive.	Open, proactive, and adaptive.
6. Internal relationships.	Conflict ridden, labour and management are adversaries.	Harmony, balance, teams are priorities.
7. Values in the workplace.	Incongruent not shared by all; often fear, alienation is predominant.	Congruent and shared throughout the organisation; trust, belonging are predominant.
8. Communications.	Top down, vertical.	Multi-directional.
9. Use of time, resources and priorities.	Not always related to overall goals, "looking good" and other games are played.	Focused on goals and prevention, "games" are minimised.
10. Productivity.	Quantity, efficiency, have top priority, often at the expense of effectiveness.	Quality, effectiveness is given the same priority as efficiency.
11. External relations.	Attempts to "force" relations with markets, communities, and ecosystems.	Seek to "Fit".

(Continued on next page)

**Table 7.1: Organisation Culture, Traditional Management and TQM.**

(Adapted: Glover, 1993)

- b) Resource allocation.
- c) Administrative support.
- d) Establishment of trust and teamwork among employees.
- e) Employee training plans.
- f) Company work procedures.

The relationship between organisation culture and management styles is shown in Table 7.1 which also compares TQM management style with traditional Western management style.

<b>Organisational Culture Feature</b>	<b>Traditional Western Management</b>	<b>TQM Management</b>
12. Measurement/accounting.	Profit and loss, etc., serve as anxiety-inducing rituals which seek to “justify” existing paradigm; myopic bottom line.	Information from consumers and employees are given equal focus with profit and loss; market share and demand are stressed; “true” bottom line.
13. Performance evaluation.	Focus on results (ends), individual recognition.	Focus on processes (means), group recognition.
14. Motivation concepts.	Individual is responsible for his/her well-being, “carrots” and threats are used simultaneously, goals of individuals not always those of the organisation.	Group orientation, self-directed teams, “ownership” by all levels in the goals of the organisation.
15. Control.	External to individual.	Internalised.
16. Growth.	“Predator” type, one constituency often benefits at expense of another.	Mutually beneficial to all constituents, balanced.

**Table 7.1: Organisation Culture, Traditional Management and TQM.**

(Adapted: Glover, 1993)



## **7.2. Management Styles**

Just as it is possible to conduct a qualitative survey of cultural changes based on the behavioural characteristics of management and employees, it is possible to benchmark a company's route to TQM using a qualitative assessment of management styles. Modern management still retains some of Taylor's management styles, especially in mass production. Dale, Lascelles and Boaden (1994) identify Taylorist elements imbedded in modern organisational culture as: 'them and us' attitudes, a limited view of 'on-the-job' expertise, inflexible working practices, job demarcation, and scant recognition of the potential of individuals. Taylor's management style is in conflict with TQM. The low level of trust and close supervision of Taylorism must be replaced with high trust between management and workers.

The different management styles and organisation structures reviewed in Chapter 6 charts the evolution of management principles and practices from the domination of the military and church during the feudal system through to TQM. The classical organisation structure that is bureaucratic, formal, authoritarian and impersonal is different from TQM's flexible, co-operative structure with open communications, effective teamwork and cross-functional improvements. Wilson and Rosenfield (1990) defined organisation structure as "the established pattern of relationships between the component parts of an organisation, outlining both communications, control and authority patterns. Structure distinguishes the parts of an organisation and delineates the relationship between them".

Flood (1993) compared his ten TQM principles with Taylor's Scientific Management (mechanical vision) and Weber's Administrative Management (political vision). This comparison is shown in Table 7.2. Flood provides two fundamental visions into the nature of organisations. The first is a mechanical vision and the second a political vision. In the mechanical vision, he sees the organisation as a machine run by engineering principles. In the political vision, the organisation is seen to be operating under a strict power structure of control. Although these are not a direct comparison of management styles, to achieve these principles requires their own management styles and behaviours.

<b>TQM Principles</b>	<b>Scientific Management (Mechanical Vision)</b>	<b>Administrative Management (Political Vision)</b>
There must be agreed requirements, for both internal and external customers.	External requirements are not seen to be relevant in the view of management.	Requirements are set internally at the top and imposed on lower levels.
Customer requirements must be met first time, every time.	Rigid notion of objective goals to be achieved in a strict internal order.	Punishments rather than rewards; the requirements must be met otherwise demotion or dismissal may result.
Quality improvement will reduce waste and total costs.	Cost reduction must be pursued as a goal, which means that people must work together as cogs much more efficiently. People must shake off what makes them unreliable. There must be machine efficiency.	There is a possible advantage of getting right to it with less deliberation and thus lower costs, but higher costs could be incurred to police and supervise to achieve imposed rules. In terms of costs, there will be beneficiaries and victims.
There must be a focus on the prevention of problems, rather than an acceptance to cope in a fire-fighting manner.	The problems are essentially deviations from set points, and mechanisms must be installed that prevent the deviation from happening or to correct it if it does happen.	In authoritarian regimes, quality by inspection misses the value of quality by prevention; there will be a tendency to scapegoat and workers become good at problem avoidance and fire-fighting.
Quality improvement can only result from planned management action.	Goals, or requirements to be met, are externalised from all but the chief governors and are implemented by leadership from the top.	Action is compliance to the plan, planned manipulation or coercion.
Every job must add value.	Mechanisms must operate systematically to increase quality at every stage.	A quota or higher performance expectation.

(continued on next page)

**Table 7.2: Comparison of Management Principles**  
(Source: Flood, 1993)



<b>TQM Principles</b>	<b>Scientific Management (Mechanical Vision)</b>	<b>Administrative Management (Political Vision)</b>
Everybody must be involved from all levels and across all functions.	Everyone is a cog in the machine and must work in unison strictly according to laws that must be obeyed ... because an organisation as a whole has a machine purpose that must be achieved; cogs (i.e., people) have no purpose.	Forced participation; work in unison because of the explicit will of some person/people.
There must be an emphasis on measurement to help assess and to meet improvements in processes.	Quantitative methods using statistics or mathematics establish how well laws are being met, how well the human cogs in the machine are performing according to machine efficiency criteria.	Rigid policing.
A culture of continuous improvement must be established.	One law that drives the machine explicitly states that the product or service must become more and more efficiently produced, but this takes no account of confounding external influences.	The culture is a kind of slavery, driving not striving, with little improvement likely to follow
An emphasis should be placed on promoting creativity.	This principle is marginalised by machine thinking and is difficult to give meaning to in a mechanical context; creativity is divergent while mechanical goal-seeking is convergent.	It is unlikely that people will be creative when they are merely instruments serving other people's interests.

(End of Table)

**Table 7.2: Comparison of Management Principles (continued)**

(Source: Flood, 1993)

### **7.3 Evolution of Management Styles**

The author in Table 7.3 presents the different management styles that have evolved from pre-Industrial Revolution through to TQM. The table shows the emphases, principles and concepts, management styles and problems of each of the management eras and the gradual evolution of scientific management to TQM as society progressed from the eighteenth century.

### **7.4 Conclusion**

It is seen from Table 7.3 that the style of management evolved in accordance with the needs of society at the time. In today's market of intense global competition management must keep pace to ensure the success of the company. The purpose of Table 7.3 is thus to provide management with a chart with which they can compare their existing management style against that of TQM. It serves to highlight to management how far they have evolved in their practices and philosophy, and points the way forward.



Pre-Industrial Revolution (Before 1750)	Scientific Management (From 1750)	Administrative Management (From 1750)	Human Relations (1930-1950)	Modern Era (Post World War II)	TQM (From 1980 to present)
<b>Emphasis</b> Agriculture and Commercial Economy	<b>Emphasis</b> Factory System (Mental Revolution)	<b>Emphasis</b> Organisation Structure	<b>Emphasis</b> Group and Social Problems of Workers	<b>Emphasis</b> Motivation and Decision- Making using Mathematical Methods	<b>Emphasis</b> Total Quality (Cultural Change)
<b>Principles and Concepts</b>	<b>Principles and Concepts</b>	<b>Principles and Concepts</b>	<b>Principles and Concepts</b>	<b>Principles and Concepts</b>	<b>Principles and Concepts</b>
Control by State, Church and Military	<ul style="list-style-type: none"> <li>• Time Study</li> <li>• Motion Study</li> <li>• Incentives/Bonuses to Motivate</li> <li>• Upgrade Skills to First-Class Man</li> </ul>	<ul style="list-style-type: none"> <li>• 5 Management Functions</li> <li>• 14 Management Principles</li> <li>• Communications</li> <li>• Authority</li> <li>• Co-ordination</li> <li>• Planning</li> <li>• Control</li> <li>• Managerial Process</li> </ul>	<ul style="list-style-type: none"> <li>• Group Interactions</li> <li>• Integration</li> <li>• Law of Situation</li> <li>• Leadership</li> <li>• Social Work Environment</li> <li>• Social Motivation</li> </ul>	<ul style="list-style-type: none"> <li>• Theory Y</li> <li>• Hierarchy of Needs</li> <li>• Hygiene Motivation</li> <li>• Arguments against:</li> <li>➢ Division of Labour</li> <li>➢ Chain of Command</li> <li>➢ Unity of Direction</li> <li>➢ Span of Control</li> <li>➢ Classical Principles of Organisation</li> <li>• Operations Research &amp; Contingency Theory</li> </ul>	<ul style="list-style-type: none"> <li>• Commitment</li> <li>• Customer Focus</li> <li>• Quality Costs</li> <li>• Quality Systems</li> <li>• Continuous Improvement</li> </ul> <p><b>(5 Pillars of TQM)</b></p>

Table 7.3: Evolution of Management Styles From the Pre-Industrial Revolution to TQM

<b>Pre-Industrial Revolution (Before 1750)</b>	<b>Scientific Management (From 1750)</b>	<b>Administrative Management (From 1750)</b>	<b>Human Relations (1930-1950)</b>	<b>Modern Era (Post World War II)</b>	<b>TQM (From 1980 to present day)</b>
<b>Management Style</b>	<b>Management Style</b>	<b>Management Style</b>	<b>Management Style</b>	<b>Management Style</b>	<b>Management Style</b>
<ul style="list-style-type: none"> <li>• Military Style</li> <li>➤ Chain of Command</li> <li>➤ Unity of Command</li> <li>➤ Delegation of Authority</li> </ul>	<ul style="list-style-type: none"> <li>• Division of Labour</li> <li>• Specialisation</li> <li>• Low Trust</li> <li>• Assembly Line Production</li> <li>• Motivation through Incentives and Bonuses</li> <li>• Skill Training</li> <li>• Job Rotation</li> </ul>	<ul style="list-style-type: none"> <li>• Co-operation</li> <li>• Communications</li> <li>• Hierarchy and Acceptance of Authority</li> <li>• Co-ordination</li> <li>• Planning</li> <li>• Control</li> <li>• Justice</li> <li>• Esprit de Corps</li> </ul>	<ul style="list-style-type: none"> <li>• Integration of Workers and Management</li> <li>• Skills to Handle Human Relations</li> <li>• Satisfy Workers' Social Needs</li> <li>• Depersonalise Authority</li> <li>• Employee Oriented Supervision</li> <li>• Interpersonal Skills</li> <li>• Emphasis on Employee Satisfaction</li> </ul>	<ul style="list-style-type: none"> <li>• Integration of Individual and Organisation Goals</li> <li>• Develop/Nurture Self-Realisation</li> <li>• Motivation</li> <li>• Decentralisation</li> <li>• Job Enrichment</li> <li>• Employee Participation</li> <li>• Leadership by Example</li> <li>• Satisfaction versus Motivation</li> <li>• Mathematical Models</li> <li>• Contingency Management</li> </ul>	<ul style="list-style-type: none"> <li>• Open, Positive Management</li> <li>• Work Integration</li> <li>• Organisation Changes</li> <li>• Employee Involvement</li> <li>• Teamwork</li> <li>• High Trust</li> <li>• Self-Control</li> <li>• Training to Upgrade</li> <li>• Continual Search for Improvements in All Aspects of the Organisation</li> <li>• Search for Customer Requirements</li> <li>• Innovations and Research</li> </ul>

Table 7.3: Evolution of Management Styles From the Pre-Industrial Revolution to TQM



<b>Pre-Industrial Revolution (Before 1750)</b>	<b>Scientific Management (From 1750)</b>	<b>Administrative Management (From 1750)</b>	<b>Human Relations (1930-1950)</b>	<b>Modern Era (Post World War II)</b>	<b>TQM (From 1980 to present day)</b>
<b>Problems</b> <ul style="list-style-type: none"> <li>• Slow Growth</li> </ul>	<b>Problems</b> <ul style="list-style-type: none"> <li>• Shortage of Skilled Labour</li> <li>• Soldiering</li> <li>• Work Fatigue</li> <li>• Monotony</li> <li>• Management of Work</li> </ul>	<b>Problems</b> <ul style="list-style-type: none"> <li>• Growth in Size and Complexity of Organisations</li> <li>• Management of Organisation</li> </ul>	<b>Problems</b> <ul style="list-style-type: none"> <li>• Social Needs of Workers</li> <li>• Motivation of Workers</li> </ul>	<b>Problems</b> <ul style="list-style-type: none"> <li>• Employee Motivation</li> <li>• Diversity of Business Objectives and Strategies Requiring Simulation of Decision-Making</li> </ul>	<b>Problems</b> <ul style="list-style-type: none"> <li>• Competitive Pressure</li> <li>• Customer Expectations and Requirements</li> </ul>

Table 7.3: Evolution of Management Styles From the Pre-Industrial Revolution to TQM

## **Chapter 8: Cladistics**

---

### **8.1 Introduction**

A problem that arises when implementing and sustaining TQM is the inability to identify a suitable and effective benchmarking system that will enable the company to monitor its progress. To be effective a benchmarking system must give a clear indication of the current situation and some indication of the route to improvement.

One of the novel aspects of this thesis is to examine the use of Cladistics as a TQM benchmarking tool for management styles.

Cladistics is a classification tool first developed by linguists to classify the evolution of languages. It was later adapted to biology by Hennig (1950). In this research Cladistics is used to study the evolution of management styles from pre-Industrial Revolution to present day TQM. The evolutionary relationship established is presented in a diagram that bears the form of a tree, known as a Cladogram. The cladogram is built on a common ancestry and its branches depict shared derived characteristics (synapomorphies).

This chapter presents an overview of Cladistics and how the Cladogram is constructed.

### **8.2 Cladistics**

Cladistics is a classification system that traces evolutionary routes. It is based on the concepts of phylogenetic systematics which were first formalised by Hennig. The term phylogenetic originates from 'phylogeny' which means genealogical history. Maddison and Maddison (1992) describe it as the "branching history of roots of inheritance". Systematics is essentially the science of classification and is described by Simpson (1961) as a scientific study of the diversity and relationships among entities.

Wiley, Siegel-Causey, Brooks and Funk (1991) suggest several key reasons why cladistics is the most applicable classification method:



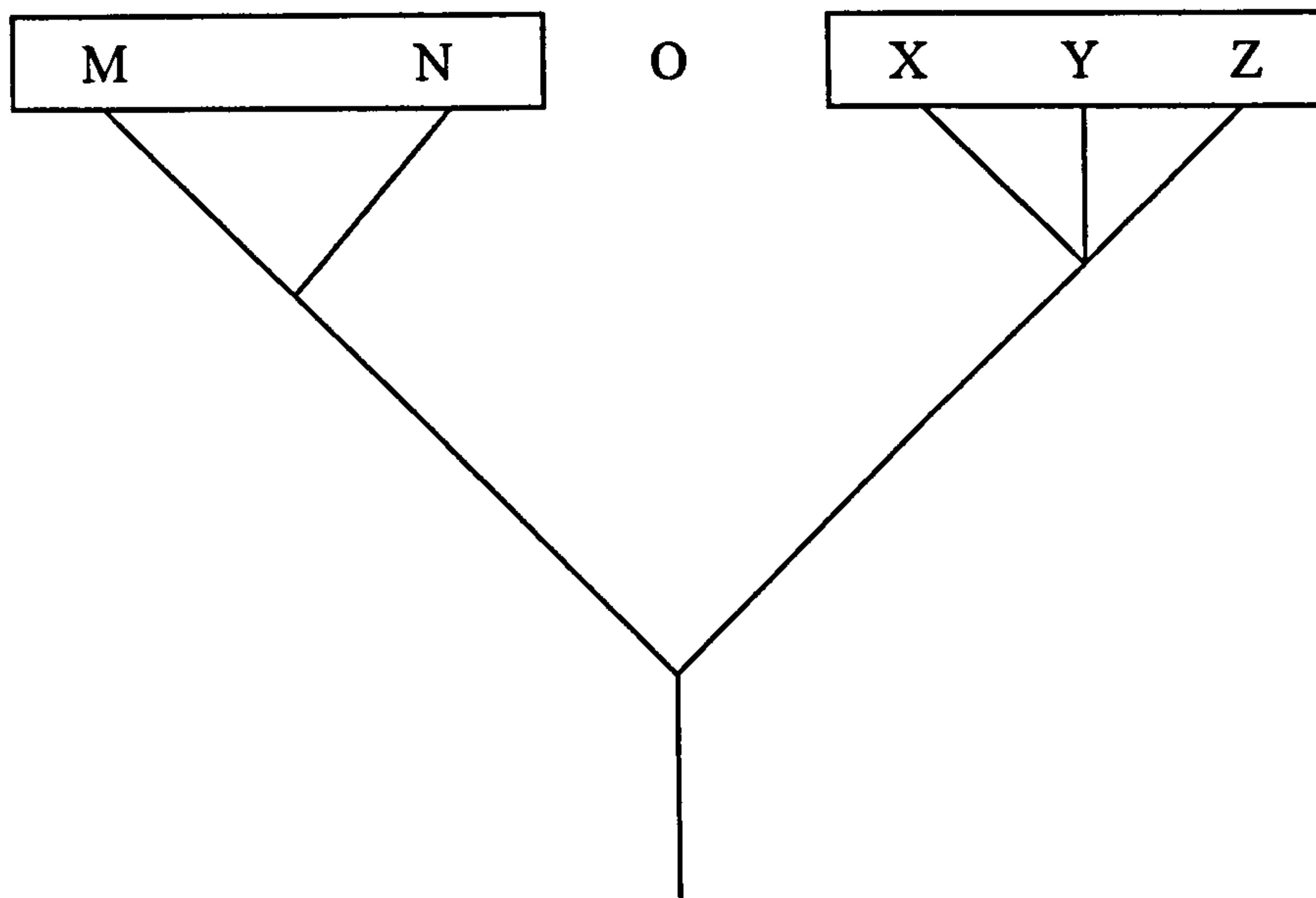
- Phylogenetic systematics allows the reconstruction of relationships with common ancestry, and groups taxa according to the common ancestor. An important point to note is classifications that are not phylogenetic cannot be applied to evolutionary theory.
- The relationship between the ancestor and the evolved management styles are displayed as a phylogenetic tree, commonly known as a Cladogram. The Cladogram gives a very precise illustration of exactly where a company stands in the evolutionary process.
- In the phylogenetic system, the method used and results obtained are “transparent”. This means that any decisions reached are based on data which can be understood by anyone who is interested, and not only specialists in the field.
- The phylogenetic trees are hypotheses. Consequently, the work can be built upon and expanded as new management styles evolve.

The reason phylogenetic systematics is gaining popularity over traditional systematics is two-fold. Firstly, non-phylogenetic classifications are very likely to be artificial and thus cannot be used for the study of evolution. Secondly, traditional systematics uses intuition. This is not favourable as the characters under consideration are selected based on intuition which effectively weights the character. Intuition makes the significance of the evolution difficult to determine and open to disagreements.

A strong argument for the use of the phylogenetic system is the transparency of the methods and results. All decisions made are based on verifiable data thus eliminating ambiguity.

Phylogenetic systematics acknowledges only monophyletic groupings as valid. Monophyletic groupings occur when all descendants of the most recent common ancestor are included. Monophyletic groups are known as clades. It is a group of species made up of an ancestral species and all its descendants. This is illustrated in Figure 8.2.

M and N form a monophyletic group, as do X, Y and Z.



**Figure 8.2: Example of a Monophyletic Group**

(Source: Wiley, Siegel-Causey, Brooks and Funk, 1991)

### 8.3 Cladogram

Phylogenetic systems have two types of natural taxa. A natural taxon exists in nature as a group of organisms that result from evolution. The two types of natural taxa are species and monophyletic groups. The monophyletic group is described in Section 8.2 and illustrated in Figure 8.2. Species represent the largest unit of taxic evolution, and are increased in number through an array of processes known as speciation.

Figure 8.3 is a simple cladogram showing a group of species. The cladogram is a common ancestry tree and is made up of a simple form of branching. Similar in terminology to real trees, the points at which a branch occurs is called a node. A terminal node is also known as a taxon. A taxon is group of organisms that have an assigned name. An illustration of how evolution occurs is shown in Figure 8.3. A tree is rooted if a node is designated as the root. Only a tree that is rooted has polarity, allowing the nodes to be referred to in terms of ancestors and descendants.





### i) Root Node

MacClade takes the internal node that is the most common ancestor of all other nodes in the tree as the root. MacClade includes an internode below the root although there is no node at the end to facilitate manipulation of the root node and to show the tree's connection with the rest of the tree life.

### ii) Treelength

MacClade gives the user the treelength, which is the sum of all the evolutionary steps of all the characters on the tree. The optimal tree has the shortest treelength. The statistic given by the treelength indicates how well the tree fits the data.

The most widely known method for determining the best treelength is the principle of parsimony. The treelength can be changed by manipulating the branches to obtain trees that are more parsimonious. This method defines as optimum the tree which requires the least character transitions in the evolutionary relationships.

### iii) Trace

This lets the user trace the evolution of any character.

### iv) Data Editor

The user enters data for the character and taxa into the data editor. The matrix contains the information of each character state per taxa. The data editor allows the user to study the outcome of omitting any taxa from the evolution process through a function which provides for taxa selection. A new tree will be built with the selected taxa only.

The reason for using a cladistic approach is that it provides a simple, easily verified criterion for delimiting taxa hence promoting objectivity.

## **8.5 Conclusion**

The transparency of the methods and results, together with the ease of use of MacClade makes Cladistics a benchmarking tool that can easily be applied by SMEs. This application and the results obtained are studied in Chapter 9.



## **Chapter 9: Results of Management Style Survey**

---

### **9.1. Management Style Survey Questionnaire**

The objective of the questionnaire is to support the hypothesis that cladistics can be used to benchmark management styles and to determine the progress of a company along its route to TQM.

The questionnaire is developed on three TQM principles of Management Commitment, Employee Participation and Customer Focus. Each principle is subdivided into components and their characteristics. These characteristics are predominantly from the management styles listed in Table 7.3. The Management Style questionnaire is found in Appendix H.

#### **9.1.1 Management Commitment**

For the purpose of the survey management commitment focuses on the four areas of Commitment, Organisation Culture, Management Style, and Training and Development.

##### **1. Commitment**

The four questions relate to commitment to quality, commitment to productivity, commitment to the customer and leading by example. Commitment to quality and the customer are characteristics of TQM. However the concept of quality has a long history dating back to the early days of quality by inspection. Likewise, productivity, which is the efficient use of resources, started with time and motion studies from scientific management. Leading by example was developed from the motivational theories of the Modern Era and receives additional emphasis in TQM.

##### **2. Organisation Culture**

Crofton and Dale (1996) state that the culture of an organisation is vital for the successful introduction and development of TQM. McQuater (1995) describes the culture of an organisation as “anything from the value systems and traditions to industrial relations internal to an organisation”. There are seven questions on the characteristics, culture and structure of the organisation which have evolved from the

autocratic, bureaucratic, military and religious domination of pre-Industrial Revolution to the flat, flexible and co-operative organisation of TQM.

### **3. Management Styles**

The five questions on management styles look at the relationship management has with workers, their authority, and whether they are fair and just in the treatment of subordinates. The changes in management styles through the various schools of management closely mirror the organisation culture of the time. The rugged society of the Industrial Revolution with its emphasis on efficiency and close supervision of workers began to change in the Human Relations school when the Hawthorne Study showed the importance of the social aspect of motivation. Further changes were made in the Modern Era based on the motivation theories of the behaviour scientists. The greatest change occurred with TQM which called for a new organisation culture with an open, positive and supportive management style.

### **4. Training and Development**

The four questions concern the commitment of time and resources for training and scheduled training for the further development of employees and management. Although training of workers was a management priority in scientific management because of the shortage of skilled labour, it was present in the pre-Industrial Revolution period in the form of craft apprenticeship. The increase in the level of skills accompanying rapid technological changes of the Industrial Revolution through to present day computer and knowledge technology require greater commitment and resources for the training of management and employees. This development of employees to achieve self-realisation and full utilisation also benefits the organisation.

#### **9.1.2 Employee Participation**

The second TQM principle of Employee Participation in a quality culture is contrasted with the skilled craftsmen of the pre-Industrial Revolution, the 'first class man' of Taylorism, the social man of Human Relations, and the 'Theory Y' man of the Modern Era.

This section of the questionnaire has three components: Employee Satisfaction, Motivation and Employee Involvement, and Communications.



### 1. Employee Satisfaction

There are fourteen questions relating to Employee Satisfaction. These are the “hygiene factors” of Herzberg’s Hygiene-Motivation Theory which states that the absence of hygiene factors causes dissatisfaction and results in low morale, high staff turnover, and low efficiency and productivity. However, the presence of the hygiene factors will satisfy but not motivate employees.

Although Herzberg’s theory was developed in the Modern Era there were earlier efforts made towards providing employees with job satisfaction. The Human Relations school emphasised the importance of the social environment in improving efficiency and productivity. Scientific management with its practice of division of labour, work specialisation and close supervision produced monotony and fatigue although the ‘first-class man’ would have some job satisfaction because of incentive payments. Some hygiene factors such as job rotation and the elimination of fatigue were advocated by the Gilbreths to provide some job satisfaction.

### 2. Motivation and Employee Involvement

The ten questions in this part of the questionnaire relate to motivation and the TQM concept of employee involvement, which is the highest level of motivation classified by Maslow in his Hierarchy of Needs. Maslow called this level of need self-realisation. Herzberg’s Hygiene-Motivation Theory showed that motivation factors are found in the work itself. They are not external to the work. These factors were developed in the Modern Era and reached maturity in TQM in the form of work teams, empowerment of employees, exercise of self-control and self-direction by employees and a high degree of trust by management. In scientific management, motivation was purely economic in the form of wage incentives and bonuses.

### 3. Communications

The two questions ask about ‘top-bottom’ communication between management and workers, and horizontal communication among employees. The importance of ‘top-bottom’ communication was noted during the Administrative Management period when pioneers such as Fayol and Weber were formulating their principles of efficient organisation structure. However its roots can be traced to pre-Industrial Revolution military style management. The importance of horizontal communications started with the Human Relations emphasis on group interactions.

### **9.1.3 Customer Focus**

Customer Focus comprising the components of customer satisfaction and continuous improvement is a core concept of TQM. This search for excellence by focusing on customers contrasts greatly with the search for “the one best way” (Gantt, 1911) of scientific management to increase efficiency. Customer focus is specific to TQM. In the Modern Era, marketing principles emphasised the customer only as a consumer of products of mass production factories and services. This is a much lower level of emphasis compared to TQM.

Customer focus asks five questions concerning customer feedback, customer complaints, customer contact and monitoring customer satisfaction. Continuous Improvement comprises three questions regarding the improvement of product and service quality and benchmarking customer satisfaction.

### **9.1.4 Additional Information**

The questionnaire concludes with a section for respondents to provide information on the “hard” aspects (Wilkinson, 1994) of TQM. The key areas of interest for the purpose of this survey relate to the company’s quality systems. The questions ask if the company is BS5750/ISO9000 certified, and whether all work processes are documented and company records maintained to facilitate future decision making and efficiency. The question about the documentation of work processes is intended for companies that have not attained certification to BS5750/ISO9000. The maintenance of process documentation is of particular importance to manufacturing companies. Companies are also asked if they work closely with their suppliers, and if they maintain a formal cost accounting system. This information will provide a complete understanding of how the company conducts its business and provides an insight into its philosophy.

## **9.2 Background**

The author conducted the Management Style Survey with ten South Yorkshire manufacturing SMEs. Of the ten, four had participated in the original TQM survey conducted with the 30 Sheffield manufacturing SMEs. The other six SMEs were University collaborators. None of these ten companies participated in the implementation of the TQM Framework. The decision was taken not to approach the



six companies that had been involved in the Framework implementation as management's position in these companies was known.

### **9.3 Survey Methodology**

An interview was arranged with a member of the management team. The survey was conducted in person instead of via post to remove the element of ambiguity from the answers as different people interpret the same questions differently. The conducting of a personal interview is supported by McCarthy, Leseure, Ridgway and Fieller (1997) who write that the best means of ensuring the reliability and validity of data is through interviews as this will eliminate variability and subjectivity that can arise as a result of respondents' perceptions. Each interview lasted an average of 45 minutes.

For academic interest, Professor Keith Ridgway conducted an interview with a Japanese company during a business visit to Japan.

### **9.4 Survey Results**

A list of 59 characteristics was established from the various management styles. For the purpose of MacClade these characteristics are referred to as characters. Each character corresponds to a survey question. These 59 characters are shown in Table 9.4a and are in the exact order in which they were entered into the Data Editor.

The taxa (i.e., evolutionary phases), characters (i.e., survey questions) and data (i.e., survey answers) were entered into the Data Editor first for the 6 evolutionary phases (i.e., Pre-Industrial Revolution, Scientific Management, Administrative Management, Human Relations, Modern Era and TQM). This is shown in Table 9.4b.

In MacClade, the Data Editor uses the binary system of '1' and '0' for the entry of data. However, for clarity, the author has replaced these with 'Yes' and 'No' respectively. Hence, looking at Table 9.4b, an entry of 'Yes' means that the character was present in that evolutionary phase and an entry of 'No' means it was absent.

The cladogram generated by MacClade for the evolutionary phases is shown in Figure 9.4a. Pre-Industrial Revolution was assigned as the ancestor in the cladogram. The

numbers along the branches of the cladogram in Figure 9.4a correspond to the number of the character in the Data Editor. These are the characters that were acquired by that particular phase of management in its evolution. The cladogram presented the evolutionary process in its historical order of the six phases of management styles, namely pre-Industrial Revolution, Scientific Management, Administrative Management, Human Relations, Modern Era and TQM.

As the cladogram generated was in the exact order of historical evolution, this strongly supports the fact that it is possible to use cladistics to study the evolution of management styles.

The answers obtained in the management style survey from the 11 companies were entered into the Data Editor, shown in Table 9.4c, and a new cladogram was generated as shown in Figure 9.4b. Presented on the cladogram were the positions of all 11 companies along the evolution process. The column 'TQM' in Table 9.4c serves as a checklist of the necessary attributes for a TQM company.

Based on Figure 9.4b, it is clear the Japanese company, Fuji Steel, has evolved such that its characters are closest to that of TQM. There are only two other companies that share this site between Modern Management and TQM. However both these Sheffield companies are not as advanced in their evolution. The reason Fuji Steel is ahead of the Sheffield companies is largely attributed to the fact that Japan has long had a culture of Total Quality Control, which is similar to TQM. The remaining eight Sheffield companies are found between Human Relations and the Modern Era. This indicates that they still engage in traditional management methods and have a way to go before they are able to reap the benefits of a TQM company. This should provide the impetus for management to seriously re-examine their processes and practices if they want to remain competitive in today's market.



1	Management Commitment to Quality	31	Intra-department Co-operation
2	Management Commitment to Productivity	32	Workers are Self-disciplined
3	Management Commitment to the Customer	33	Subordination of Interests
4	Management Leads by Example	34	Job Security
5	Organisation is Pyramid Shaped	35	Esprit de Corps (Teamwork)
6	Jobs are Directed towards a Common Goal	36	Work Improvement Teams
7	Unity of Command: One Supervisor per Worker	37	Specialisation of Labour
8	Emphasis solely on Machinery	38	Highly Skilled Workers
9	Emphasis solely on Human Resources	39	Detailed Work Instructions are given
10	Resources Co-ordinated for Maximum Efficiency	40	Worker Responsible for own Output
11	Communication of Company Policy and Future Developments, etc.	41	Daily Performance Chart used to monitor Performance of Workers
12	Good Relationship between Management and Workers	42	Employee Participation in Decision Making
13	Centralisation of Authority	43	Level of Self-Initiative is Encouraged
14	Scalar Chain (Chain of Command)	44	Employees have Opportunities for Growth and Development
15	Positional Power	45	Effective Communication among Workers
16	Equity: Justice and Kindness is shown by Management	46	Good Level of Communication between Management and Workers
17	Management Commitment to Employee Training	47	Active Search for Customer Feedback
18	Employee Training – Financial Commitment	48	Monitor Customer Satisfaction
19	Scheduled Management Training	49	Fixed Customer Contact Employee per Customer
20	Scheduled Employee Training	50	Communication of Customer Complaints
21	Mutuality of Interests	51	Customer Complaints are Communicated to the Relevant Worker
22	Management Actively ensures Employee Motivation	52	Continuous Improvement of Product
23	Employees Updated on Company Progress	53	Continuous Improvement of Service
24	Management ensures Good Work Conditions	54	Benchmarking of Customer Satisfaction
25	Policy to ensure Employee Welfare	55	ISO9000 Accreditation
26	High Literacy among Workers	56	Documentation of Work Procedures
27	Job Rotation to avoid Monotony	57	Working Closely with Suppliers
28	Co-operation is Fostered	58	Formal Cost Accounting Maintained
29	Employment in-line with Future Needs	59	Record Keeping for Future Reference
30	Inter-department Co-operation		

**Table 9.4a: Management Style Characters**



Characters	Evolutionary Phases					Total Quality Management
	Pre-Industrial Revolution	Scientific Management	Administrative Management	Human Relations	Modern Era	
1 Management Commitment to Quality	No	Yes	Yes	Yes	Yes	Yes
2 Management Commitment to Productivity	No	Yes	Yes	Yes	Yes	Yes
3 Management Commitment to the Customer	No	No	No	No	Yes	Yes
4 Management Leads by Example	No	No	No	No	Yes	Yes
5 Organisational Structure is Pyramid-Shaped	No	Yes	Yes	Yes	Yes	No
6 All Jobs are Directed towards a Common Goal	Yes	Yes	Yes	Yes	Yes	Yes
7 Unity of Command: One Supervisor per Worker	No	Yes	Yes	Yes	Yes	Yes
8 Company Emphasis is Solely on Machinery	No	Yes	Yes	No	No	No
9 Company Emphasis is Solely on Human Resources	No	No	No	Yes	Yes	No
10 Resources are Co-Ordinated for Maximum Efficiency	Yes	Yes	Yes	Yes	Yes	Yes
11 Communication of Company Policy, Future Development	No	No	No	No	No	Yes
12 Good Relationship exists between Management & Workers	No	No	No	No	No	Yes
13 Authority is Centralised	No	Yes	Yes	Yes	Yes	Yes
14 Scalar Chain of Command	Yes	Yes	Yes	Yes	Yes	Yes
15 Power is Accorded to the Position Held	Yes	Yes	Yes	Yes	Yes	Yes
16 Management is Equitable	No	No	Yes	Yes	Yes	Yes
17 Management is Committed to Employee Training	Yes	Yes	Yes	Yes	Yes	Yes
18 Management is Financially Committed to Employee Training	No	Yes	Yes	Yes	Yes	Yes
19 Scheduled Management Training	No	No	No	No	Yes	Yes
20 Scheduled Employee Training	No	No	No	No	Yes	Yes
21 Mutuality of Interest is present in the Company	No	No	No	No	Yes	Yes
22 Management Actively Ensures Employee Motivation	No	Yes	Yes	Yes	Yes	Yes
23 Employees are Updated on the Progress of the Company	No	No	No	Yes	Yes	Yes
24 Management Ensures Good Work Conditions	No	Yes	Yes	Yes	Yes	Yes
25 The Company takes care of Employee Welfare	No	Yes	Yes	Yes	Yes	Yes
26 Workers have a High Level of Literacy	No	No	No	No	Yes	Yes
27 Job Rotation is Implemented to avoid Monotony	No	Yes	Yes	Yes	Yes	Yes
28 A Sense of Co-operation is Fostered in the Company	No	No	Yes	Yes	Yes	Yes
29 Employment is in line with Company's Future Requirement	No	No	No	No	Yes	Yes
30 Inter-Departmental Co-operation Exists	No	No	No	No	Yes	Yes
31 Intra-Departmental Co-operation Exists	No	No	No	No	Yes	Yes
32 Workers are Self-Disciplined	No	No	No	No	Yes	Yes
33 Subordination of Interests	No	No	No	No	Yes	Yes
34 Employees have Job Security	No	No	No	No	Yes	Yes
35 There is a sense of Teamwork among Employees	No	No	Yes	Yes	Yes	Yes
36 Work Improvement Teams are Active in the Company	No	No	No	No	No	Yes
37 There is specialisation of Labour among Workers	No	Yes	Yes	Yes	Yes	Yes
38 Workers are Highly Skilled	No	Yes	Yes	Yes	Yes	Yes
39 Workers Receive Detailed Work Instructions	No	Yes	Yes	Yes	Yes	Yes
40 Each Worker is Responsible for his own Output	No	No	No	No	No	Yes
41 Daily Performance Chart is used in the Company	No	Yes	Yes	Yes	Yes	Yes
42 Employees Participate in Relevant Decision-Making	No	No	No	No	Yes	Yes
43 Self-Initiative is Encouraged among Employees	No	Yes	Yes	Yes	Yes	Yes
44 Employees have Growth and Development Opportunities	No	No	No	No	Yes	Yes
45 There is Effective Communication between all Workers	No	No	No	Yes	Yes	Yes
46 Open Communication between Management and Workers	Yes	Yes	Yes	Yes	Yes	Yes
47 Company Conducts Active Search for Customer Feedback	No	No	No	No	No	Yes
48 Customer Satisfaction is Closely and Formally Monitored	No	No	No	No	No	Yes
49 Dedicated Customer Contact Dept & Employee per Customer	No	No	No	No	No	Yes
50 Employees are made Aware of Customer Complaints	No	No	No	No	No	Yes
51 Customer Complaints Communicated to the Relevant Worker	No	No	No	No	No	Yes
52 Company Continuously Seeks to Improve Product(s)	No	No	No	No	No	Yes
53 Company Continuously Seeks to Improve Service(s)	No	No	No	No	No	Yes
54 Company Benchmarks Customer Satisfaction	No	No	No	No	No	Yes
55 Company has BS5750/ISO9000 Accreditation	No	No	No	No	No	Yes
56 Work Procedures are Fully Documented	No	No	Yes	Yes	Yes	Yes
57 Company Works Closely with Suppliers	No	No	No	No	No	Yes
58 Company Practices Cost Accounting	No	Yes	Yes	Yes	Yes	Yes
59 Recordkeeping is Maintained for Future Reference	No	No	Yes	Yes	Yes	Yes

Table 9.4b: Data Editor for 6 Evolutionary Phases of Management Styles



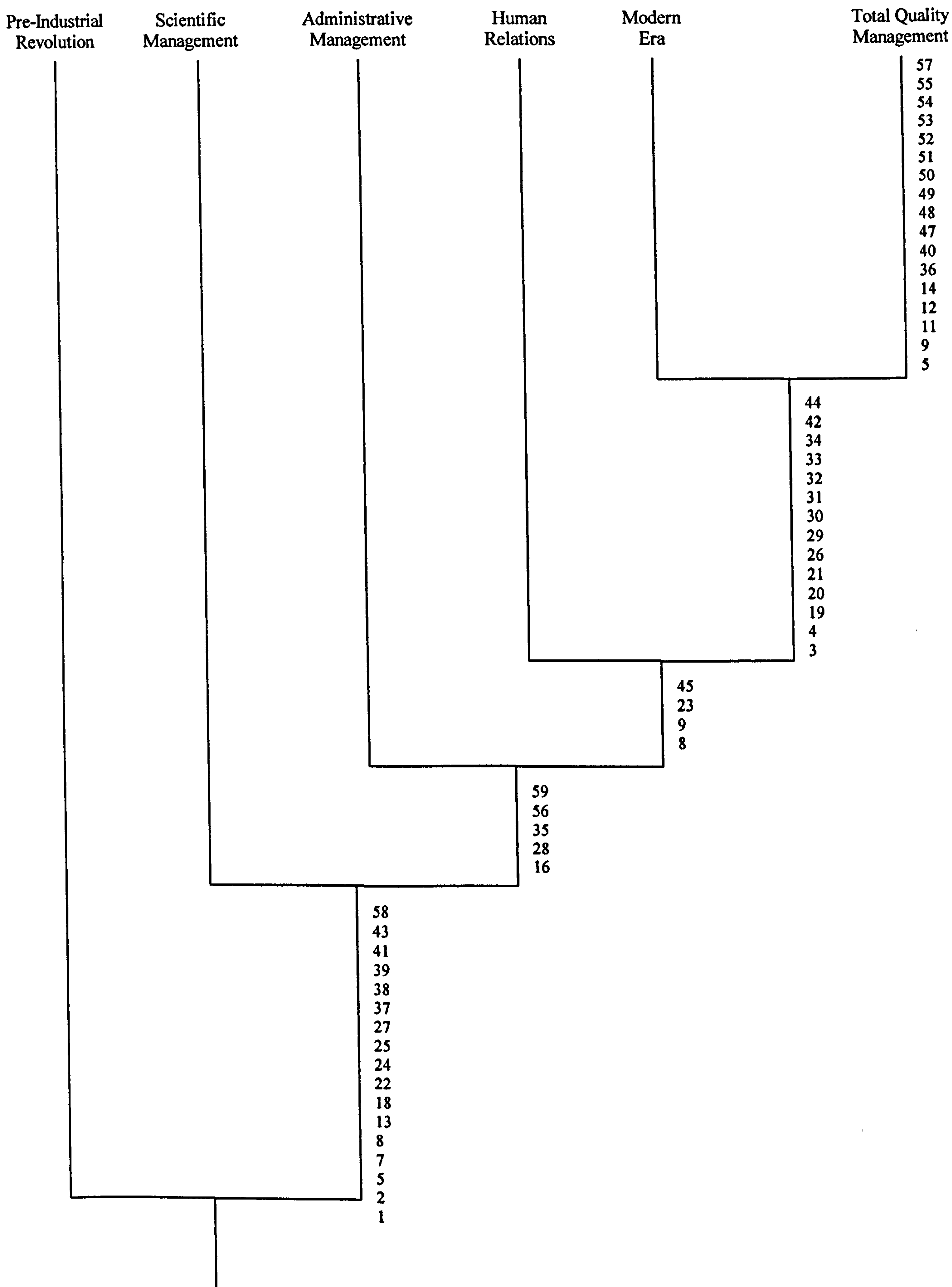


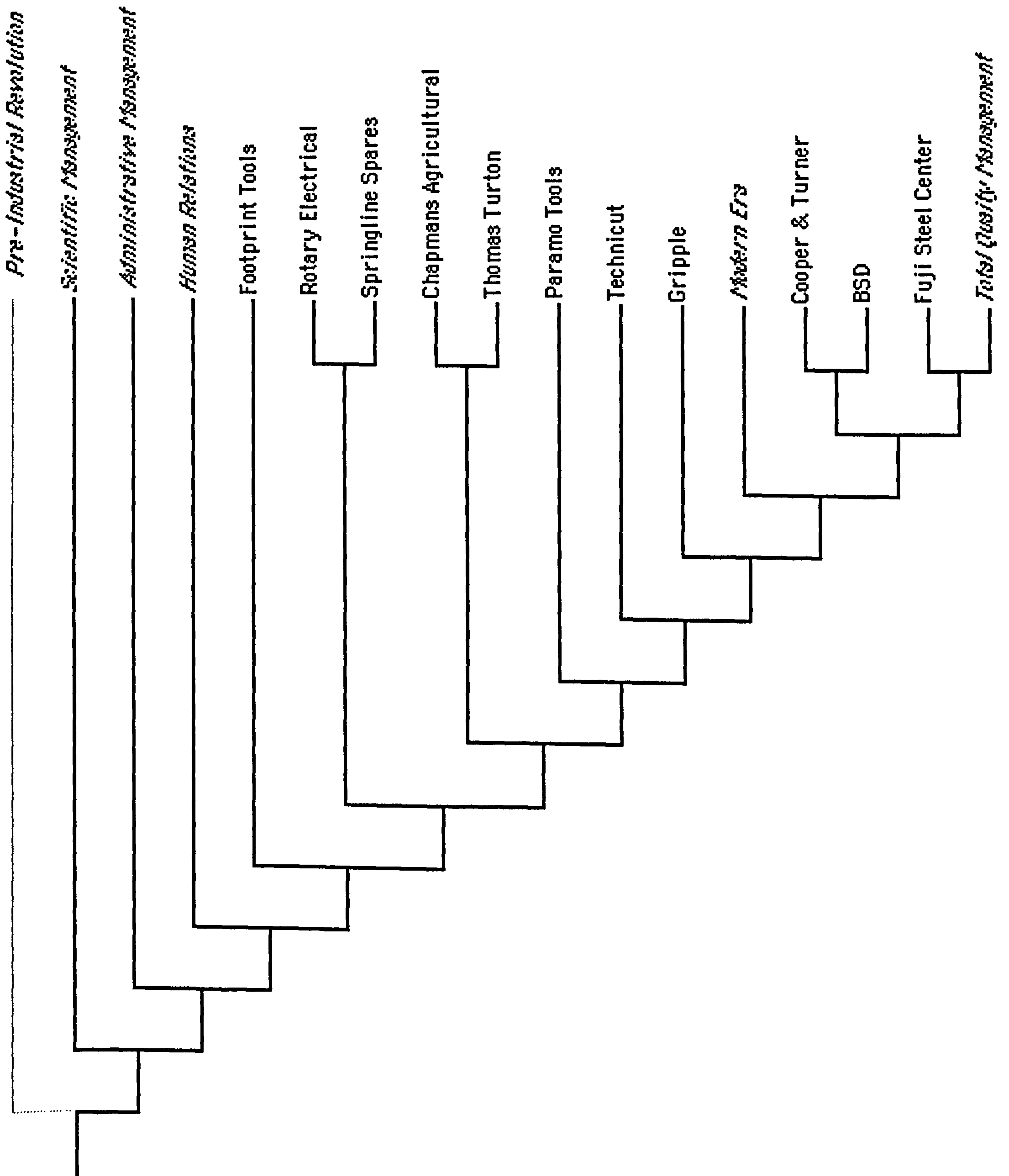
Figure 9.4a: Cladogram of Evolutionary Phases of Management Styles



Characters	Companies													TQM
	Gripple	Technicut	Thomas Turton	Chapmans Agricultural	Rotary Electrical	Paramo Tools	Cooper & Turner	Footprint Tools	Springline Spares	Fuji Steel	BSD			
1 Management Commitment to Quality	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
2 Management Commitment to Productivity	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
3 Management Commitment to the Customer	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
4 Management Leads by Example	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes	
5 Organisational Structure is Pyramid-Shaped	No	No	No	No	No	No	No	Yes	No	No	No	Yes	No	
6 All Jobs are Directed towards a Common Goal	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	
7 Unity of Command: One Supervisor per Worker	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	
8 Company Emphasis is Solely on Machinery	No	No	No	No	No	No	No	No	No	No	No	No	No	
9 Company Emphasis is Solely on Human Resources	Yes	Yes	No	No	No	No	No	Yes	No	No	No	No	No	
10 Resources are Co-Ordinated for Maximum Efficiency	Yes	Yes	No	No	No	Yes	No	No	No	No	Yes	No	Yes	
11 Communication of Company Policy, Future Development	No	No	No	No	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	
12 Good Relationship exists between Management & Workers	Yes	Yes	No	No	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	
13 Authority is Centralised	Yes	Yes	No	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	
14 Scalar Chain of Command	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
15 Power is Accorded to the Position Held	Yes	Yes	No	No	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes	
16 Management is Equitable	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	
17 Management is Committed to Employee Training	Yes	No	No	Yes	Yes	No	Yes	No	No	No	Yes	Yes	Yes	
18 Management is Financially Committed to Employee Training	Yes	Yes	No	Yes	Yes	No	Yes	No	No	No	Yes	Yes	Yes	
19 Scheduled Management Training	Yes	No	No	No	No	No	Yes	No	No	No	Yes	Yes	Yes	
20 Scheduled Employee Training	Yes	No	No	No	No	No	Yes	No	No	No	Yes	Yes	Yes	
21 Mutuality of Interest is present in the Company	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	
22 Management Actively Ensures Employee Motivation	No	Yes	No	No	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes	
23 Employees are Updated on the Progress of the Company	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes	
24 Management Ensures Good Work Conditions	No	No	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	
25 The Company takes care of Employee Welfare	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
26 Workers have a High Level of Literacy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
27 Job Rotation is Implemented to avoid Monotony	No	No	Yes	Yes	No	No	No	No	No	No	Yes	No	Yes	
28 A Sense of Co-operation is Fostered in the Company	Yes	Yes	No	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	
29 Employment is in line with Company's Future Requirement	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	
30 Inter-Departmental Co-operation Exists	Yes	Yes	Yes	Yes	No	No	No	No	No	Yes	Yes	Yes	Yes	
31 Intra-Departmental Co-operation Exists	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
32 Workers are Self-Disciplined	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	
33 Subordination of Interests	No	No	No	No	No	No	No	No	No	No	No	No	Yes	
34 Employees have Job Security	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
35 There is a sense of Teamwork among Employees	Yes	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
36 Work Improvement Teams are Active in the Company	No	No	No	No	No	No	Yes	No	No	No	Yes	Yes	Yes	
37 There is specialisation of Labour among Workers	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
38 Workers are Highly Skilled	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes	
39 Workers Receive Detailed Work Instructions	No	No	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	
40 Each Worker is Responsible for his own Output	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	
41 Daily Performance Chart is used in the Company	No	No	No	No	No	Yes	Yes	No	No	No	Yes	Yes	Yes	
42 Employees Participate in Relevant Decision-Making	Yes	Yes	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes	
43 Self-Initiative is Encouraged among Employees	Yes	Yes	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
44 Employees have Growth and Development Opportunities	Yes	Yes	No	Yes	No	No	Yes	No	No	No	Yes	Yes	Yes	
45 There is Effective Communication between all Workers	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
46 Open Communication between Management and Workers	Yes	Yes	No	Yes	No	Yes	No	No	No	Yes	Yes	Yes	Yes	
47 Company Conducts Active Search for Customer Feedback	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	
48 Customer Satisfaction is Closely and Formally Monitored	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
49 Dedicated Customer Contact Dept & Employee per Customer	No	Yes	No	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	
50 Employees are made Aware of Customer Complaints	No	No	No	No	No	No	No	Yes	No	No	Yes	Yes	Yes	
51 Customer Complaints Communicated to the Relevant Worker	No	Yes	No	No	No	No	No	Yes	No	No	Yes	Yes	Yes	
52 Company Continuously Seeks to Improve Product(s)	Yes	Yes	No	No	No	No	No	Yes	No	No	Yes	Yes	Yes	
53 Company Continuously Seeks to Improve Service(s)	Yes	Yes	No	No	No	No	No	Yes	No	No	Yes	Yes	Yes	
54 Company Benchmarks Customer Satisfaction	No	No	No	No	No	No	No	Yes	No	No	Yes	Yes	Yes	
55 Company has BS5750/ISO9000 Accreditation	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
56 Work Procedures are Fully Documented	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
57 Company Works Closely with Suppliers	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
58 Company Practices Cost Accounting	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
59 Recordkeeping is Maintained for Future Reference	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	

Table 9.4c: Data Matrix for the Evolution of the 11 Companies' Management Styles





**Figure 9.4b: Cladogram Showing the Evolution of the 11 Companies' Management Styles**

## **Chapter 10: Conclusion**

---

This thesis has involved extensive research including reviews of literature, reports, surveys and case studies regarding SMEs and their implementation of TQM. The review of previous work indicated that there was little published literature or reported research on TQM implementation in SMEs. This is supported by Newall and Dale (1991) who reported that there was a considerable body of literature dealing with the importance of TQM, its benefits and the factors affecting its success but there was little on the problems encountered with TQM and quality improvement. Thus this thesis makes a contribution to the body of research in this aspect of TQM, which has not as yet been studied in detail.

The scope of this thesis includes a questionnaire based on 5 Pillars of TQM to survey the state of TQM implementation in 30 SMEs in Sheffield. The development and critical evaluation of a TQM implementation framework applied in six SMEs adds to this body of research. Detailed TQM implementation studies carried out in the six companies involved the development of Customer Focus and Employee Motivation surveys that were conducted with 107 customers and 313 employees.

In addition to this body of research the thesis also examined three hypotheses:

1. SMEs do not understand the definitions or implications of TQM.
2. SMEs can be encouraged to implement TQM by a Framework of training and mentoring (Uncle Concept).
3. Management styles and the relative position of a company en route to TQM can be benchmarked using Cladistics.



**Hypothesis 1**

*SMEs do not understand the definitions or implications of TQM.*

Extensive study carried out on the characteristics, strengths and weaknesses of SMEs indicated that the traditional approaches to TQM implementation successfully practised by large companies needed modification to suit the needs and requirements of SMEs. This approach to ascertain the actual needs of SMEs is consistent with the basic principle of TQM to define and meet the requirements of customers who in this thesis are SMEs from the manufacturing sector. An SME is a very different customer from a large company in terms of management, organisation structure and culture, business goals and objectives. SMEs, therefore, justify special consideration.

Research revealed that TQM is not a prescriptive process to be implemented on a standard basis in all companies. Companies that have successfully implemented TQM have done so by various approaches appropriate to their organisational culture and background. Based on a review of the work of TQM gurus and the development of TQM in the UK, a TQM definition and model using 5 Pillars comprising Management Commitment, Customer Focus, Quality Costs, Quality Systems and Continuous Improvement was developed for SMEs.

Greater emphasis was placed on Quality Costs compared to other TQM models to meet the characteristics of SMEs. Previous studies indicated that the costs of quality averages 25% to 30% of annual sales. These costs, due to internal failures such as scrap, rework and rejects and external failures such as wrong deliveries and correction of defects, are known to employees and management of SMEs in the manufacturing sector even though they have no supporting documentation or records. Previous researchers have claimed that TQM can reduce the costs of quality to 2.5% of sales which is a major motivating factor for SMEs. This aspect of TQM is usually given little publicity because TQM is viewed as a long term process. Moreover immediate savings from quality costs are comparatively less important to large companies than to SMEs who regularly face problems of finance and cash flow.

The author recommends that SMEs maintain simple yet complete records of the costs of quality and monitor the benefits obtained as they implement TQM.

A TQM questionnaire based on the 5 Pillars was developed to test the first hypothesis. The survey showed a high awareness by SMEs of the importance of quality. Of the 30 Sheffield SMEs, 28 were either certified to BS5750 or were planning the implementation of BS5750 or TQM. However, only one company had implemented TQM. The average rating of all 5 Pillars was above the average of 3.0 for the Sheffield SMEs because of their awareness of quality management and the inherent strengths of SMEs. The disappointment was that 36.7% of SMEs with BS5750 were stopping their quality initiative without any plan to progress to TQM. Their attitude being they had satisfied their customers' requests for BS5750 certification and that was sufficient for them. It is postulated that most or all of the other 36.7% of SMEs planning for BS5750 certification would do likewise. The TQM survey revealed that management found the implementation of BS5750 costly and disruptive to their work schedules and there was resistance from employees to the amount of paperwork required. Management felt forced into attaining certification by customers and that BS5750 had not resulted in any significant improvements. These negative aspects of BS5750 are barriers to SMEs discouraging them from progressing to TQM. The low ratings in the areas of customer focus, quality costs and continuous improvement indicate the lack of understanding of the fundamental TQM principles of customer requirements, employee participation and continuous improvement.

The misconception among management was that TQM was only applicable to large companies and multi-national corporations. The results of the survey confirmed Hypothesis 1, that SMEs do not understand the definitions or implications of TQM. This supports the need for a cost-effective Framework to encourage SMEs to implement TQM.



**Hypothesis 2**

*SMEs can be encouraged to implement TQM by a Framework of training and mentoring (Uncle Concept).*

The TQM survey identified the need for two important surveys. These are the Customer Focus and Employee Motivation surveys described in Chapter 4. The findings of the TQM survey revealed that only 10% of the Sheffield companies conducted customer surveys. The other companies relied on customer complaints and feedback from the sales team. None of the companies had ever conducted any form of employee survey. Although one of the strengths of SMEs is their closeness to customers, it is important that customer surveys are conducted on an annual basis so that the companies can accurately determine their performance and ability to satisfy their customers.

The objective of the customer survey is to determine the company's performance in meeting customer satisfaction and requirements and to identify areas of weakness that require attention. The results of the customer survey can then be used by the company to monitor performance trends in meeting customer satisfaction.

An employee survey is important to determine the level of employee satisfaction and motivation and identify what the company needs to do to change its company culture to that of TQM. This survey is necessary even for SMEs that are not planning to implement TQM. Chandra (1993) reported that a close link exists between employee satisfaction and customer satisfaction. Employee satisfaction heavily impacts on the company's ability to achieve and improve customer satisfaction. Berke (1994) reiterates this correlation in his quote: "Do unto your employees as you would have them do unto your customers." It goes against human nature that dissatisfied employees would desire to produce quality products and services. Dissatisfied employees also affect the efficiency and productivity in the company. Hence, monitoring employee satisfaction is necessary so that the root causes of dissatisfaction can be identified and action taken to provide the hygiene and motivation factors advocated by Herzberg in Chapter 6.

SMEs planning to implement TQM need to conduct an employee survey to identify the actions and efforts required to change the company's culture to TQM. If

management is not committed to ensure this culture change, the initiative will not succeed. As discussed in Chapter 2, the lack of management commitment is the most common cause for the failure of TQM.

The TQM Framework of training and mentoring (Uncle Concept) requires that companies conduct the customer and employee surveys as a pre-requisite to commencing Facilitator and Employee training. The six companies that adopted the framework welcomed the surveys conducted by the author.

The reason that five companies that did not achieve TQM status was because they cherry-picked TQM. They wanted the components they perceived as beneficial to their company such as the Customer and Employee Surveys, the Facilitator Training conducted by the Uncle and the resulting Employee Training Manual. The companies failed to realise that cherry-picking at best addresses specific issues but will never result in successful implementation of TQM. The five companies that failed to implement TQM represent a failure rate of 83% which is similar to the findings of Hollins (1995) who found that 80% of TQM initiatives fail during implementation.

Only the Machinery (MME) and Consumables Divisions of Edward Pryor & Son Ltd proceeded to conduct Employee Training and to successfully implement TQM. The results of the customer survey were used during employee training to highlight the areas for improvement. The company successfully implemented many quality improvement projects through work improvement teams. These not only improved the quality of their products and services but also motivated employees. When the Managing Director of the MME Division left the company their TQM initiative ground to a halt first in the MME Division then in the Consumables Division. This proves that Hypothesis 2 is incorrect. SMEs do not have the management commitment to successfully implement TQM even though the Framework is cost-effective and specifically adapted to cater to their needs.

Despite of the failures of the companies using the Uncle Concept of training and mentoring, the Uncle Concept is novel and is established on principles supported by research discussed in Section 4.1.



### **Hypothesis 3**

*Management styles and the relative position of a company en route to TQM can be benchmarked using Cladistics.*

This review of management styles is beneficial to the understanding of TQM as “there are many lessons in history for management scholars; the important one is the study of past as prologue” (Wren, 1979).

The study of the evolution of management styles is based on the theories of the management pioneers such as Owen, Babbage, Taylor, Gantt, the Gilbreths and Fayol. The practice of management however neither started with these pioneers nor the Industrial Revolution. Mankind has historically lived in groups or tribes to ensure their survival and for mutual benefit and elementary management practices first evolved in these group situations. The evolution and increasing complexity of society brought with it the establishment of recognised organisations. The main organisations were the military, the state and the church, of which the most advanced was the military. To this day, many of the principles developed by the military, such as Chain of Command, Delegation of Authority, Staff and Unity of Command, are still used in management practices.

In the 19<sup>th</sup> century, the emergence of scientific management brought with it a major change in management theories, principles and concepts. Scientific management sought to increase the efficiency, productivity, skills and wages of workers using scientific methods. A further management style that arose during that period was Administrative Management which focused primarily on organisation structure and the development of managerial principles to increase productivity. Fayol, a pioneer of Administrative Management, developed the functions of management which are still applied in traditional management. This bureaucratic, authoritarian and impersonal management style evolved into the Human Relations era with its emphasis on the worker and social environment. Critics of the Human Relations era complained of the lack of emphasis on the economic aspects of work. This was addressed after World War II by behaviour scientists such as McGregor, Maslow and Herzberg with their motivation theories of the Modern Era. The Modern Era was gradually replaced by TQM in the 1980s. The distinct theories, principles and management styles of each management era are tabulated in Chapter 7, Table 7.3.

This evolution of management styles allows the application of the classification system Cladistics which traces the evolutionary process from an ancestor. For the purpose of this study the ancestor is the pre-Industrial Revolution era. This classification technique is described in Chapter 8.

A Management Style Survey Questionnaire was developed based on three TQM principles of Management Commitment, Employee Participation and Customer Focus. The Management Style Questionnaire was conducted with ten South Yorkshire SMEs through an interview survey by the author with a member of the company's management team. The eleventh company interviewed is a Japanese company based in Japan.

The results of the survey are presented in a Cladogram which shows that 80% of the South Yorkshire SMEs are found between the Human Relations and Modern Era phase in their style of management. The other 20% of the SMEs are found between the Modern Era and TQM. This indicates the management styles and organisational culture of the 80% have the characteristics of traditional management. The further a company is located from the Modern Era, the more it displays the Human Relations management style with its emphasis on the social environment with little of the Modern Era emphasis on motivation and the achievement of esteem and self-realisation.

The 20% of companies between the Modern Era and TQM have characteristics of both traditional management and TQM. The closer the company is found to TQM the more it has of TQM culture. The company closest to TQM is the Japanese company. This can be explained by the fact that Japanese companies have been practising TQC, the equivalent of TQM, for much longer than British companies. This supports the validity of Cladistics as a classification system for the evolution of management styles and confirms that Hypothesis 3 is correct.



**Summary**

This thesis fulfils the TQM Pillar of Customer Focus by accurately ascertaining the needs of manufacturing SMEs in South Yorkshire and going on to meet these needs.

The initial research conducted with Sheffield SMEs revealed that they were inward looking with regard to quality improvement initiatives. Although they obtained BS5750 certification it was not through their own conviction but to satisfy the customer. The ability to satisfy one's customer is vital for the success of the company but by the same token, the company must realise that quality improvement initiatives are for their own benefit. The world today is a much smaller place and the competition for business is no longer local but international. The ability to produce high quality products at the lowest cost is what is needed to compete and to win the customer.

The characteristics of SMEs were researched and based on the findings the 5 Pillars of TQM were developed to meet the needs of SMEs. These 5 Pillars of Management Commitment, Customer Focus, Quality Costs, Quality Systems and Continuous Improvement are the key areas that SMEs need to focus their attention in order to successfully implement TQM. The commercially produced TQM packages are not suitable for SMEs.

The results of the TQM survey questionnaire developed based on the 5 Pillars and conducted by the author supports that Hypothesis 1 is correct as SMEs do not understand the definitions or implications of TQM. They have perceptions of what TQM is but have not made the attempt to unravel it. The blame cannot be attributed solely to the management teams from SMEs as they do not have the luxury of time and the same level of resources as management from large companies.

The results of the TQM survey also highlighted the urgent need for customer and employee surveys. These were developed by the author to enable the companies to conduct formal surveys with their customers and employees to obtain feedback of actual requirements, satisfactions and dissatisfactions with the company.

The Uncle Concept was the basis for the development of a cost effective TQM Framework that encompasses the customer and employee surveys, facilitator and employee training. The Uncle Concept is a novel approach to helping SMEs in their

implementation of TQM. The application of the framework in six South Yorkshire companies supports Hypothesis 2 to be incorrect. SMEs could not be encouraged to implement TQM using a framework of training and mentoring (Uncle Concept). The problem lay not with the Uncle Concept and Framework but with the commitment of management. In all six companies that participated in this study, management was the reason the initiative ground to a halt. Management simply wanted to cherry-pick and was not prepared to implement the whole framework. They were not prepared to empower their employees to work for the common good of the company. Their resistance is also borne out of a sense of complacency. Feeling that the company has survived so far, they see no justifiable cause to make any changes. Hence, although the framework was presented to them and all efforts made to assist the company, it was the proverbial 'you can bring the horse to water but you cannot make it drink'.

The development of this framework has opened a new dimension for SMEs that was previously enjoyed mainly by large companies. The framework and approach used is concise and cost effective and allows the company to customise and conduct its own initiative without the need for consultants, which was the reason cited by many in management for not considering TQM.

An integral part of this approach to TQM is Hypothesis 3, which seeks to benchmark management styles and the relative position of a company en route to TQM using the evolutionary classification system Cladistics. When used as a benchmarking tool to monitor a company's progress to TQM, it is vital that the benchmarking tool is a 'live' system it will clearly indicate the level of progress. This use of cladistics and the cladogram as a benchmarking tool is a novel concept. When used with the management style questionnaire it will show how far management and the company have progressed and what remains to be achieved. It is quickly and easily performed and monitored and is cost effective, which is what SMEs need. The management styles considered spanned from the pre-industrial revolution period to TQM.

The benchmarking of management styles and the relative position of a company en route to TQM using Cladistics is an integral part of the TQM Framework and is to be conducted concurrently with the TQM survey. In this thesis, Hypothesis 3 was conducted after the implementation of the TQM Framework because it was developed to address the cause of the failure of the TQM implementation in all six SMEs. The



six companies faltered along the route to TQM because senior management was not committed to the initiative. It is intended that the result of the management style survey and the position of the company along the evolutionary process of management in the cladogram will make management realise exactly where they stand and thus be the motivating factor needed to secure management commitment.

The results of the thesis indicate that management responds only to customer demands. For example, they obtained ISO9000 certification because increasingly customers were demanding it as a prerequisite for their suppliers. Customer driven focus is positive as it fulfils the TQM requirement of delighting the customer and is one of the 5 Pillars of TQM. However, unless the company changes its organisational culture and management style to that of TQM, it will soon be unable to meet the customer's ever increasing demands. This reactive attitude of management must give way to one that is proactive. Management must strive to keep the company one step ahead of customer requirements. This however can only fully be attained through the TQM philosophy of employee empowerment.

### **Recommendations for Further Work**

The possible directions for further research in TQM is predicated on the future market environment. Plunkett and Attner (1992) predicted that "the factory of the future is not a place where computers, robots and flexible machines do the drudge work. That is the factory of the present. The next generation of factories will place production workers and plant managers in partnership with customers. It will be able to respond to a comprehensive range of customer needs". Such a market environment will mean a greater focus of the customer and therefore greater emphasis on TQM.

The following is a list of recommendations for further research:

- SMEs will have a greater need for TQM. The TQM Framework of training and mentoring (Uncle Concept) can be improved to eliminate cherry picking.
- A study is required to define measurements and surveys on internal customer satisfaction.
- A study is required to examine the relationship between employee satisfaction and customer satisfaction.
- Further research is required to develop the use of Cladistics to benchmark SMEs in a variety of areas.

---

**References**

---

Ackoff, R. L. and Rivett, P., (1963) *A Manager's Guide to Operations Research*, John Wiley & Sons, New York.

Aldag, R. J. and Stearns, T. M., (1991) *Management*, Amazon, p. 35.

Archer, S. H., (1964) The Structure of Management Decision Theory, *Academy of Management Journal*, Vol. 7, December 1964, pp. 269-287.

Argyris, C., (1957) *Personality & Organisation: The Conflict between System and the Individual*, Harper & Row, New York.

Ashton, C., (1993) Investing in People, *The TQM Magazine*, Vol. 5, Issue 3, pp. 51-54.

Askey J. M. and Dale, B. G., (1994), From ISO9000 Series Registration to Total Quality Management: An Examination, *Quality Management Journal*, July, pp. 67-76.

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

Babbage, C., (1832), *On the Economy of Machinery and Manufactures*, Charles Knight, 1832, London. Reprinted by Kelly, Augustus M., 1963, New York.

Barnard, C. I., (1938) *The Functions of the Executive*, Harvard University Press, Cambridge, Massachusetts.

Bavad, M., (1996) Total Quality Management, *International Encyclopaedia of Business and Management*, Vol. 5, Routledge, London.

Bell, D., (1973) *The Coming of Post-Industrial Society: A Venture in Social Forecasting*, Basic Books, New York.



Berke, E., (1994) Customer Focus, *Harvard Business Review*, September-October, p186.

Binney, G. (1992) *Making Quality Work – Lessons from Europe’s Leading Companies*, Economist Intelligence Unit, London.

Bolton Report, (1971) *Small Firms, Report of the Committee of Inquiry on Small Firms*, HSMO, London.

Bradley, M., (1994) Starting Total Quality Management from ISO9000, *The TQM Magazine*, Vol. 6, Issue 1, pp. 50-54.

Brown, M. G., (1993) Why Does TQ Fail in Two out of Three Tries, *Journal for Quality and Participation*, Vol. 16, No. 2, March, pp. 80-89.

BS 4778: Part 1, (1991) *Quality Vocabulary*, British Standards Institution, London.

BS 4778: Part 2, (1991) *Quality Concepts and Related Definitions*, British Standards Institution, London.

BS6143, (1992) *Guide to Economics of Quality*, British Standards Institution, London.

BS6143: Part 1, (1992) *Process Control Model*, British Standards Institution, London.

BS6143: Part 2, (1992) *Prevention, Appraisal and Failure Model*, British Standards Institution, London.

BS7850: Part 1, (1992) *Total Quality Management: Guide to Management Principles*, British Standards Institution, London.

BS7850: Part 2, (1992) *Total Quality Management: Guide to Quality Improvement Methods*, British Standards Institution, London.

- Bunney, H. S. and Dale, B. G., (1996) The Effect of Organisational Structure on Sustaining a Process of Continuous Improvement, *Quality Engineering*, 8(4), pp. 649-657.
- Burgess, R. G., (1984) *In the Field: An Introduction to Field Research*, Allen & Unwin, London.
- Buzzel, R. D. and Gale B. T., (1987) *The PIMS Principles*, Free Press.
- Chandra, M., (1993) Total Quality Management in Management Development, *Journal of Management Development*, Vol.12, No.7, pp. 19-31.
- Chua, M. H., (2000) If the Ice Kacang Man can do it, You can too, *The Straits Times*, 5 April, Singapore.
- Churchman, C. W., Ackoff, R. L. and Arnoff, E. L., (1957) *Introduction to Operations Research*, John Wiley & Sons, New York.
- Clarke, P., (1972) *Small Businesses – How They Survive and Succeed*, Newton Abbot: David & Charles.
- Claude, S. G., (1968) *The History of Management Thought*, Englewood Cliffs, N.J., Prentice Hall.
- Cole, R. E., (1995) *The Death and Life of the American Quality Movement*, Oxford University Press, p. 117.
- Conti, T., (1991) Company Quality Assessments, *The TQM Magazine*, Vol. 3, Issue 3, pp. 167-172.
- Conti, T., (1994) Quality Awards in Europe, *The International Congress on Quality*, Singapore, pp. 39-43.
- Cook, D. and Baxter, T., (1991) Maintaining Momentum, *The TQM Magazine*, Vol. 3, Issue 3, pp. 149-151.



- Copley, F. B., (1923) *Frederick W Taylor: Father of Scientific Management*, Harper & Row, New York.
- Coulson-Thomas, C. J., (1992) Surveying the Scene, *The TQM Magazine*, Vol. 4, Issue 1, pp. 25-31.
- Creelman, J., (1992) Improving the Quality of Life, *The TQM Magazine*, Vol. 4, Issue 2, pp. 81-83.
- Crofton, C. G. and Dale, B. G., (1996) The Difficulties Encountered in the Introduction of Total Quality Management: A Case Study Examination, *Quality Engineering*, 8(3), pp. 433-439.
- Crosby, P. B., (1980) *Quality is Free*, Mentor Books, New York, pp. 15.
- Crosby, P. B., (1984) *Quality Without Tears*, McGraw-Hill.
- Cullen, J. M., (1991) Conditions for Success, *The TQM Magazine*, Vol. 3, Issue 3, pp. 153-156.
- Curran, J. and Blackburn, R. A., (1992) *Small Firms and Local Economic Networks: Relations Between Small and Large Firms in Two Localities*, Kingston-upon-Thames, Small Business Research Centre, Kingston University.
- Daiute, R. J., (1964) *Scientific Management and Human Relations*, Holt, Rinehart and Winston Inc., New York.
- Dale, B. G., (1991) Quality Costing: Some Issues and Queries, *2<sup>nd</sup> European Conference on Education, Training and Research in TQM*, 17-18 April, Oxford.
- Dale, B. G., (1992) Total Quality Management: What are the Research Challenges, *Crossing Borders in Manufacturing and Science*, edited by R. H. Hollier, R. J. Boaden and S. J. New, pp. 369-378.

Dale, B. G., (1994) Quality Costing, *Managing Quality*, 2<sup>nd</sup> edition, Dale, B. G. (ed.), Prentice Hall, UK, pp. 209, 223.

Dale, B. G., (1996) Sustaining a Process of Continuous Improvement: Definition and Key Factors, *The TQM Magazine*, Vol. 8, Issue 2, pp. 49-51.

Dale, B. G. and Allan, D. G., (1993) Japan- Myth or Miracle? *The TQM Magazine*, Vol. 5, Issue 3, pp. 55-60.

Dale, B. G. and Boaden, R. J., (1994a) A Generic Framework for Managing Quality Improvement, *Managing Quality*, 2<sup>nd</sup> edition, Dale, B. G. (ed.), Prentice Hall, UK.

Dale, B. G. and Boaden, R. J., (1994b) The Use of Teams in Quality Improvement, *Managing Quality*, 2<sup>nd</sup> edition, Dale, B. G. (ed.), Prentice Hall, UK, p. 514.

Dale, B. G., Boaden, R. J. and Lascelles, D. M., (1994) Total Quality Management: An Overview, *Managing Quality*, 2<sup>nd</sup> edition, Dale, B. G. (ed.), Prentice Hall, UK, pp. 128-129.

Dale, B. G., Boaden, R. J., Wilcox, M. and McQuater, R. E., (1997) Sustaining Total Quality Management: What are the Key Issues, *The TQM Magazine*, Vol. 9, Issue 5, pp. 372-380.

Dale, B. G. and Cooper, C., (1992) *Total Quality and Human Resources: An Executive Guide*, Blackwell, Oxford, p. 20.

Dale, B. G., Lascelles, D. M. and Boaden, R. J., (1994) Levels of Total Quality Management Adoption, *Managing Quality*, 2<sup>nd</sup> edition, Dale, B. G. (ed.), Prentice Hall, UK, p. 126.

Dale, B. G., Lascelles D. M. and Plunkett J. J., (1990) The Process of Total Quality Management, *Managing Quality*, Dale, B.G. and Plunkett, J. J. (eds.), Prentice Hall, UK.



Dale, B. G. and McTeer, M. M., (1994) Are the ISO9000 Series of Quality Management System Standards of Value to Small Companies, *European Journal of Purchasing and Supply Management*, Vol.1, No.4, pp. 227-235.

Dale, B. G. and Plunkett, J. J. (1990), *Managing Quality*, 1<sup>st</sup> edition, Prentice Hall, UK, p. 346.

Dale, B. G. and Prapopoulos, M. (1995) The Introduction of a Quality Improvement Process in Small Companies: An Examination in Trafford Park, *QW TS*, September, pp. 80-88.

Dale, B. G., Van der Wiele, T., Timmers, J. G., Williams, A. R. T. and Bertsch, B., (1992) Communal Education, *The TQM Magazine*, Vol. 4, Issue 2, pp. 77-80.

Davis, K., (1957) *Human Relations in Business*, McGraw-Hill Book Company, New York, p. 4.

Davies, P., (1991) What Does the Future Hold? *The TQM Magazine*, Vol. 3, Issue 3, pp. 141-143.

Dean, J. W. and Bowen, D. E., (1994) Management Theory and Total Quality: Improving Research and Practice Through Theory Development, *Academy of Management Review*, 19(3), pp. 392-418.

Deane, P., (1965) *The First Industrial Revolution*, Cambridge University Press, London.

Deming, W. E., (1951) *Dr. Deming's Diary – My Third Trip to Japan*, p. 18.

Deming, W. E., (1986) *Out of the Crisis*, Massachusetts Institute of Technology, Cambridge, Massachusetts, USA.

Development (1993), *TQM: Forging Ahead or Falling Behind?* Development Dimensions International and Quality and Productivity Management Association, Industry Week, April.

- DiPietro, R. A., (1993) TQM: Evolution, Scope and Strategic Significance for Management Development, *Journal of Management Development*, Vol. 12, No. 7, pp. 11-18.
- Donnelly, J. H., Gibson, J. L. and Ivancevich, J. M., (1971) *Fundamentals of Management*, Business Publications Inc., Austin, Texas.
- Doody, A. F. and Bingaman, R., (1988) *Reinventing the Wheel: Ford's Spectacular Comeback*, Ballinger Publishing Co., Cambridge, Massachusetts.
- Drucker, P. F., (1955) *The Practice of Management*, William Heinemann.
- DTI Managing in the '90s , *The Competitive Response*, Department of Trade and Industry, London.
- DTI, (1992) *BS5750/ISO9000:1987 A Positive Contribution to Better Business*, Department of Trade and Industry, London.
- DTI, (1996) *Small Firms in Britain Report 1996*, Department of Trade and Industry, London.
- EFQM, (1993) *Total Quality Management: The European Model for Self-Appraisal*, *The European Foundation for Quality Management*, Netherlands.
- EFQM News, (1992) 3<sup>rd</sup> European Quality Conference on Education, Training and Research, 9-10 April, Rome, *The TQM Magazine*, Vol. 4, Issue 3, pp. 137-138.
- Egan, J., (1984) Quality – The Jaguar Obsession, *Proceedings of the World Quality Congress*, Vol. 3.
- ESRC (1990) *Work Place Industrial Relations Survey*, Economic and Social Research Council, Swindon.



Farquhar, H. H., (1924) *Positive Contributions of Scientific Management*, Scientific Management since Taylor, Hunter, E. E. (ed.), McGraw-Hill Book Company, New York.

Fayol, H., (1949) *General and Industrial Management*, Paris 1916. Translated by Storrs, C., Pitman, London.

Feigenbaum, A. V., (1991) *Total Quality Control*, McGraw-Hill, New York.

Filley, A. C. and House, R. J., (1969) *Managerial Process and Organizational Behaviour*, Scott, Foresman and Company, Glenview Illinois.

Finn, M. and Porter, L. J., (1994) TQM Self-Assessment in UK, *The TQM Magazine*, Vol. 6, Issue 4, pp. 56-61.

Fisher, E., (1994) Total Quality: Hit or Myth? *Accountancy*, April, pp. 50-51.

Flood, R. L., (1993) *Beyond TQM*, Jordan Wiley & Sons, pp. 42, 106-111, 150.

Follett, M. P., (1918) *The New State: Group Organisation the Solution of Popular Government*, Longmans, Green & Co., London.

Follett, M. P., (1924) *Creative Experience*, Longmans, Green & Co., London.

Fry, B. R. and Thomas, L. L., (1996) Mary Parker-Follett: Assessing the Contribution and Impact of her Writings, *Journal of Management History*, Vol. 2, No. 2, pp. 11-19.

Gallup, (1989) *Quality: Executive Priority or After Thought?*, American Society for Quality Control, Milwaukee.

Gantt, H. L., (1911) *The Five Steps to the Best Way: How Scientific Management is Applied*, System Co., New York, p. 26.

Gantt, H. L., (1916) *Work, Wages and Profits*, 2<sup>nd</sup> edition, New York: Engineering Magazine Company.

- Garvin, D. A., (1991) How the Baldrige Award Really Works, *Harvard Business Review*, November-December, Vol. 69, No. 6, pp. 80-95.
- Ghobadian, A. and Speller, S., (1994) Gurus of Quality: A Framework for Comparison, *Total Quality Management*, Vol. 5, No. 3, pp. 53-69.
- Gilbreth, F. B. and L. M., (1916) *Fatigue Study*, Sturgis and Walton Company, New York.
- Gilbreth, L. M., (1914) *The Psychology of Management: The Functions of the Mind in Determining, Teaching and Installing Methods of Least Waste*, Sturgis and Walton Co., New York.
- Gilbreth, L. M., (1924) *The Quest for the One Best Way*, Society of Industrial Engineers, Chicago.
- Glover, J., (1993) Achieving the Organisational Change Necessary for Successful TQM, *International Journal for Quality and Reliability Management*, Vol. 10, No. 6, pp. 47-64.
- Graham, P., (1995) *Mary Parker-Follett – Prophet of Management: A Celebration of Writings from the 1920s*, Harvard Business School Press, Boston MA, p. vii.
- Gulick, L. and Urwick, L. (eds.), (1937) *Papers on the Science of Administration*, Institute of Public Administration, Columbia University, Institute of Public Administration, New York.
- Hakes, C. (1991) *Total Quality Management*, Chapman & Hall, London.
- Hand, M., (1993) Freeing the Victims, *The TQM Magazine*, Vol. 5, Issue 3, pp. 11-14.
- Harris, D., (1993a) *Firms Strive to Measure Up*, The Times, UK, 28 October.
- Harris, D., (1993b) *Efficiency under the Microscope*, The Times, UK, 28 October.



- Haynes, W. W. and Massie, J. L., (1969) *Management: Analysis, Concepts and Cases*, Prentice Hall, New Jersey.
- Hennig, W., (1950) *Grundzuge Einer Theorie Der Phylogenetischen Systematik*, Berlin: Deutsche, Zentralverlag.
- Herzberg, F., (1968) *Work and the Nature of Man*, Staples Press, London, pp. 80, 189.
- Herzberg, F., Mausner, B. and Snyderman, B. B., (1959) *The Motivation to Work*, John Wiley & Sons, USA.
- Hewitt, S., (1997) Business Excellence: Does It Work for Small Companies? *The TQM Magazine*, Vol. 9, Issue 1, pp. 76-82.
- Hill, S., (1991) How Do You Manage a Flexible Firm: The Total Quality Model, *Work, Employment and Society*, Vol. 5, Issue 3, pp. 397-415.
- Holliday, R., (1994) *Double Standards: BS5750 and Quality Management in Two Small Companies*, Quality Workshop at Kingston Business School, Kingston University, February.
- Hollins, B., (1995) TQM – Learning from Mistakes and Getting It Right Second Time, *The TQM Magazine*, Vol. 7, Issue 4, pp. 18-22.
- HMSO, (1992) *Small Firms in Great Britain*, Department of Employment, London.
- HMSO, (1994) *Government White Paper, Competitiveness 1994*, HMSO, London.
- Huxtable, N., (1995) *Small Business Total Quality*, Chapman & Hall, London, pp. 41-43, 47, 50, 57, 167.
- Hyvarinen, L., (1990) Innovativeness and Its Indicators in Small and Medium Sized Industrial Enterprises, *International Small Business Journal*, Vol. 9, No. 1, October-December, pp. 64-79.

Ishikawa, K., (1985) *What is Total Quality Control? The Japanese Way*, Translated by Lu, D. J., Prentice Hall, Englewood Cliffs, N. J., p. 45.

Jennings, P. and Beaver, G. (1997) The Performance and Competitive Advantage of Small Firms: A Management Perspective, *International Small Business Journal*, Vol. 15, No. 2, January-March, pp. 63-75.

Johnson, R. A., Kast, F. E. and Rosenzweig, J. E., (1963) *The Theory and Management of Systems*, McGraw-Hill Book Co., New York.

Joyce, P., Woods, A., McNulty T. and Corrigan, P., (1990) Barriers to Change in Small Businesses: Some Cases from an Inner City Area, *International Small Business Journal*, Vol. 8, No. 4, July-September, pp. 49-58.

Juran, J. M., (1988) *The Quality Function: Juran's Quality Control Handbook*, 4<sup>th</sup> edition, pp. 2.7, 2.8.

Kanji, G. K. and Asher, M., (1993) *100 Methods for Total Quality Management*, Sage Publications, London.

Kast, F. E. and Rosenzweig, J. E., (1973) *Contingency Views of Organisation and Management*, Science Research Associates, Henley-on-Thames, Chicago.

Kearney, A. T., (1992) *Total Quality: Time to take Off the Rose-Tinted Spectacles*, A Report, Kempston: IFS Publications.

Kerlinger, F. N., (1964) *Foundations of Behavioural Research*, Holt, Rinehart and Winston Inc., New York.

Kondo, Y., (1994) Quality and Human Motivation – Indispensable Managerial Element in the 21<sup>st</sup> Century, *International Congress on Quality*, Singapore, pp. 55-59.

Koontz, H. and O'Donnell, C., (1955) *Principles of Management: An Analysis of Managerial Functions*, McGraw-Hill, New York.



Kumar, K. and Brittain, J. C., (1995) Cost of Quality: Evaluating the Health of British Manufacturing Industry, *The TQM Magazine*, Vol. 7, No. 5, pp. 50-57.

Lascelles, D. M. and Dale, B. G., (1989) The National Quality Campaign: A Study of its Impact on Industries, *Proceedings of the Institution of Mechanical Engineers*, 203(B1), pp. 201-209.

Lascelles, D. M. and Dale, B. G., (1994) Difficulties and Barriers to Quality Improvement, *Managing Quality*, 2<sup>nd</sup> edition, Dale, B. G. (ed.), Prentice Hall, UK, pp. 24, 316-318.

Lee, G. L. and Oakes, I., (1995) The 'Pros' and 'Cons' of Total Quality Management for Smaller Firms in Manufacturing: Some Experiences Down the Supply Chain, *Total Quality Management*, Vol. 6, No. 4, pp. 413-426.

Lee-Mortimer, A. and Casbourne, B., (1991) A Quest for Quality, *The TQM Magazine*, Vol. 3, Issue 3, pp. 179-182.

Lewis, J. S., (1896) *The Commercial Organisation of Factories*, London.

Lillrank, P. and Kano, N., (1989) *Continuous Improvement: Quality Control Circles in Japan Industry*, Ann Arbor, MI: Centre for Japanese Studies, University of Michigan.

Little, A. D., (1992) *Best Practices Report 1992*, Ernst and Young and the American Quality Foundation, March 24.

Long, A.A., Dale, B. G. and Younger, A., (1991) A Study of BS5750 Aspirations in Small Companies, *Quality and Reliability Engineering International*, 7(1), pp. 27-33.

Longenecker, J. G. and Pringle, C. D., (1978) The Illusion of Contingency Theory as a General Theory, *Academy of Management Review*, Vol. 3, No. 3, July, pp. 679-682.

Luthans, F. and Stewart, T. I., (1977) A General Contingency Theory of Management, *Academy of Management Review*, Vol. 2, No. 2, April, p. 181.

MacDonald, J. (1992) Reasons for Failure, *The TQM Magazine*, Vol. 4, Issue 4, pp. 237-240.

MacDonald, J., (1994) *TQM: Does it Always Work*, Stanley Thornes, Cheltenham, pp. 5, 41.

Maddison, W. P. and Maddison, D. R., (1992) *MacClade version 3: Analysis of Phylogeny and Character Evolution*, Sinauer Associates Inc., Massachusetts, USA.

Main, J., (1994) *Quality Wars. The Triumphs and Defeats of American Business*, A Juran Institute Report, The Free Press, New York, p. 10.

Majerczyk, R. J. and DeRosa, D. A., (1994) ISO9000 Standards: The Building Blocks for TQM, *American Society for Quality Control 48<sup>th</sup> Annual Quality Congress Proceedings*, pp. 642-650.

Mann, R. and Kefoe, D., (1994) An Evaluation of the Effects of Quality Improvement Activities on Business Improvement, *International Journal of Quality and Reliability Management*, Vol.11, No.4, pp. 29-44.

Martin, T., (1991) To Succeed Worldwide, Ask Your Employees How, F. Caropreso (ed.), *Managing Globally, Key Perspectives*; The Conference Board, New York, p. 13.

Maslow, A. H., (1943) A Theory of Human Motivation, *Psychological Review*, Vol. 50.

Maslow, A. H., (1954) *Motivation and Personality*, Harper & Brothers, New York, p. 92.

Mayo, E., (1933) *The Human Problems of an Industrial Civilization*, Macmillan Co., New York, pp.71, 73, 78.

McCarthy, I. P., Leseure, M. J., Ridgway, K and Fieller, N (1997) Building a Manufacturing Cladogram, *International Journal of Technology Management*, 13(3), pp. 269-286.



- McGregor, D., (1954) On Leadership, Antioch Notes, May 1954. Cited by Warren G. Bennis, Revisionist Theory of Leadership, *Harvard Business Review*, Vol. 39, No.1, 1961, p.34.
- McGregor, D., (1960) *The Human Side of Enterprise*, McGraw-Hill, New York, pp. 33, 47.
- McQuater, R. E., (1995) *TQM Integration and Development: UMIST Quality Management Techniques and Tools Assessment Methodology User Guide*, Quality Management Centre, UMIST, Version 1, 5 July, p. 11.
- McQuater, R. E., Dale, B. G., Boaden, R. J. and Wilcox, M., (1996) The Effectiveness of Quality Management Tools and Techniques: An Examination of the Key Influences in Five Plants, *Proceedings of the Institution of Mechanical Engineers Part 3: Journal of Engineering Manufacture*, Vol. 210, pp. 329-339.
- Metcalf, H. C. and Urwick, L., (1940) *Dynamic Administration: The Collected Papers of Mary Parker Follett*, Urwick, L. (ed.), Harper & Row, New York, p. 33.
- Miller, R. L. and Cangemi, J. P., (1993) Why Total Quality Management Fails: Perspective of Top Management, *Journal of Management Development*, Vol. 12, No. 7, pp. 40-50.
- Montgomery, J. M., (1840) *The Cotton Manufacture in the United States of America Contrasted and Compared with that of Great Britain*, John N. Van, London.
- Mooney, J. D., (1939) *The Principles of Organisation*, Harper and Brothers, London.
- Mooney, J. D., (1947) *The Principles of Organisation*, revised edition, Harper & Row, New York, p. 34.
- Mooney, J. D. and Reiley, A. C., (1931) *Onward Industry: The Principles of Organisation and their Significance to Modern Industry*, Harper & Row, New York, p. xiii.

- Mortiboys, R. and Oakland, J., (1993) *DTI Enterprise Initiative, Managing in the '90s – Total Quality Management and Effective Leadership*, pp.23, 39.
- Nagpal, B., Twamley, C. and Vallis, M., (1989) *Towards Total Quality Management, Proceedings of the 2<sup>nd</sup> Conference Total Quality Management*, June, pp.47-59.
- National Institute of Standards and Technology, (1991) *Malcolm Baldrige National Quality Award*, Gaithersburg, Md.
- Newall, D. and Dale, B. G., (1991) The Introduction and Development of a Quality Improvement Process: A Study, *International Journal of Production Research*, Vol. 29, No. 9, pp. 1747-1760.
- North, J., Curran, J. and Blackburn, R. A., (1993) *Quality Standards and Small Firms: A Position Paper*, Small Business Research Centre, Kingston University, September.
- Oakley, R., (1995) *High Technology New Firms: Variable Barriers to Growth*, Chapman, London.
- Oakland, J. S., (1989a), TQM – The New Way to Manage, *Proceedings of the 2<sup>nd</sup> International Conference on Total Quality Management*, 14-15 June 1989, London, pp. 3-17.
- Oakland, J. S., (1989b) *Total Quality Management*, Butterworth-Heinemann, Oxford.
- Oakland, J. S., (1993) *Total Quality Management: The Route to Improving Performance*, 2<sup>nd</sup> edition, Butterworth-Heinemann, London, p. 3.
- Oakland, J. S. and Waterworth, R. D., (1995) Total Quality Management Training: A Review and Suggested Framework, *Total Quality Management*, Vol. 6, No. 4, pp. 299-316.
- Oliver, N., (1990) Employee Commitment and Total Quality Control, *International Journal of Quality and Reliability Management* 7(1).



O'Neil, H. M. and Duker, J., (1986) Survival and Failure in Small Firms, *Journal of Small Business Management*, Vol. 24, No. 1, pp. 30-37.

Owen, R., (1857) *The Life of Robert Owen*, Effingham, 1857, London. Reissued by Kelly, A. M., 1967, Vols. 1 & 1A.

Pfeffer, J., (1994) *Competitive Advantage Through People*, New York, Free Press.

Pike, J. and Barnes, R. (1994) *TQM in Action: A Practical Approach to Continuous Performance Improvement*, Chapman & Hall, London.

Piore, M. J. and Sabel, C., (1984) *The Second Industrial Divide*, New York, Basic Books.

Plunkett, W. R. and Attner, R. F., (1992) *Introduction to Management*, PWS-Kent Publishing Company, Boston MA.

Pollard, H. R., (1974) *Developments in Management Thought*, William Heinemann Ltd., pp. 50, 258.

Pursglove, A. B. and Dale, B. G., (1995) Developing a Quality Costing System: Key Features and Outcomes, *International Journal of Management Science*, Vol. 23, No. 5, pp. 567-575.

QED, (1992), Downsizing and Upgrading: A Time for Middle-Sized Firms, *Quarterly Enterprise Digest*, September, p. 8.

Roethlisberger, F. J. and Dickson, W. J., (1939) *Management and the Worker*, Harvard University Press, Cambridge, Massachusetts, pp. 17, 65.

Roper, S., Hewitt-Dundas, N. and McFerran, B., (1997) Disparities in Quality Perceptions Between Small Firms and Their Customers, *International Small Business Journal*, Vol. 15, No. 4, July-September, pp. 64-79.

- Roy, S. (1991) Getting the Message Across, *The TQM Magazine*, Vol. 3, Issue 5, pp. 275-277.
- Scott, M., Roberts, I., Holyroyd, G. and Sawbridge, D. (1989) *Management and Industrial Relations in Small Firms*, UK Employment Dept. Research Paper No. 70.
- Scrimshaw, D. and Wooton, R., (1995) *The Route to World Class Service*, Total Quality Management, Proceedings of the First World Congress, Sheffield Hallam University, edited by Kanji, G. K., Chapman & Hall, p. 550.
- Shook, R. L., (1990) *Turnaround: The New Ford Motor Company*, Prentice Hall, New York.
- Simpson, G. G., (1961) *Principles of Animal Taxonomy*, Columbia University Press, New York.
- Sirota, D., Usilaner, B and Weber, M. S., (1994) Breaking Through the Culture Wall, *Journal for Quality and Participation*, March, pp. 74-83.
- Smyth, C., (1991) Putting the 'M' in TQM, *The TQM Magazine*, Vol. 3, Issue 6, pp. 347-350.
- Stanworth J. and Gray C. [1991] *Bolton 20 Years On: The Small Firm in the 1990s*, Chapman, London.
- Storey, D. J., (1987) *The Performance of Small Firms: Profits, Jobs and Failures*, Croom-Helm, London.
- Taguchi, G., (1986) *Introduction to Quality Engineering: Designing Quality into Products and Processes*, Quality Resources.
- Taylor, F. W., (1903) *Shop Management*, Harper & Row, 1903, New York. Reissued as part of *Taylor, W. F. Scientific Management*, Harper & Row, 1947, New York.
- Taylor, F. W., (1911) *Taylor's Testimony before the Special House Committee*, p.29.



Taylor, F. W., (1912) *Hearings before Special Committee of the House of Representatives to Investigate the Taylor and Other Systems of Shop Management under the Authority of House Resolution 90*, Washington D.C., US Government Printing Office, p. 1387.

Tenner, A. R. and Toro, I. J. de, (1992) *Total Quality Management*, Addison-Wesley Publication.

Thomas, A. B., (1993) *Controversies in Management*, Routledge, London, p. 166.

Trefethen, F. N., (1954) A History of Operations Research, *Operations Research for Management*, McCloskey, Joseph F. and Trefethen, F. N. (eds.), John Hopkins Press, Baltimore.

Tuckman, A., (1994) The Yellow Brick Road: Total Quality Management and the Restructuring of Organisational Culture, *Organisation Studies*, 15:5, p. 740.

Tuckman, A., (1995) Ideology, Quality and TQM, *Making Quality Critical: New Perspectives on Organisational Change*, edited by Wilkinson, A. and Willmott, H., Routledge, London, pp. 59-74.

Tyrrell, R., (1991) Signalling Change, *The TQM Magazine*, Vol 3, Issue 5, pp. 289-291.

Urwick, L. F., (1938) *Scientific Principles of Organisation*, American Management Association, New York.

Urwick, L. F., (1944) *The Elements of Administration*, Harper & Brothers, New York.

Urwick, L. F., (1956) *The Golden Book of Management*, Newman Necime, London, pp. 220-224.

Urwick L. and Brech, E. F. L., (1959) *The Making of Scientific Management Volume 3*, Sir Issac Pitman & Sons, London, p. 9.

- Wagner, H. M., (1970) *Principles of Management Science*, Prentice Hall, Englewood Cliffs, N. J.
- Walker, J., (1994) *National Productivity Award Winners*, Singapore Business Times, 3 November.
- Walton, M., (1986) *The Deming Management Method*, Pedigree Books, New York, pp. 6-19.
- Walton, R. E., (1985) From Control to Commitment in the Workplace, *Harvard Business Review* 63, March/April, pp. 77-84.
- Weeks, B., Helms, M. M. and Etkin, L. P., (1995) Is Your Organisation Ready for TQM? An Assessment Methodology, *The TQM Magazine*, Vol. 7, Issue 5, pp. 43-49.
- Weber, M., (1947) *The Theory of Social and Economic Organisation*, edited and translated by Henderson, A. M. and Parsons, T., Free Press, New York.
- Wevill, A., (1992) Keeping the Concept Hot, *The TQM Magazine*, Vol. 4, Issue 4, pp. 241-243.
- Witcher, B., (1993) *The Adoption of Total Quality Management in Scotland*, Centre for Quality and Organisational Change, Durham University Business School, UK.
- Witcher, B. and Whyte, J., (1992) *The Adoption of Total Quality Management in Northern England*, Durham University Business School Occasional Paper Series, UK.
- Wiley, E., Siegel-Causey, D., Brooks, D. and Funk, V., (1991) *The Complete Cladist, A Primer of Phylogenetic Procedures*, Special Publication No. 19, The University of Kansas Museum of Natural History.
- Wiggans, T. and Turner, G., (1991) Breaking Down the Walls, *The TQM Magazine*, Vol. 3, Issue 3, pp. 183-186.



Wilkinson, A., (1994) *Managing Human Resources for Quality, Managing Quality*, 2<sup>nd</sup> edition, Dale, B. G. (ed.), Prentice Hall, UK.

Wilkinson, A., Redman, T., and Marchington, M., (1998) *Managing with Total Quality Management*, Macmillan Press, London, p. 188.

Wilkinson, A., Redman, T., and Snape, E., (1993) *Quality and the Manager*, Institute of Management, p. 20.

Williams, A., Dobson, P. and Walters, M., (1991) *Changing Culture*, Institute of Personnel Management, London.

Williams, M., (1993) *Attaining New Levels*, *The TQM Magazine*, Vol. 5, Issue 2, pp. 9-14.

Wilson, D. C. and Rosenfield, R. H., (1990) *Managing Organisation*, McGraw-Hill, London.

Witcher, B., (1993) *The Adoption of Total Quality Management in Scotland*, Centre for Quality and Organisational Change, Durham University Business School, Durham.

Witcher, B. and Whyte, J., (1992), *The Adoption of Total Quality Management in Northern England*, Durham University Business School, Durham.

Womack, J. P., Jones, D. T. and Roos, D. (1990) *The Machine that Changed the World*, Macmillan, New York.

Woodruff, R. B., Schumann, D. W. and Gardial, S. F., (1993) *Understanding Value and Satisfaction from the Customer's Point of View*, *Survey of Business*, 28 (Summer/Fall 1993), pp. 33-40.

Wren, D. A., (1979) *The Evolution of Management Thought*, John Wiley & Sons, New York.

## **APPENDIX A**

### **TQM Survey Questionnaire**



**Pillar 1: Commitment to Quality**

1.0 Management Responsibility	Rating Guidelines					Rating
	Highest 5	4	3	2	Lowest 1	
<b>1.1 Management Leadership</b> Are top management seen by all as actively promoting quality within the company?	Top management seen throughout company as actively taking part in quality improvements. Known within Industry to be quality advocates.	Top management viewed throughout company as actively taking part in quality improvement programs.	Top management merely talks about quality improvement but does not take an active role.	Top management does not communicate the need for quality with employees but expects employees to be quality conscious.	Top management only interested in cost cutting.	
<b>1.2 Policy</b> Is there is written statement of quality policy and is it integral to the company's policy?	Quality policy is clearly communicated to all employees and policy is adhered to and has contributed to enhanced company performance.	Company has good quality policy but it is communicated only to office-bearers.	Company has a quality policy, but its link to key business objectives is unclear. Policy is communicated to employees.	Company has a quality policy but its link to key business objectives is not clear. It is not communicated to employees. Quality policy is merely put on display in lobby.	Company has no quality policy.	

**Pillar 1: Commitment to Quality**

1.0 Management Responsibility (continued)	Rating Guidelines					Rating
	Highest 5	4	3	2	Lowest 1	
<p><b>1.3 Communication</b> Is there open communication between top management and all staff, especially with shop floor workers, about production problems?</p> <p>Does top management visit the shop floor on a regular basis to effectively communicate with workers about problems encountered?</p>	<p>Open communication top management and shop floor about production problems. Top management visits shop floor on regular basis. Management lets people know they are important to company. Top management knows about problems on shop floor.</p>	<p>Occasional communication between management and shop floor but not about problems encountered. Management maintains top-down hierarchy and this attitude is "communicated" to shop floor.</p>	<p>Top management occasionally visits shop floor but only for a quick walk-about. Does not effectively achieve anything from this.</p>	<p>Top management shows very little interest in shop floor operations. The running of the shop floor is left to the quality manager or quality inspector.</p>	<p>Top management does not visit shop floor at all. Top management has no contact with non-office bearers.</p>	
<b>Average Rating</b>						



**Pillar 1: Commitment to Quality**

**Note: Only Applies to Companies that are NOT BS5750 Certified.**

2.0 Documentation and Procedures	Rating Guidelines					Rating
	Highest 5	4	3	2	Lowest 1	
Is there up-dated documentation and procedures to:						
2.1. Ensure products and services meet specified requirements?	Always	Most of the time	Sometimes	Rarely	None	
2.2. Review company's contracts to ensure company is meeting contract requirements and specifications?	Always	Most of the time	Sometimes	Rarely	None	
2.3. Control and verify each product design and development requirement and activity?	Always	Most of the time	Sometimes	Rarely	None	
2.4. Control all data, documents and changes?	Always	Most of the time	Sometimes	Rarely	None	
2.5. Ensure traceability and identification of material/data/drawings etc. from customers and suppliers?	Always	Most of the time	Sometimes	Rarely	None	
2.6. Collect, index, store, and maintain quality records?	Always	Most of the time	Sometimes	Rarely	None	
2.7. Ensure non-conforming material is not stored or used or non-conforming products sent to customers/dealers?	Always	Most of the time	Sometimes	Rarely	None	
2.8. Investigate the cause(s) of non-conforming product(s)?	Always	Most of the time	Sometimes	Rarely	None	
<b>Average Rating</b>						

## **Pillar 1: Commitment to Quality**

### **3.0 Supplier Assessment:**

- How does the company select its suppliers?
- Does the company have a list of acceptable suppliers?
- How often is this list updated?
- Does the company conduct Formal Supplier Rating?
- How often is this done?
- Are suppliers made aware of the company's stand with regard to quality?
- If a supplier's product fails to meet requirements, what actions are taken?
- Does the company establish good relationships with its suppliers?
- Does the company work with its suppliers on a Partnership basis?
- Are goods-in checked for conformance to requirements?
- Are the company's purchasing documents clear?



## Pillar 1: Commitment to Quality

## 3.0 Supplier Assessment Rating

Highest 5	4	3	2	Lowest 1	Rating
Supplier Rating System in place and list of approved suppliers updated regularly. Company communicates its stand on quality with suppliers. Company has partnership with suppliers and works with suppliers on long term basis. Purchasing is based on total cost of ownership and conformance to specifications. Outstanding supplier management.	Informal supplier assessment method is used but list of approved suppliers is kept and updated. Company works closely with suppliers. Suppliers know company's position with regard to quality. Purchasing not always based on total cost of ownership and conformance to specifications. Generally, good supplier management.	No supplier rating performed and list of approved suppliers is not kept. Company does not forge close relationships with suppliers. Only limited reference to total cost of ownership and conformance to specifications. Limited supplier management.	Company works significantly on lowest price available. Quality is considered but a trade-off is not a problem. Negligible supplier management.	Purchases are based on lowest price with no verification of conformance to specifications. No supplier management.	

**Pillar 2: Customer Focus**

	Rating Guidelines					Rating
	Highest 5	4	3	2	Lowest 1	
<b>4.0. Customer Requirements and Expectations</b>						
<b>4.1. Determining Customer Requirements /Expectations</b> What is the key method used by the company to determine its Customers present and future requirements and expectations of the company?	Formal surveys are conducted on a regular basis. Standard survey forms are used.	Formal surveys not conducted but feedback is obtained from company's major contracts.	Feedback through information obtained via the Sales team.	Company only learns of customer requirements or expectations through customer complaints.	Company does not consider it necessary to determine this. Company is inward-looking.	
<b>4.2. Determining Customer Satisfaction</b> What is the key method used by the company to determine Customer Satisfaction with the company, and its products and services?	Company has standard survey forms issued to all customers. Company specially keeps in close contact with key customers.	Company only obtains feedback about satisfaction levels from key customers.	Customer satisfaction levels determined through the Sales team while on their follow-up visits.	Company relies on customer complaints or compliments for feedback.	Customer satisfaction or dissatisfaction is ignored.	



**Pillar 2: Customer Focus**

4.0. Customer Requirements and Expectations. (continued)	Rating Guidelines					Rating
	Highest 5	4	3	2	Lowest 1	
<p><b>4.3 Commitment to the Customer</b>                      How important is the customer to the company?                      Is the company fully committed to the customer?                      Does the company continually seek to win the confidence and loyalty of present and future customers?</p>	<p>Company acknowledges the customer as the most important factor to the company's continued existence, and company policies and actions support this. Company is fully committed to the customer. Promises are always honoured.</p>	<p>Company acknowledges that the customer is the most important factor but its actions do not support this. Management preaches this but does not lead by example. Company is committed to the customer. Promises are generally kept.</p>	<p>Company views customer as important to business, but not most important. Company is generally committed to the customer. Promises kept to a limit.</p>	<p>Company admits that it needs its customers but is not doing much to secure customer loyalty and confidence in the company and its products. Minimal customer commitment towards its customers.</p>	<p>Company is only concerned and interested in its own operations and processes and does not consider its customers. Company has no commitment towards its customers.</p>	
<b>Average Rating</b>						

**Pillar 2: Customer Focus**  
**5.0 Customer Satisfaction**

**5.1 Complaint Resolution**

- Are all customer complaints channelled to a particular department?
- Are all customer complaints documented?
- Are all corrective actions recorded?
- Is top management aware of the number of and nature of customer complaints?
- Are the statistics monitored to determine if they are increasing or decreasing?

Highest 5	4	3	2	Lowest 1	Rating
<p>Customer department takes charge of all complaints and maintains contact with the department in which the problem arose till a solution is reached.</p> <p>All complaints and corrective actions are fully documented. Trends are carefully monitored and have been steadily decreasing. Preventive measures are taken immediately to prevent recurrence.</p> <p>Top management receives weekly reports about all complaints. Excellent response to all complaints.</p>	<p>Customer department gives priority only to complaints from key customers. Complaints not documented and no records are kept of the nature of the complaint or of corrective actions taken.</p> <p>Trends kept are not accurate as they only reflect complaints from key customers. Only some preventive measures taken.</p> <p>Top management receives monthly reports on the number of complaints. Response time is generally good.</p>	<p>No customer department to take charge of complaints. Complaints are managed by whoever happens to receive the complaint, so complaints responded to individually.</p> <p>Response time depends on who gets the call. No documentation kept of complaints and no information available on the number of complaints, therefore no trends are kept.</p> <p>Management only receives statistics on complaints with the annual report.</p>	<p>Response to customer complaints are given minimum priority in the daily operations of the company. They will be tended to only when personnel have time to "spare" from their work. No records of any form are kept and management is only informed if a major contract has been lost or is threatened.</p>	<p>No action is taken on customer complaints.</p> <p>Company has no idea at all of the nature of complaints or number of complaints received.</p>	



**Pillar 2: Customer Focus**

5.0 Customer Satisfaction (continued)	Rating Guidelines					Rating
	Highest 5	4	3	2	Lowest 1	
<p><b>5.2 Determining Customer Satisfaction</b> Does the company monitor the levels of customer satisfaction? Are the trends then used to facilitate quality improvement programs?</p>	<p>Formal surveys are conducted regularly. Trends are closely monitored and communicated to all employees. Data obtained is used to achieve continuous quality improvement.</p>	<p>Informal surveys are conducted regularly and trends obtained are closely monitored and communicated. Data obtained has resulted in quality improvement.</p>	<p>Occasional feedback obtained through informal means. Company currently improving on this. Trends monitored on whatever data is available. Sporadic improvement opportunities.</p>	<p>Occasional customer feedback through informal means. Company is not doing anything to improve on this. No trends are monitored.</p>	<p>Customer feedback ignored.</p>	
<p><b>5.3 Customer Relationships</b> Does the company continuously look for means to improve customer relationships? Do all customer contact employees receive specialised training? Is training done through 'classroom methods' or through on-the-job training?</p>	<p>Top priority to continuously improving customer relationships. All customer contact employees have extensive formal training.</p>	<p>Company places importance on customer relationships. Customer contact employees receive generalised 'classroom' training.</p>	<p>Ad hoc search to improve customer relationships. Customer contact employees receive on-the-job training.</p>	<p>Customer contact employees receive minimal training. Company expends minimal efforts with regard to improving customer relationships.</p>	<p>Customer contact employees receive no instruction or training with regard to dealing with customers and are left to their own devices.</p>	
<b>Average Rating</b>						

**Pillar 3: Quality Costs**

6.0 Quality Costs	Rating Guidelines					Rating
	Highest 5	4	3	2	Lowest 1	
6.1. Cost of quality as a percentage of annual sales. (i.e., Cost of waste of materials, waste of manpower, waste from lost sales, customer's claims, guarantees or warranties, as a percentage of the total sales per fiscal year)	Less than or equal to 2%.	Greater than 2% but less than or equal to 4%.	Greater than 4% but less than or equal to 6%.	Greater than 6% but less than or equal to 8%.	Greater than 8%.	
6.2. Are costs of quality fully recorded, and are these costs well communicated to all employees?	Cost of quality records are kept and are detailed. Costs are well communicated to all employees.	Detailed cost of quality records are kept but these costs are not communicated to all employees.	Cost of quality is only partly recorded. However, these costs are communicated to all employees.	Cost of quality is only partially recorded, and is not communicated to all employees.	No cost of quality records are kept. Costs are not communicated.	
<b>Average Rating</b>						



**Pillar 4: Quality Systems**

	Rating Guidelines					Rating
	Highest 5	4	3	2	Lowest 1	
<p><b>7.0. BS5750/ISO9000</b></p> <p>Is a quality system in place? Is company BS5750/ISO9000 certified?</p>	<p>Quality system is in place and all lines have been BS5750/ISO9002 certified.</p>	<p>Quality improvement program is in place. Only some product lines have earned BS5750/ISO9000 certification.</p>	<p>Quality programs employed and company is in process of obtaining certification.</p>	<p>Company is planning to implement quality improvement programs and is planning to obtain certification.</p>	<p>No plans to implement a quality system and no plans for certification.</p>	

## Pillar 4: Quality Systems

8.0 Employee Quality Training & Awareness	Rating Guidelines					Rating
	Highest 5	4	3	2	Lowest 1	
8.1. What percentage of all company employees are trained in quality management or quality improvement activities? (i.e., Percentage of total number of employees trained as compared to total employed)	Greater than or equal to 80%.	Less than 80% but greater than or equal to 60%.	Less than 60% but greater than or equal to 40%.	Less than 40% but greater than or equal to 20%.	Less than 20%.	
8.2. Is there a training schedule for every employee? Is the training received recorded and are more advanced programs continually being planned for each employee? Is there a compulsory quality induction program?	Every employee has scheduled training and advancement programs. All employees are sent for regular improvement training programs. Compulsory induction program for all new staff pertaining to their job & in line with company policies.	Company has quality induction training programs for all employees relevant to their job. Training schedule in place and training received is recorded.	No formal induction program in place but new shopfloor employees receive relevant instructions from supervisors. Limited training planned. No formal training but company in process of improving this.	New employees receive instruction about how to do job. No formal training schedule but employees given instructions as needed.	New employees given initial job instructions, but are subsequently left to their own devices. No training programs planned and no plans to improve on this. Company feels that training is not needed, especially for shopfloor workers.	



**Pillar 4: Quality Systems**

8.0 Employee Quality Training & Awareness (continued)	Rating Guidelines					Rating
	Highest 5	4	3	2	Lowest 1	
8.3. Do employees actively contribute to quality improvement within the company? What is the level of quality awareness among employees?	All employees are fully aware of the need for continuous improvements and are continually on the look-out for ways to improve the quality and efficiency of their work. Significant contributions have been made and implemented with good results. Very high level of quality awareness among all employees.	Employees are generally aware of the need to continuously improve the quality of their work. Contributions made have led to significant improvements but not all employees are committed to quality improvement. Quality awareness present among most employees.	Employees occasionally contribute suggestions and methods of how their work processes etc. can be performed with greater efficiency, leading to quality improvement. Quality awareness present only some departments, depending on the commitment of the departmental head.	Employees have made suggestions to leading improving work processes, & efficiency. Company is now in the process of planning activities that will encourage employees to take a greater interest in helping their improve work and product quality.	Level of quality awareness is absent among employees as a result of the lack of encouragement by management in this aspect. Company has no plans to initiate moves to rectify this.	
<b>Average Rating</b>						

## Pillar 4: Quality Systems

9.0 Quality Assurance	Rating Guidelines					Rating
	Highest 5	4	3	2	Lowest 1	
<b>9.1 Process Control</b> i. Are statistical methods used to ensure processes are working within specifications? ii. For processes that cannot be checked using tests or inspections, is continuous monitoring achieved in accordance with documented procedures?	Good controls on all production processes.	Controls are in order.	Most controls are in order but work is underway for further improvement.	Limited control over processes.	No control over any production process.	
<b>9.2 Conformance Control</b> i. Is there a specific department or group that specialises in the review and disposition of non-conforming goods? ii. Are all processes, operations and incoming materials carefully monitored to enable the detection of potential non-conformance? iii. Is non-conformance investigated immediately and are corrective actions implemented immediately. Are these changes documented?	Always  Search for non-conformance is a continuous process.  Always	Almost always  Occasional search for non-conformance.  Almost always	Occasionally  Limited search for non-conformance.  Occasionally	Seldom  Search for non-conformance is disorganised.  Seldom	Never  No search for non-conformance.  Never	



**Pillar 4: Quality Systems**

9.0 Quality Assurance (continued)	Rating Guidelines					Rating
	Highest 5	4	3	2	Lowest 1	
<b>9.3. Inspection and Testing</b> i. Are in-coming materials checked for fitness-for-purpose before use? ii. Is there a standard procedure to ensure that non-conforming materials are not inadvertently used? iii. Is the test status of a product maintained throughout the production process? iv. Are all testings and inspections performed according to a standard quality procedure? v. Are all test equipment checked regularly for correctness and are they calibrated against national standards?	Excellent planning and implementation of inspection and test procedures.	Good planning and implementation of inspection and test procedures.	Planning of test and inspection procedures is good but the implementation of the process needs improvement.	Both the planning and implementation of test and inspection procedures need improvement.	Very limited test and inspection procedures maintained.	
<b>Average Rating</b>						

## Pillar 5: Increasing Growth and Productivity

10. Continuous Improvement	Rating Guidelines					Rating
	Highest 5	4	3	2	Lowest 1	
<b>10.1. Continuous Improvement Program</b> Is there a program to ensure continuous improvement in the quality of the company's products or services?	Very good program, and very effectively and efficiently employed.	Program in place and widely used.	Presently there is such a program but company is working on improving it.	Company is planning to implement a program to enable continuous improvement.	Company has no plans at all to embark on such a program.	
<b>10.2. Performance Trends</b> Does the company closely monitor its own performance trends, and does it conduct benchmarking?	Performance trends closely kept and monitored and continuously improving. Company compares itself with industry and benchmarks against the best in industry.	Performance trends are kept and monitored. Generally, trends indicate improvement. Company compares with industry and local competitors.	Performance is generally measured through informal methods. Trends felt to be improving. Company compares its performance only with that of its neighbouring competitors.	Performance trends are not kept but company feels its performance is improving. Company does not compare its performance with other companies. Company is inward-looking.	Company does not keep track of its performance. It has no data or information that enables comparisons with competitors.	



**Pillar 5: Increasing Growth and Productivity**

	Rating Guidelines					Rating
	Highest 5	4	3	2	Lowest 1	
<b>10. Continuous Improvement (continued)</b>						
<b>10.3. Opportunities for Improvement</b> Is the company actively seeking improvement opportunities throughout its operations and processes? Are work improvement teams working on these opportunities and have significant achievements and improvements been attained?	Teams have been very successful and excellent improvements have been made throughout the company.	Significant improvements have been achieved throughout the company.	Improvements only in certain areas. Work is underway to enable benefits to be companywide.	Although limited improvements have been made, there are no plans as yet to improve current level.	Company has no plans at all for any improvement opportunities.	
<b>10.4. Quality System Audits</b>						
i. Are regular internal and external quality audits conducted and documented?	Regular planned and internal audits. external audits.	Regular, planned internal audits only.	Occasional quality audits.	No quality audits at present, but planning to start.	No quality audits.	
ii. Are audit results communicated throughout the company?	Results are communicated to all employees.	Results communicated only to relevant departments.	Results communicated only to relevant personnel.	Results are known only to top management.	Results are not communicated at all.	
iii. Is immediate action taken to rectify any audit deficiencies?	Immediate action is taken to correct deficiencies.	Speed of action depends on the severity of the deficiency.	Generally, corrective actions implemented as soon as possible.	Corrective action is only employed if it is thought to be serious.	Corrective actions are not employed.	
<b>Average Rating</b>						

## **APPENDIX B**

### **Customer Survey Questionnaire**



## CUSTOMER SURVEY

Please take a few moments to rate the quality of our products and services and provide us with your comments by completing this questionnaire. Please circle the appropriate rating.

We thank you for helping us to improve the quality of our products and services.

Company Name: \_\_\_\_\_ .

Product Purchased: \_\_\_\_\_ .

<u>Section 1: Quality Management</u>	<b>Rating</b>			
	Very Good	Average	Needs Improvement	Not Acceptable
To what extent do the following meet your requirements:				
1. Quality and Delivery				
a. Quality of Product	4	3	2	1
b. Overall Quality of Service	4	3	2	1
c. Delivery , i.e., i) Time for Delivery	4	3	2	1
ii) Meeting Delivery Promises	4	3	2	1
2. Performance of Product				
a. Consistency	4	3	2	1
b. Durability	4	3	2	1
<u>Section 2: Customer Focus</u>				
1. Please rate the quality of service provided by us with regard to the following:				
a. Sales	4	3	2	1
b. Invoices are correct and timely	4	3	2	1
2a. How efficiently did we respond to your order?	4	3	2	1
2b. How efficiently did we respond to your enquiry?	4	3	2	1
3. How do you rate our company in terms of meeting customer satisfaction?	4	3	2	1



CUSTOMER SURVEY					
<u>Section 3: Quality Costs</u>		<b>Rating</b>			
How do we compare with other suppliers in the following:		Better	Same	Worse	Poor
a. Product Quality		4	3	2	1
b. Value for Money		4	3	2	1
c. Delivery , i.e., i) Time for Delivery		4	3	2	1
ii) Meeting Delivery Promises		4	3	2	1
		Very Good	Average	Needs Improvement	Not Acceptable
2. How does our product performance measure up to your requirements?		4	3	2	1
3. What is the estimated cost of our non-conformance as a percentage of your annual sales?		4	3	2	1
<u>Section 4: Quality Systems</u>		Very High	High	Low	Not Required
1. What emphasis do you place on your suppliers being certified to ISO9000?		4	3	2	1
2. Please rate the following regarding our performance:		Very Good	Average	Needs Improvement	Not Acceptable
a. Meeting specifications and requirements		4	3	2	1
b. Complaints resolved to your satisfaction		4	3	2	1
c. Technical support and assistance					
d. Quality awareness of our employees		4	3	2	1



CUSTOMER SURVEY					
<u>Section 5: Quality Improvements</u>		<b>Rating</b>			
		Very Well	Average	Needs Improvement	Not Acceptable
1. How well do we react to your needs in:					
a. Product		4	3	2	1
b. Service		4	3	2	1
2. How have we improved in the following since your last purchase:					
a. Product		4	3	2	1
b. Service		4	3	2	1
<u>Section 6: Others</u>					
1. What do you like MOST about our:					
a. Product					
b. Service and Delivery					
2. What do you like LEAST about our:					
a. Product					
b. Service and Delivery					



## CUSTOMER SURVEY

3. What IMPROVEMENTS would you like made to our:

a. Product

---



---

b. Service and Delivery

---



---

4. a. Would you like to purchase from us again?

b. Would you like to recommend us to others?

Yes	No

If 'NO', why not?

---



---

5. Other comments or suggestions

---



---



---



---

Would you like to be contacted to further discuss your comments?

Yes	No

If 'YES', please provide us with the following details:

Name: \_\_\_\_\_ Contact Number: \_\_\_\_\_

Designation: \_\_\_\_\_



## **APPENDIX C**

### **Customer Survey Report**

**Customer Survey Report  
for  
Company A**

**Part 1: Overview**

**Part 2: Summary of Survey Results**

**Part 3: Identified Strengths and Weaknesses**

**Part 4: Conclusion**

**Appendix A: Method Used to Determine Areas of Weakness**

**Appendix B: Customer Survey Questionnaire**



## **Part 1: Overview**

**Total Number of Participants: 16**

### **Tables:**

Tables 1, 2, 3, 4 and 5 provide the summary of results obtained from the returned survey forms. These Tables indicate the exact number of Customers per Rating for each question.

The horizontal summation of each sub-section will not add up to 16, i.e., the number of Customers that participated, as not all customers completed the questionnaire in full.

### **Customer Comments:**

Questions were included in the Survey Form and all the responses given are shown in Part 2 of the report.

## **Part 2: Summary of Survey Results**

The Summary of the Customer Survey results comprise the following:

- Table 1: Number of Customers per Rating for Section 1 (Quality Management)
- Table 2: Number of Customers per Rating for Section 2 (Customer Focus)
- Table 3: Number of Customers per Rating for Section 3 (Quality Costs)
- Table 4: Number of Customers per Rating for Section 4 (Quality Systems)
- Table 5: Number of Customers per Rating for Section 5 (Quality Improvement)

Customer Comments

**Table 1: Number of Customers per Rating for Section 1 (Quality Management)**

Section 1: Quality Management Rating	Number of Customers per Rating			
	Very Good	Average	Needs Improvement	Not Acceptable
1a. Quality of Product	12	3	1	-
1b. Quality of Service	8	5	3	-
1ci. Time for Delivery	4	10	2	-
1cii. Meeting Delivery Promises	5	6	3	-
2a. Consistency of Product	12	2	1	-
2b. Durability of Product	9	6	1	-
<b>Percentage of Customers per Rating</b>	52.1	33.3	11.5	0

**Table 2: Number of Customers per Rating for Section 2 (Customer Focus)**

Section 2: Customer Focus Rating	Number of Customers per Rating			
	Very Good	Average	Needs Improvement	Not Acceptable
1a. Quality of Service with regard to Sales	4	9	2	-
1b. Invoices are correct and timely	10	6	-	-
2a. Efficiency of Response to order placed by Customer	7	7	1	-
2b. Efficiency of Response to Customer Enquiry	9	5	2	-
3. Performance with regard to meeting Customer Satisfaction	7	8	1	-
<b>Percentage of Customers per Rating</b>	46.3	43.8	7.5	0



**Table 3: Number of Customers per Rating for Section 3 (Quality Costs)**

**Section 3: Quality Costs**

Rating	Number of Customers per Rating			
	Better	Same	Worse	Poor
Performance when Benchmarked against other suppliers by the Customer in:				
1a. Product Quality	7	8	1	-
1b. Value for Money	6	8	1	1
1ci. Time for Delivery	1	13	2	-
1cii. Meeting Delivery Promises	4	11	1	-

Rating	Very Good	Average	Needs Improvement	Not Acceptable
2. Extent to which product meets performance requirements	11	4	1	-
3. Estimated cost of non-conformance to Customer requirements as percentage of Customer's Annual Sales	4	4	2	1

<b>Percentage of Customers per Rating</b>	34.4	50.0	8.3	2.1
---	------	------	-----	-----

**Table 4: Number of Customers per Rating for Section 4 (Quality Systems)****Section 4: Quality System**

Rating	Number of Customers per Rating			
	Very High	High	Low	Not Required
1. Emphasis placed by Customer on suppliers being certified to BS 5750	6	7	-	3

Rating	Number of Customers per Rating			
	Very Good	Average	Needs Improvement	Not Acceptable
2a. Meeting Customer Specifications and Requirements	10	5	1	-
2b. Resolving Customer Complaints to the Satisfaction of the Customer	11	4	-	1
2c. Providing Technical Support and Assistance	7	6	3	-
2d. Level of Quality Awareness of Company A's	5	11	-	-

<b>Percentage of Customers per Rating</b>	48.8	41.3	5.0	5.0
---	------	------	-----	-----

**Note:**

Question 1 is not taken into account in the analysis of Customer Satisfaction levels for Company A as the question has no direct relation to the level of customer satisfaction since the company is certified to BS5750.



**Table 5: Number of Customers per Rating for Section 5 (Quality Improvement)**

**Section 5: Quality Improvement**

Rating	Number of Customers per Rating			
	Very Good	Average	Needs Improvement	Not Acceptable
1. Extent to which Company A is reacting to Customer's needs in:				
1a. Product	9	6	-	1
1b. Service	6	9	1	-

	Much Better	Better	Worse	Much Worse
2. Extent of improvement in Company A since Customer's last purchase with regard to:				
2a. Product	-	8	1	-
2b. Service	-	8	1	-

<b>Percentage of Customers per Rating</b>	23.4	48.4	4.7	1.6
---	------	------	-----	-----

## Customer Comments

The following are Questions and the corresponding Customer Responses received in the Customer Survey Form:

Qn.: What do you like MOST about our :

a) Product:

Ans.: "Good quality."

"It's quality."

"Consistency in quality."

"It meets with all production requirements."

"Value for money."

"We have never had the need to raise a non-conformance report as products always delivered correctly."

"Consistently high quality."

"Not a lot."

"Well finished (Good Quality). Very hard wearing (Long Life)."

"The quality."

"Accurate and durable."

"Consistent quality."

"The degree of perfection in manufacturing cigarette machine dies."

b) Service and Delivery:

Ans.: "Service - Competent Staff  
Delivery - Honour promise."

"Excellent."

"Response to customer needs when pressurised."

"In general delivery promises are kept."

"As good as one could expect when taking into account distance."

"Good."

"Sales staff helpful in confirming which part number we need to order by."

"Keep delivery promise."

"Done during our shutdown is a big advantage."



“Service very good. Delivery sometimes slightly out butt we are usually informed as to why.”

“Prompt delivery.”

“Timely delivery.”

“Reliable delivery - able to respond quickly if required.”

Qn.: What do you like LEAST about our:

a) Product:

Ans.: “Re-curing faults, communicated to yourselves and never resolved.”

“Price - Recent survey has alternatives 50% cheaper. (May not be same quality)”

“The price.”

“It's price!”

“Very expensive to buy.”

“The average life needs to be improved.”

b) Service and Delivery:

Ans.: “Difficult for the customer - how to ascertain what “in (Company A’s) eyes” is a special or standard products”

“Sales staff sometimes not very forthcoming with firm delivery date for urgent orders.”

“Very expensive to repair.”

“Nothing drastic. Delivery sometimes slightly out. But we are usually informed as to why.”

“Your unwillingness to carry out further design work on an existing product to the extent of us having to approach your competitor to solve a problem, after giving you over a year to come up with an answer You do not keep to agreed service dates for the overhaul of the machines.”

“Response to urgent requirement.”

“Rigid and long lead times.”

“Parts within a multiple order are not identified and have to be sorted by us.”

**Qn.:** What IMPROVEMENTS would you like made to our:

**a) Product:**

**Ans.:** “As a user we constantly search for longer stamp life at an economic cost.”

“On the components we purchase I do not think they can be improved.”

“Durability.”

“Easier maintenance by our Fitters.”

“Flat faced characters for hot-foil coding, have a sharp edge that can cut through the material being printed.”

“Make them more robust and able to cope with abrasive and corrosive environments.”

“Improvements in the average life of cigarette machine die.”

“Yours is an expensive product; Need to maintain high quality by not changing to low quality materials; Otherwise product is good.”

**b) Service and Delivery:**

**Ans.:** “Listen to the requirements of your customer, solve problems and implement the solutions.”

“Single department for standards and specials, especially on sales and progress contact.”

“Keep up the good work.”

“The need for firm delivery dates would be useful as our client base requires exact dates when they will receive goods.”

“Quicker reaction to requests for "specials".”

“Parts and overhauls at sensible prices.”

“Start an after sales service scheme to find out how your product is being used by your customer. Give advice.”

“Quicker response to urgent requirements.”

“Full orders to be sent as a single shipment. Dies within an order to be identified.”

**Qn.:** Other Comments or Suggestions:

**Ans.:** “Business world-wide has become very competitive. Therefore there is a need for every businessman (like you) to try and gain a competitive edge by:

(1) Delivering your product promptly

(2) Visiting your customers in the field



(3) Understanding your customer, e.g., Don't be rigid with lead times when the customer needs your product urgently."

"We would be grateful to know the full range of your Quality Products."

"Find that technical backup by this company is excellent. Changes that may be required are dealt with promptly."

"Contact by technical representative not evident: As an ISO9002 approved manufacturer, you are welcome to visit our site on any aspect of TQM."

"(A) New building to project a better image?

(B) The products and service are excellent. It is only (A) that could affect a customer's initial perception of the company."

"Generally, we have no major complaints with your company."

"Our dealings with your company have been very good. Our only current concern is the pricing. We know of cheaper suppliers - less than 50% of your prices. We are not sure of the quality would match that of your company."

"Quite frankly there are better machines on the market for two-thirds of your price, which are more reliable and conform better to our requirements."

"Cheaper packages for planned maintenance instead of £1000 per machine every 12 months."

### **Part 3: Identified Strengths and Weaknesses**

Tables A, B, C, D and E indicate the Strengths and Weaknesses of the Company A based on the survey results.

The Method used to determine if a classification of Weakness is to be given is found in Appendix A.

#### **High Strength**

A classification of High Strength is awarded if NO Customers have indicated any dissatisfaction.

#### **Strengths**

Classifications that have been left **blank** are the Strengths of the Company A as indicated by their customers. These generally are areas with high levels of Customer Satisfaction.

#### **Weaknesses**

These are areas which have a significant percentage of Customer Dissatisfaction.



**Table A: Classification of Customer Satisfaction Levels for Quality Management**

Section 1: Quality Management	Number of Satisfied Customers	Number of Dissatisfied Customers	Classification
1a. Quality of Product	15	1	
2b. Durability of Product	15	1	
2a. Consistency of Product	14	1	
1ci. Time for Delivery	14	2	
1b. Quality of Service	13	3	Weakness
1cii. Meeting Delivery Promises	11	3	Weakness

**Table B: Classification of Customer Satisfaction Levels for Customer Focus**

Section 2: Customer Focus	Number of Satisfied Customers	Number of Dissatisfied Customers	Classification
1b. Invoices are timely and correct	16	-	High Strength
3. Performance with regard to meeting customer satisfaction	15	1	
2a. Efficiency of response to order placed by Customer	14	1	
2b. Efficiency of response to Customer Enquiry	14	2	
1a. Quality of Service with regard to Sales	13	2	

**Table C: Classification of Customer Satisfaction Levels for Quality Costs**

Section 3: Quality Cost	Number of Satisfied Customers	Number of Dissatisfied Customers	Classification
1a. Performance when Benchmarked in Product Quality	15	1	
1cii. Meeting Delivery Promises	15	1	
2. Extent to which product meets performance requirements	15	1	
1b. Performance when Benchmarked in Value for Money	14	2	
1ci. Time for Delivery	14	2	
3. Estimated cost of non-conformance to Customer requirements as percentage of Customer's Annual Sales	8	3	Weakness

**Table D: Classification of Customer Satisfaction Levels for Quality Systems**

<b>Section 4: Quality System</b>	<b>Number of Satisfied Customers</b>	<b>Number of Dissatisfied Customers</b>	<b>Classification</b>
<b>2d. Quality Awareness of Employees</b>	16	-	<b>High Strength</b>
2a. Ability to meet Customer Specifications and Requirements	15	1	
2b. Complaints are resolved to the Satisfaction of the Customer	14	1	
2c. Level of Technical support and assistance provided	13	3	Weakness

**Table E: Classification of Customer Satisfaction Levels for Quality Improvement**

<b>Section 5: Quality Improvement</b>	<b>Number of Satisfied Customers</b>	<b>Number of Dissatisfied Customers</b>	<b>Classification</b>
1a. Reaction of Company A to Customer needs with regard to Product	15	1	
1b. Reaction of Company A to Customer needs with regard to Service	15	1	
2a. Improvement in Company A's Product since Customer's last purchase	8	1	
2b. Improvement in Company A's Service since Customer's last purchase	8	1	



#### **Part 4: Conclusion**

The analysis of the results indicate that a very high percentage of customers are very satisfied with the consistent Product Quality, and the overall performance of the Product. Customers have expressed satisfaction with product consistency, durability, and the ability to meet their specifications and requirements.

Customers have also very favourably rated the Quality Awareness of Company A's employees. That invoices are timely and correct is another area of high customer satisfaction.

Generally, comments made in this survey indicate that the company has established good relations with their customers.

Although Product Quality is a very important consideration to a customer, this is not the sole criteria in their determination of a good supplier. This has been communicated by Company A's customers. The comments and ratings received show dissatisfaction exists with regard to the Quality of Service and the ability of the company to meet Delivery Promises. Dissatisfaction is also present pertaining to the level of Technical Support and Assistance provided.

It is important for Company A to give immediate attention and action to overcoming these as full customer satisfaction is vital to any company's sustained success. The ability to satisfy the customer always is of paramount importance for a company intending to become a full Total Quality Management company.

#### **Highest Level of Customer Satisfaction:**

The largest number of customers answering any questions in the rating of 4, i.e., Very Good, is 12. This is 75% of the participating customers. The areas in which these occur are:

- Section 1, Question 1a:      Product Quality
- Section 1, Question 2a:      Product Consistency

#### **Lowest Level of Customer Satisfaction:**

The largest number of customers answering any questions in the rating of 1, i.e., Not Acceptable, is 1. Four questions were rated as such. The questions are:

Section 3, Question 1b : Value for Money when Benchmarked.

Section 3, Question 3 : Estimated cost of Company A's non-conformance to customer requirements as a percentage of the customer's annual sales.

Section 4, Question 2b : Resolution of complaints to the satisfaction of the customer.

Section 5, Question 1a : Ability of Company A to react to customer needs regarding product.

#### **Areas Requiring Improvement According to Customer Feedback:**

These areas are identified based on rating 3, i.e., Needs Improvement. The following are areas where 20% or more Customers awarded a Rating of 3:

#### **Section 1 (Quality Management)**

- 20% of Customers feel the company needs to improve on its overall Quality of Service.
- 20% of Customers feel the company needs to improve on Meeting Delivery Promises to enable that their requirements be met.

#### **Section 4 (Quality System)**

- 20% of Customers want improvements concerning the level of Technical Support and Assistance provided.

#### **Customer Retention:**

- **Two Customers have stated they do not wish to continue with Company A as their supplier.**

**These companies have also indicated that they will not recommend Company A to others.**

The reasons given for their decision are:

- "Far Too Expensive".
- "Very expensive to buy."
- "Very expensive to repair."



- “Cheaper packages for planned maintenance instead of £1000 per machine every 12 months.”
- Recurring faults, communicated to yourselves and never resolved.
- Your unwillingness to carry out further design work on an existing product to the extent of us having to approach your competitor to solve a problem, after giving you over a year to come up with a answer. You do not keep to agreed service dates for the overhaul of the machines.
- Make them more robust and able to cope with abrasive and corrosive environments.
- Listen to the requirements of your customer, solve problems and implement the solutions.

The remaining 14 Customers have indicated they will re-purchase and recommend Company A to others.

Although 14 of 16 Customers wanting to continue with Company A as their supplier is a significant percentage, it cannot diminish the fact that the company has lost 2 customers. This is very costly as it is much more difficult to find a new customer than it is to retain a customer. Furthermore, a poor reputation spreads much more rapidly and is much harder to mend.

**Appendix A: Method Used to Determine Areas of Weakness.**

The results shown in Tables A, B, C, D and E are obtained as follows:

The column for 'Number of Satisfied Customers' is obtained by adding the numbers of customers per question for ratings:

(Very Good and Average), (Better and Same), or (Much Better and Better).

Similarly, the column for 'Number of Dissatisfied Customers' is obtained by adding the number of customers per question for ratings:

(Needs Improvement and Not Acceptable), (Worse and Poor),  
or (Worse and Much Worse).

Weakness

These two columns are then compared per question. Any question which has a value of 3 or greater in the column 'Number of Dissatisfied Customers' is classified as a Weakness.

The value of 3 Dissatisfied Customers is taken as this study aims to look at areas where at least 20 percent of the total number of participating Customers, i.e., 20% of 16, have indicated their dissatisfaction.



**Appendix B: Customer Survey Questionnaire**

## CUSTOMER SURVEY

Please take a few moments to rate the quality of our products and services and provide us with your comments by completing this questionnaire. Please circle the appropriate rating.

We thank you for helping us to improve the quality of our products and services.

Company Name: \_\_\_\_\_ .  
Product Purchased: \_\_\_\_\_ .

<u>Section 1: Quality Management</u>	<b>Rating</b>			
	Very Good	Average	Needs Improvement	Not Acceptable
To what extent do the following meet your requirements:				
1. Quality and Delivery				
a. Quality of Product	4	3	2	1
b. Overall Quality of Service	4	3	2	1
c. Delivery , i.e., i) Time for Delivery	4	3	2	1
ii) Meeting Delivery Promises	4	3	2	1
2. Performance of Product				
a. Consistency	4	3	2	1
b. Durability	4	3	2	1
<u>Section 2: Customer Focus</u>				
1. Please rate the quality of service provided by us with regard to the following:				
a. Sales	4	3	2	1
b. Invoices are correct and timely	4	3	2	1
2a. How efficiently did we respond to your order?	4	3	2	1
2b. How efficiently did we respond to your enquiry?	4	3	2	1
3. How do you rate our company in terms of meeting customer satisfaction?	4	3	2	1







CUSTOMER SURVEY				
<u>Section 5: Quality Improvements</u>	<b>Rating</b>			
	Very Well	Average	Needs Improvement	Not Acceptable
1. How well do we react to your needs in:				
a. Product	4	3	2	1
b. Service	4	3	2	1
2. How have we improved in the following since your last purchase:				
a. Product	4	3	2	1
b. Service	4	3	2	1
 <u>Section 6: Others</u>				
1. What do you like MOST about our:				
a. Product	<hr/> <hr/>			
b. Service and Delivery	<hr/> <hr/>			
2. What do you like LEAST about our:				
a. Product	<hr/> <hr/>			
b. Service and Delivery	<hr/> <hr/>			



## CUSTOMER SURVEY

3. What IMPROVEMENTS would you like made to our:

a. Product

---



---

b. Service and Delivery

---



---

4. a. Would you like to purchase from us again?

b. Would you like to recommend us to others?

If 'NO', why not?

---



---

Yes	No

5. Other comments or suggestions

---



---



---



---

Would you like to be contacted to further discuss your comments?

Yes	No

If 'YES', please provide us with the following details:

Name: \_\_\_\_\_ Contact Number: \_\_\_\_\_

Designation: \_\_\_\_\_

## **APPENDIX D**

### **Employee Survey Questionnaire**



## EMPLOYEE SURVEY

This is a confidential survey regarding employee satisfaction. Please give your opinion on the following by circling the relevant rating.

STRONGLY AGREE (4)    AGREE (3)    DISAGREE (2)    STRONGLY DISAGREE (1)

Thank you for your participation.

A. <u>WORK ENVIRONMENT</u>	RATING			
1. I am paid a fair and competitive salary.	4	3	2	1
2. Company benefits are fair and competitive.	4	3	2	1
3. Working hours are suitable to me.	4	3	2	1
4. It is convenient to travel to and from work.	4	3	2	1
5. The company employs enough employees to operate productively.	4	3	2	1
6. The company provides adequate training.	4	3	2	1
7. Co-workers are friendly and helpful.	4	3	2	1
8. I have good work relationships with people in the company.	4	3	2	1
9. I have job security and stability.	4	3	2	1
10. I am satisfied with conditions at work.	4	3	2	1
B. <u>PERFORMANCE</u>				
1. My responsibilities are well defined.	4	3	2	1
2. I know my quality goals and performance standards.	4	3	2	1
3. I receive feedback about my performance.	4	3	2	1
4. I work a reasonable amount of overtime.	4	3	2	1
5. My salary increase is based on how well I do my job.	4	3	2	1
6. We share information with each other in our work.	4	3	2	1
7. I have enough information to do my work.	4	3	2	1
8. The tools and equipment available are adequate to do my job.	4	3	2	1
9. Management is fair and considerate.	4	3	2	1
10. Management is competent in doing its job.	4	3	2	1



EMPLOYEE SURVEY				
C. <u>JOB SATISFACTION</u>	RATING			
	4	3	2	1
1. There is good team spirit and co-operation in the company.	4	3	2	1
2. People in the company treat me with respect.	4	3	2	1
3. My training and skills are fully utilised.	4	3	2	1
4. I find my job interesting and challenging.	4	3	2	1
5. I have enough authority to do my work.	4	3	2	1
6. The company recognises the importance of my work.	4	3	2	1
7. Management trusts me to do a good job.	4	3	2	1
8. There is enough emphasis on improving quality, productivity and performance.	4	3	2	1
9. There is enough reward and recognition for doing good work.	4	3	2	1
10. Everyone is working to their full ability and capability.	4	3	2	1
D. <u>PARTICIPATION</u>				
1. I am working towards the future of the company.	4	3	2	1
2. I am encouraged to be creative in my work.	4	3	2	1
3. I am encouraged to share new ideas and suggestions for improvements.	4	3	2	1
4. I can learn new skills at work.	4	3	2	1
5. I can develop to my full potential.	4	3	2	1
6. I can implement changes to improve productivity and quality.	4	3	2	1
7. My ideas and suggestions are solicited before decisions are made.	4	3	2	1
8. There is opportunity for personal growth.	4	3	2	1
9. There are promotion opportunities.	4	3	2	1
10. I am satisfied working for the company.	4	3	2	1





## **APPENDIX E**

### **Employee Survey Report**



# **Employee Survey Report for Company A**

**Part 1: Overview**

**Part 2: Summary of Survey Results**

**Part 3: Identified Strengths and Weaknesses**

**Part 4: Conclusion**

**Part 5: Recommended Action Plan**

**Appendix A: Method Used to Determine Areas of High Satisfaction and  
Dissatisfaction.**

**Appendix B: Employee Survey Questionnaire**

## **Part 1: Overview**

**Total Number of Participants: 69**

### **Tables:**

Tables 1, 2, 3 and 4 found on the following pages provide the summary of results obtained from the Survey.

The Tables indicate the exact number of employees that opted for each rating per subsection.

It should be noted that the horizontal summation per subsection will not equal the total of 69, which is the number of participants in the survey, as not all participants filled out the questionnaire in full. Furthermore, there were participants who did not select an exact rating, i.e., 4, 3, 2 or 1. These participants' options fell into in-between ratings, e.g., between ratings 3 and 2.

For the purpose of this analysis, these in-between ratings are not taken into account. The computations made based on the number of employees in the categories indicated by ratings 4 (Strongly Agree), 3 (Agree), 2 (Disagree) and 1 (Strongly Disagree).

### **Employee Comments:**

**Of the 69 participants, 24 have provided comments as requested in the questionnaire. The comments in this report are the actual comments written in the returned forms.**



## **Part 2: Summary of Survey Results**

The Summary of the Employee Survey Results comprise the following:

**Table 1: Summary of Results for Part A (Work Environment)**

**Table 2: Summary of Results for Part B (Performance)**

**Table 3: Summary of Results for Part C (Job Satisfaction)**

**Table 4: Summary of Results for Part D (Participation)**

**Employee Comments**

Table 1: Summary of Results for Part A (Work Environment)

Part A : Work Environment	Rating	Number of Employees Per Rating			
		4	3	2	1
1. I am paid a fair and competitive salary.		3	23	27	16
2. Company benefits are fair and competitive.		5	29	24	10
3. Working hours are suitable to me.		12	46	5	6
4. It is convenient to travel to and from work.		12	43	8	6
5. Company employs enough employees to operate productively.		1	17	29	20
6. Company provides adequate training.		1	18	29	21
7. Co-workers are friendly and helpful.		6	40	13	8
8. I have good work relationships with people in the company.		12	35	13	7
9. I have job security and stability.		7	36	16	9
10. I am satisfied with conditions at work.		3	22	30	14
Percentage of Employees in each Rating for Part A		9.0	44.8	28.1	17.0
		Percentage Motivated: 53.8		Percentage Demotivated: 45.1	



Table 2: Summary of Results for Part B (Performance)

Part B : Performance	Rating	Number of Employees Per Rating				
		4	3	2	1	
1. My responsibilities are well defined.		5	37	20	6	
2. I know my quality goals and performance standards.		10	47	8	4	
3. I receive feedback on my performance.		4	29	23	11	
4. I work a reasonable amount of overtime.		5	40	10	11	
5. My salary increase is based on how well I do my job.		3	22	17	27	
6. We share information with each other in our work.		4	32	20	12	
7. I have enough information to do my job.		7	37	18	7	
8. The tools and equipment are adequate to do my job.		4	32	17	16	
9. Management is fair and considerate.		2	26	24	16	
10. Management is competent in doing its job.		-	15	28	25	
Percentage of Employees in each Rating for Part B		6.7	45.9	26.8	19.6	
		Percentage Motivated:	52.6	Percentage Demotivated:	46.4	

Table 3: Summary of Results for Part C (Job Satisfaction)

Part C : Job Satisfaction	Rating	Number of Employees Per Rating			
		4	3	2	1
1. There is good team spirit and co-operation in the company.		1	11	33	23
2. People in the company treat me with respect.		2	35	20	11
3. My training and skills are fully utilised.		5	25	22	15
4. I find my job interesting and challenging.		6	33	19	10
5. I have enough authority to do my work.		4	44	15	5
6. The company recognises the importance of my work.		2	30	19	16
7. Management trusts me to do a good job.		8	48	9	2
8. There is enough emphasis on improving quality, productivity and performance.		3	26	22	16
9. There is enough reward and recognition for doing good work.		-	13	34	22
10. Everyone is working to their full ability and capability.		4	16	34	15
Percentage of Employees in each Rating for Part C		5.1	40.7	32.9	19.6
		Percentage Motivated: 45.8		Percentage Demotivated: 52.5	



Table 4: Summary of Results for Part D (Participation)

Part D : Participation	Rating	Number of Employees			
		4	3	2	1
1. I am working towards the future of the company.	9	44	13	2	
2. I am encouraged to be creative in my work.	4	20	34	10	
3. I am encouraged to share new ideas and suggestions for improvement.	5	21	31	12	
4. I can learn new skills at work.	4	30	22	13	
5. I can develop to my full potential.	2	28	20	17	
6. I can implement changes to improve productivity and quality.	4	27	21	16	
7. My ideas and suggestions are solicited before decisions are made.	6	21	23	16	
8. There is opportunity for personal growth.	1	21	30	15	
9. There are promotion opportunities.	-	13	29	25	
10. I am satisfied working for the company.	8	35	13	13	
Percentage of Employees in each Rating for Part D		6.2	34.6	34.2	20.1
		Percentage Motivated:	40.8	Percentage Demotivated:	54.3



## Employee Comments

The following are actual comments as they appear on the Survey Forms.

“Too many new chiefs standing about talking (and not about work).  
The management do not ask the people who work in the department for their ideas on making the job better. They bring in somebody from another department for theirs.  
The management do not seem to know the rules into the running of the firm. i.e.,  
Having time off in the week (sick or holiday) and then letting them work on Saturday.”

“I feel my grade of pay is totally unrewarding, Re: the extra responsibilities received from management.”

“Some sort of personal development scheme would help to inspire me to work harder.  
Management do not seem to be able to make decisions without authority of Directors.  
What the MD says goes! In discussion we dare not say anything that the MD does not like.”

“This company is short sighted and very old fashioned in its attitude.  
We employ far too many staff (non-production) in ratio to hourly paid (production).  
The management will do anything to avoid facing up to problems.”

“If the management were doing their job correctly there would be no need for a survey of this nature. The time put into this survey could be put to better use getting work out of the factory gate to customers.”

“If management did their job correctly we wouldn't need this survey. There is no co-operation between managers of different departments. Management seem to create problems rather than solve them, i.e., passing the buck.”

“How much expense has this cost the company to carry out?”

“Management appear to ignore shopfloor suggestions for possible improvements in productivity, training and working relationships. TQM ‘appears’ to be only a “nodding” formality.  
Too much emphasis is placed on old, out of date work practices that cost employees and the company money. A strong feeling of Who Knows Who is present when “favours” are in the offering, with nepotism being a strong underlying trend.”

“Management are inconsistent in certain areas of authority.”

“The company lacks direction.  
General morale is low.  
Generally many people do not want to take responsibility for their own quality of work.  
Generally the employees are conservative and lack exposure to working for other organisations.”

“Questions are too generalised - a wrong impression can easily be formed.  
Most, if not all, of the company's problems lie at the door of the management. They can neither manage the company well nor manage their personnel well.”



**“Training:**

Very little formal training is given.

**Conditions:**

The building as a whole is in a state of disrepair - This is not conducive to a pleasant working environment. This includes office furniture and toilets - Particularly Reception.

**Salary:**

This is a male orientated company.

**Management:**

We feel that management is not interested in what goes on in the departments and that they do not care. They have yet to prove themselves.

**Job Satisfaction:**

There are no rewards for hard work - the only time your performance is highlighted is when there is a problem and a “witch hunt” begins.

**Superteams:**

Last year 5 employees set about trying to solve the problems of this division. They produced a twentish page report which was acclaimed at the time. One year on we still have no official feedback even though this has been chased with managers, constantly. The general opinion is that management do not care - particularly about its staff’s opinions.”

“This is a small company. It should be run on small company lines. When worker to staff is almost 1 to 1 this is wrong. I find a management team having to resort to having this sort of survey done means a total lack of knowing what is going on in the factory, a total lack of management.”

“It is all well and good having these seminars and mini meetings, but the average operator(worker) is only bothered about coming to work, doing their job and going home.

I feel it is for management to take all responsibility on production and problems, not the worker.”

“As I have not been with the company for long I have answered the questions to the best of my knowledge. I think my views may change when I have been here a reasonable length of time.”

“This company is badly managed by people who take no time to look into the views of the workforce. A Them and Us attitude exists, sex discrimination is rife, women being treated as second class in every way imaginable even down to male workers being given ice lollies in the hot weather, the ladies get nothing.”

“The questions are mostly too generalised and not specific. What has happened to the managers who have or had the ability to manage a company without the need for outside consultants who do not know the business or its employees? Employees are increasingly becoming more Dissatisfied, Demoralised and Demotivated with little hope of positive change for the future.”

- “1. The scrap and bonus system is totally unfair.
2. There are not enough employees to do a satisfactory job of getting work produced (i.e., too much work to cope).



3. Management should communicate better instead of all the petty infighting that goes on.
4. Too many people have the attitude that "I have done my bit, let somebody else sort this out".
5. Pre-production work should not be rushed therefore creating mistakes. (Scrap Bonus)

If a job is started off correctly then it should go through the company correctly instead of a large amount of re-work and scrap."

"A major cause of ill feeling in the company is the bonus system.

1. Managers are required to exercise the judgement of Solomon when work is scraped.
2. Financial penalties fall unfairly on a small section of the work force.
3. Times on jobs do not allow for quality.
4. Once an employee has lost his bonus it promotes a consistent care less attitude.
5. The system is open to abuse and is abused.
6. Quality time is lost to the company in disputes as to where the fault lies."

- "1. Departments work on an individual basis, rather than as a whole unit.
2. Too many chiefs not enough Indians who don't pull their weight but rake in benefits, i.e., the company cars which are a waste of money, unless Sales Rep.
3. High wages for Directors who sit on their arses."

"Having worked for the company for only a short time, it seems to me sections don't get on together as a unit, i.e., each unit has its own particular goals and not a joint venture.

Bonus system seems to work at 75% of its capacity."

"I feel that by using a Yes/No, agree-disagree answer this questionnaire does not truly reflect my feelings, towards the management and the company in general.

Having worked for the company for many years, I have witnessed new schemes and ideas being suggested, and implemented, only to see things remain exactly the same. This coupled with the length of time for a decision to be made about either production methods, or financial matters, losses then company impetus, and the management, credibility with the workforce. This obviously then leaves supervision problems and other related issues to contend with.

The department has had little or no capital expenditure for many years, this mixed together with the constant productive output pressure, and seeing other departments benefit from new equipment, has left people feeling that the company no longer cares, so why should they bother. Motivation and dedication is now another problem to deal with."

"A7 - Most workers are friendly and helpful.

C1 - Agreed in my department but not throughout the company.

C8 - Disagree through lack of communication between supervisors and workers.

C10 - Totally disagree due to the fact that a number of individuals wonder around the company, not only wasting their own time but the time of other workers whose department they wander into without just cause.

"I think that the management should pull themselves together because they are no good."



### **Part 3: Identified Strengths and Weaknesses**

#### **Strengths**

The following are the identified Strengths of the company based on their employee feedback:

1. Employees feel Management trusts them to do good work.
2. Employees have good relationships with people they work directly with.
3. Good work Processes and Procedures  
(Employees know their Quality goals and performance standards. Their responsibilities are well defined. Employees are given enough information and authority to do their work.)
4. Good work environment.
5. Employees are committed to and are working for the future of the company.
6. Employees have a strong sense of job security and stability working for the company.

Overall, employees are satisfied working for the Company A.

#### **Weaknesses**

The identified Weaknesses in Company A are based on Dissatisfactions highlighted through employee feedback in the survey. The following indicate the areas in which these occur:

1. Level of Recognition and Reward for good work, and the method and level of Financial Remuneration.
2. Teamwork and Co-operation.
3. Employees' opinion of Management Competence.
4. Creativity and Methods to Improve Quality and Productivity are not actively sought from Employees.
5. Lack of Communication between Management and Employees.
6. Employee Training.
7. Work Conditions.
8. Advancement Opportunities.

With regard to Advancement Opportunities, it is generally acknowledged that for small and medium sized companies, this is an area of difficulty that is hard to overcome due to the very limited promotion opportunities.

Advancement opportunities falls into the highest level of needs as defined by Maslow, i.e., Self-Actualisation Needs. It is the highest level of motivation in Maslow's hierarchy of needs and is not easily achievable.

### **Tables Indicating Employee Satisfaction Levels**

Tables A, B, C and D on the following pages serve to highlight the Areas of High Satisfaction and Dissatisfaction indicated by employees in the survey.

Classifications that are left blank represent areas of low satisfaction. These areas can be worked on and transformed into areas of high satisfaction at the discretion of the company, as opposed to the areas of dissatisfaction which require immediate attention and action by management. A Recommended Action Plan is found in Part 5 of the report. Efforts required to improve upon areas of lower satisfaction require minimal effort being expended by the company as opposed to the time, effort and possible financial commitment needed to effectively and permanently transform the areas of Dissatisfaction into areas of High Satisfaction.

The Method used to determine the Satisfaction Level Classifications in Tables A, B, C and D is found in Appendix A.



Table A: Classification of Satisfaction Levels for Subsections of Part A (Work Environment)

Part A : Work Environment	Number of Motivated Employees	Number of Demotivated Employees	Classification
A3. Working hours are suitable to me.	58	11	High Satisfaction
A4. It is convenient to travel to and from work.	55	14	High Satisfaction
A8. I have good work relationships with people in the company.	47	20	High Satisfaction
A7. Co-workers are friendly and helpful.	46	21	High Satisfaction
A9. I have job security and stability.	43	25	High Satisfaction
A2. Company benefits are fair and competitive.	34	34	
A1. I am paid a fair and competitive salary.	26	43	Dissatisfaction
A10. I am satisfied with conditions at work.	25	44	Dissatisfaction
A5. Company employs enough employees to operate productively.	18	49	Dissatisfaction
A6. Company provides adequate training.	19	50	Dissatisfaction



Table B: Classification of Satisfaction Levels for Subsections of Part B (Performance)

Part B : Performance	Number of Motivated Employees	Number of Demotivated Employees	Classification
B2. I know my quality goals and performance standards.	57	12	High Satisfaction
B4. I work a reasonable amount of overtime.	45	21	High Satisfaction
B7. I have enough information to do my job.	44	25	High Satisfaction
B1. My responsibilities are well defined.	42	26	High Satisfaction
B8. The tools and equipment are adequate to do my job.	36	33	
B6. We share information with each other in our work.	36	32	
B3. I receive feedback on my performance.	33	34	
B9. Management is fair and considerate.	28	40	
B5. My salary increase is based on how well I do my job.	25	44	Dissatisfaction
B10. Management is competent in doing its job.	15	53	Dissatisfaction



Table C: Classification of Satisfaction Levels for Subsections of Part C (Job Satisfaction)

Part C : Job Satisfaction	Number of Motivated Employees	Number of Demotivated Employees	Classification
C7. Management trusts me to do a good job.	56	11	<b>High Satisfaction</b>
C5. I have enough authority to do my work.	48	20	<b>High Satisfaction</b>
C4. I find my job interesting and challenging.	39	29	
C2. People in the company treat me with respect.	37	31	
C6. The company recognises the importance of my work.	32	35	
C3. My training and skills are fully utilised.	30	37	
C8. There is enough emphasis on improving quality, productivity and performance.	29	38	
C10. Everyone is working to their full ability and capability.	20	49	<b>Dissatisfaction</b>
C9. There is enough reward and recognition for doing good work.	13	56	<b>Dissatisfaction</b>
C1. There is good team spirit and co-operation in the company.	12	56	<b>Dissatisfaction</b>



Table D: Classification of Satisfaction Levels for Subsections of Part D (Participation)

Part D : Participation	Number of Motivated Employees	Number of Demotivated Employees	Classification
D1. I am working towards the future of the company.	53	15	High Satisfaction
D10. I am satisfied working for the company.	43	26	High Satisfaction
D4. I can learn new skills at work.	34	35	
D6. I can implement changes to improve productivity and quality.	31	37	
D5. I can develop to my full potential.	30	37	
D7. My ideas and suggestions are solicited before decisions are made.	27	39	
D3. I am encouraged to share new ideas and suggestions for improvement.	26	43	Dissatisfaction
D2. I am encouraged to be creative in my work.	24	44	Dissatisfaction
D8. There is opportunity for personal growth.	22	45	Dissatisfaction
D9. There are promotion opportunities.	13	54	Dissatisfaction



**Part 4: Conclusion**

	High Satisfaction	Low Satisfaction	Dissatisfaction
Percentage of Total of 40 Questions	32.5 (13 Qns. of 40)	35.0 (14 Qns. of 40)	32.5 (13 Qns. of 40)
	Positive: 67.5%		Negative: 32.5%

From the above Table, it is shown that the level of satisfaction among employees pertaining the questions asked in the survey is not very high (i.e., 32.5%). Only 13 questions came under the classification ‘High Satisfaction’. It should be noted that the classification under which these questions fall is based on the opinion of only 60% of all participating employees, as explained in Appendix A. For the 13 questions rated as ‘Dissatisfaction’, they represent areas which Management might want to perform Root Cause Analysis to determine if there are solutions that may be implemented.

Taking into consideration Company A is a small company, it will therefore have limited promotional opportunities for its employees. Hence, it is fair to set aside the negative answer for Question D9 (There are promotion opportunities). This will decrease the percentage to 12 of 40, i.e., 30%.

The strengths of the company indicate there is a good level of employee commitment towards working for the future of the company. Good work relationships are present among co-workers, and employees are happy with their work environment. Employees also feel that management trusts them to do good work, and they have a strong sense of job security and stability working for the company. This strong sense of job security felt by employees is a strong positive factor the company, especially in today's market. Employees have indicated they know their Quality goals and performance standards, and that their responsibilities within the company are well-defined. This is positive as it means employees are aware of their role in the company regarding the company's requirements and expectations of them. It is important that

employees know what is expected of them as this gives them guidelines and goals to work towards. Employees also feel they have sufficient information and authority to enable them to do their work. The results indicate that 43 of 69 employees have indicated that they are satisfied working for the company.

The employees have, through their participation shown their willingness and interest to improve the company's performance, quality and productivity, and consequently improve their own welfare as well.

The following are key areas of dissatisfaction indicated by employees through their survey response and comments: The level of training provided, and the level of communication between themselves and management. Employees have indicated improvements must be made regarding inter-department Teamwork and Co-operation. They would appreciate recognition from management for good work done, and also want management to be willing to listen and to discuss their ideas and suggestions to help the company further improve its quality and productivity. There is a notable level of dissatisfaction pertaining to the level of and the method employed to ascertain financial remuneration, and a significant proportion of employees have stated they are not satisfied with work conditions in the company.

Total Quality Management requires: 1) Management Commitment, 2) Employee Commitment, and 3) Efficient and Effective Systems. TQM requires that all employees be committed and participate actively in continuously seeking to improve the quality of their work, and that they are appropriately trained to enable this. These can only be achieved with full commitment from Management. Management alone is responsible for motivating their employees. Management must maintain a motivated workforce with a high level of employee morale in order to fully reap the benefits of a totally committed workforce.

Based on the comments provided in the questionnaire and the fact that 69 employees voluntarily participated it is a very clear indication that employees want greater success to be attained for the company, and that they want to be able to contribute toward this. They have highlighted areas which in their opinion need improvement. It is now the responsibility of Management to analyse the results presented in this report, and to determine the necessary corrective actions to be undertaken. The decision of



the company to conduct this survey in order to obtain candid feedback from their employees shows their level of commitment to working with the employees to identify and improve upon areas which might adversely affect future progress.

The conducting of this survey and the high level of participation have undoubtedly shown that both Company A and its workforce share a common goal, that is, to achieve the future and continued success of the company. With this shared goal, the company has definitely taken its first crucial and successful step as it embarks on its journey down the route to TQM.

## **Part 5: Recommended Action Plans**

### **1. Communicate Results of the Survey to All Employees.**

Appreciation should be extended for good points made and assurance given that identified weaknesses will be studied and appropriate courses of action will be taken, and that employees will be informed, consulted and updated on these.

### **2. The identified weaknesses need further definition and root cause analysis by Management with participation from employees.**

Employee participation will result in their ownership of the problems and solutions. However, Management must play the leadership role.

Suggestion: The formation of work teams to define, analyse and recommend solutions to problems.

### **3. Plan of Action should be developed to resolve the problems. This will result in enhanced employee motivation and improved teamwork leading to greater productivity.**

### **4. Action should be taken to improve Low Satisfaction areas and maintain High Satisfaction areas, thus utilising the skills and resources of employees to the fullest and consequently further increasing productivity.**



**Appendix A: Method Used to Determine Areas of High Satisfaction and Dissatisfaction.**

The results shown in Tables A, B, C and D are obtained as follows:

The column for Motivated Employees is obtained by adding the values for Ratings 4 and 3 for each subsection. Similarly, the column for Demotivated Employees is obtained by adding the values for Ratings 2 and 1 for each subsection.

These two columns are then compared per subsection. Any subsection which has a value in either column of 41 employees or more will be classified as follows:

**High Satisfaction:** 41 or more employees in the column 'Number of Motivated Employees'.

**Dissatisfaction:** 41 or more employees in the column 'Number of Demotivated Employees'.

The determining value of 41 employees is taken as the study aims to look at the results obtained based on 60% of the employees. As 69 employees participated in this survey, the value of 41 employees is used in the analysis, i.e., 60% of 69 employees.

**Appendix B: Employee Survey Questionnaire**



## EMPLOYEE SURVEY

This is a confidential survey regarding employee satisfaction. Please give your opinion on the following by circling the relevant rating.

STRONGLY AGREE (4)    AGREE (3)    DISAGREE (2)    STRONGLY DISAGREE (1)

Thank you for your participation.

A. <u>WORK ENVIRONMENT</u>	RATING			
1. I am paid a fair and competitive salary.	4	3	2	1
2. Company benefits are fair and competitive.	4	3	2	1
3. Working hours are suitable to me.	4	3	2	1
4. It is convenient to travel to and from work.	4	3	2	1
5. The company employs enough employees to operate productively.	4	3	2	1
6. The company provides adequate training.	4	3	2	1
7. Co-workers are friendly and helpful.	4	3	2	1
8. I have good work relationships with people in the company.	4	3	2	1
9. I have job security and stability.	4	3	2	1
10. I am satisfied with conditions at work.	4	3	2	1
B. <u>PERFORMANCE</u>				
1. My responsibilities are well defined.	4	3	2	1
2. I know my quality goals and performance standards.	4	3	2	1
3. I receive feedback about my performance.	4	3	2	1
4. I work a reasonable amount of overtime.	4	3	2	1
5. My salary increase is based on how well I do my job.	4	3	2	1
6. We share information with each other in our work.	4	3	2	1
7. I have enough information to do my work.	4	3	2	1
8. The tools and equipment available are adequate to do my job.	4	3	2	1
9. Management is fair and considerate.	4	3	2	1
10. Management is competent in doing its job.	4	3	2	1



EMPLOYEE SURVEY				
C. <u>JOB SATISFACTION</u>	RATING			
	4	3	2	1
1. There is good team spirit and co-operation in the company.	4	3	2	1
2. People in the company treat me with respect.	4	3	2	1
3. My training and skills are fully utilised.	4	3	2	1
4. I find my job interesting and challenging.	4	3	2	1
5. I have enough authority to do my work.	4	3	2	1
6. The company recognises the importance of my work.	4	3	2	1
7. Management trusts me to do a good job.	4	3	2	1
8. There is enough emphasis on improving quality, productivity and performance.	4	3	2	1
9. There is enough reward and recognition for doing good work.	4	3	2	1
10. Everyone is working to their full ability and capability.	4	3	2	1
D. <u>PARTICIPATION</u>				
1. I am working towards the future of the company.	4	3	2	1
2. I am encouraged to be creative in my work.	4	3	2	1
3. I am encouraged to share new ideas and suggestions for improvements.	4	3	2	1
4. I can learn new skills at work.	4	3	2	1
5. I can develop to my full potential.	4	3	2	1
6. I can implement changes to improve productivity and quality.	4	3	2	1
7. My ideas and suggestions are solicited before decisions are made.	4	3	2	1
8. There is opportunity for personal growth.	4	3	2	1
9. There are promotion opportunities.	4	3	2	1
10. I am satisfied working for the company.	4	3	2	1





## **APPENDIX F**

### **Facilitator Training**

Appendix F is divided into the following sections:

- F1 Day 1 of Training Session
- F2 Day 2 of Training Session
- F3 Day 3 of Training Session



## **F1. Day 1 of Training Session**

The training program for the first day looked at:

- Objectives of the facilitator training and the role/expectations of facilitators.
- Facilitator techniques.
- Video presentation: 'Case of the Short Sighted Boss'.
- Syndicate Exercise on "What is Total Quality". This exercise reviews the principles of TQ and the four phase process for the introduction of TQ.

The objectives of the Facilitator Training are:

- Facilitators to generate company examples of the concepts and techniques of TQ.
- Facilitators to understand how the TQ training material fits together.
- Facilitators to understand and effectively use the employee training manual

The facilitator's role is to:

- Be a TQM champion.
- Train fellow employees in TQ.
- Offer guidance to both teams and individuals.
- Assist TQ steering groups to control projects.
- Encourage and support TQ.
- Maintain a watching brief – to recommend redirection.

Facilitators are taught the techniques they should use to be effective facilitators, such as the laying of ground rules, presentation styles, listening and learning aspects. They are encouraged to appeal to several senses, apply a wide variety of teaching methods, use teaching (audio and visual) aids, and stimulate participants to play an active role.

The Program for Days 2 and 3 consist of presentations by the trainer, syndicate exercises and lecturates presented by the facilitators. The lecturates provide facilitators with the opportunity to give presentations on the principles and concepts relating to TQ which prepares them to conduct their own Employee Training Program.

An important point that is reiterated is the need for customisation. Facilitators are told that although Avesta called their TQ initiative 'Precise Performance', facilitators should customise their own initiative by giving it a title best suited to the culture of the

company. The title is important as it focuses the attention of employees and conveys the TQ message to customers. Consensus reached during the training was that the title TQM or TQ has earned itself an unfavourable reputation, but given another name the same principles would be better received.

## **F2. Day 2 of Training Session**

The session discusses the following:

- Why the company is implementing TQM, and why quality is becoming increasingly important.
- What makes a quality company, and the characteristics of a quality company.
- External and internal customers and customer satisfaction and emphasises that everyone in the company has a customer.
- The importance of prevention instead of detection and the concept of the cost of quality. Participants are taught the tools for prevention.
- The type of management behaviour necessary for the successful implementation of TQM, and how to effectively communicate the message of TQM to employees.
- How to define quality problems and identify quality opportunities.

Facilitators learn that one of the aims of TQM is to ensure everyone understands the aims and goals of the company so that everyone will work towards achieving the same objective.

Total Quality is defined as achieving quality at the lowest cost which necessitates having everyone's commitment. The ultimate aim of TQ is the company-wide realisation that quality is the most effective route to customer satisfaction and to the company's survival and growth.

The seven key principles of TQ are discussed:

1. Philosophy - Prevention, not detection.
2. Approach - Management led.
3. Scale - Quality is the responsibility of everyone.
4. Measure - Costs of quality.
5. Standard - Right first time.



- 6. Scope - Company-wide.
- 7. Theme - Continuous improvement.

In addition to the seven principles, facilitators discuss the TQ approach towards the most valuable asset of the company - its people. The premise of TQ encompasses three aspects:

- Total quality begins with top management.

Total quality is not a quick fix. The real changes of attitude and behaviour within a company must begin at the top.

- Total quality places the emphasis on people.

Total quality is about balancing and optimising all resources - people, systems and technology – in order to maximise customer satisfaction. The importance of people above systems and technology is because the human resource drives the systems and technology used in a company and provides the link between them. Hence TQ promotes quality improvement through people using systems and technology to support what they do.

- Total quality exerts bottom-up pressure.

As commitment and action towards improvement extends throughout the company, a process of bottom-up pressure is set in motion through teamwork and the initiative of employees.

Total Quality will only be successfully incorporated into the company culture if the following four stages are followed:

#### 1. Management Commitment and Focus

Senior management commitment is the most important factor in the success or failure of TQ implementation. They have to lead by example.

#### 2. Diagnosis and Preparation

The only way forward is to know where the company is now.

### 3. Planned Improvement

Upon determination of the areas needing improvement, it is important to develop a plan of how and who is to be involved. Training is vital to provide the skills to ensure the best course of action is taken and implemented.

### 4. Review and Reinforcement

Review is necessary to monitor the success of changes and improvements made. Reinforcement ensures continuous improvement.

At this point, a syndicate work assignment is conducted to reinforce the importance of TQ in the facilitators' company.

The next topic is customer satisfaction. Facilitators are reminded that in addition to external customers each employee has an internal customer and that the employee is in turn a supplier. The same concept of satisfying external customers applies to the internal customer. Hence every employee needs to meet customer requirements. The syndicate work assignment requested facilitators to identify their internal customers and the ways that internal customers' needs can be identified.

The TQ principle of prevention instead of detection means:

- Tackling the cause, not the effect or symptoms.
- Solving the problem at source, not managing round it.
- Removing the mistake for good, not just this once.

Efforts and resources must be focused on doing things Right First Time Every Time as this:

- Maximises the use of resources.
- Ensures quality performance at every stage of the operation.
- Cuts down waste and rework.
- Eliminates work disruption.
- Satisfies and delights internal and external customers.

Syndicate work assignments required facilitators to list five examples of detection and prevention and to list samples of waste/rework with suggestions on how these can be prevented.



Facilitators were reminded that the quality improvement process needs a structured approach, which entails identifying and defining the problem, finding the root cause and determining the action to be taken, solving and testing the solution, and implementing the solution.

Identification of quality improvement opportunities can be achieved through:

- Analysing department activities in terms of customer-supplier relationships, both internal and external.
- Analysing customer complaints.
- Treating all tasks or functions as potential quality improvement areas.
- Talking to workers to find out how much of their time is actually wasted as a result of poor quality.

The best way to define quality problems is to perform a disciplined analysis as follows:

1. Clearly state the current situation through:

- Simple definition of the problem.
- Quantifying the problem, indicating how it is measured.
- Obtaining more information on the problem, such as details of the who, when, where and how long.
- Determining failure, appraisal and other costs caused by the problem.

2. Having defined the current situation, it is then compared to actual requirements of what the situation should be. These actual requirements are determined in the same manner as the current situation analysis.

3. With both sets of data and information, the problem can be clearly defined based on its deviation from requirements.

This approach to quality improvement is recommended because it focuses on looking for solutions for future changes, and does not dwell on laying blame for present mistakes.

A good start for quality improvement is to tackle problems within the facilitator's own department or group that have a high potential for improvement and that will involve

several employees. This is beneficial because employees are able to develop a sense of achievement and confidence within the security of their own department or group.

Another point that was discussed was the need to publicise results obtained company-wide and to give credit to the team members involved. This acts as a strong motivator and builds up enthusiasm and confidence in the TQ initiative as actual results are being achieved.

All facilitators are given a copy of the Employee Training Manual to be used to conduct their own employee training program. The trainer gave an overview of the employee training manual and asked facilitators to read through the manual so that they could clarify any doubts with him the following day. Moreover, he extended an open invitation to facilitators to contact him if they subsequently encountered any problems with the training material or employee training program.

### **F3. Day 3 Training Session**

The third session discusses the benefits of problem solving teams, their importance and use. It emphasises that quality improvement is integral to TQ and develops this concept. It also stresses the actions needed to overcome the barriers to TQ and to ensure it becomes part of the new culture of the company. The aim of this session is for facilitators to understand the following:

- When and how to use problem solving teams in TQ.
- How to use the techniques of teamwork for TQ.
- How to analyse and solve quality problems in a methodical manner.
- The action needed to produce error-free work.
- The application of TQ to accident prevention.
- What must be done to make quality improvements permanent.

The need for strong teamwork is emphasised. Teamwork is the best way of involving everyone in quality improvement. Teams harness commitment, provide a means of cross-functional or departmental communication and serve as a platform for promoting positive attitudes for change.



Two types of teams are discussed. Task Forces are set up by the Steering Committee to deal with specific multi-function problems that cross department boundaries and include members from each affected department. Action Teams on the other hand are formed to solve departmental problems. The aims of Action Teams include education to help spread the TQ message, and commitment to help everyone do tasks right first time every time.

The benefits of teamwork are:

- Teams can do jobs individuals cannot.
- A team uses the skills and talents of all members to arrive at the best answers.
- Working in teams builds ownership across the organisation.
- Everyone is involved in the decision and having invested in it, they will be more committed to it.
- Management cannot solve quality problems by itself. Teams use talent throughout departments to bring responsibility for improvement company-wide.

Team selection and team size are vital for success. Teams should include people who will have to take action as a result of the decisions made. Essentially these are the people whose job or responsibilities are likely to be affected by decisions made. Participants are alerted to the fact that teams begin to lose their cohesion and effectiveness at a maximum of ten to twelve members. The optimum team size is five to eight members.

The next topic of discussion is problem solving. The need to know customer requirements before any effective quality improvements can be made was emphasised. For the participating companies, this is a step they have already taken through conducting the Customer Survey. The approach to achieving quality improvement is outlined:

- Determine the root cause of the problem.
- Solve the problem and test the solution to ensure it will not cause new problems.
- Implement the proven solution.
- Ensure that any change made is permanent.

The accurate determination of the root cause is the first vital step to correctly addressing the problem. Facilitators are taught how to analyse and solve quality

problems in a methodical manner using brainstorming and the cause and effect diagram. Two syndicate exercises were conducted to allow facilitators to practice the use of these tools.

Quality improvement can only be realised when:

- Employees are motivated to act on it.
- Employees are empowered to act on it and have the authority to effect a permanent change.
- Procedures are in place to allow measurement and monitoring of the improvements and any deviation that may arise. The improvement has to be reviewed on a regular basis.

An important point brought to the attention of facilitators is that quality improvement to satisfy customer requirements can only be achieved when customer requirements are known. The pitfalls to be aware of when determining customer requirements are:

- The conclusion that meeting customer requirements is all about product requirement, ignoring service quality and an overall quality business.
- The failure to appreciate that meeting customer requirements must be a continual process. Customer requirements are not static.
- The failure to acknowledge that everyone has a customer, especially an internal customer.
- Fear. This is the fear of change or recrimination and is usually the greatest barrier to change in any organisation.

The following TQ principles on accident prevention are discussed:

1. Prevention.

Through the adoption of safe working procedures and training in these procedures.

2. Management led.

Management demonstrates commitment through the implementation of safe working and ensures communication through safety committees (Action Teams).

3. Everyone is responsible.

Everyone must be aware of his responsibilities to himself and others.



**4. Costs.**

Accidents are a clear example of failure that penalises the business through increased costs.

**5. Right first time.**

The adoption of safe working practices will ensure accidents are avoided, and can bring about the realisation of zero accidents

**6. Company-wide.**

Accidents can occur anywhere.

**7. Continuous Improvement.**

This must be the aim.

Six steps are discussed to make quality improvements permanent:

**1. Give every improvement, large and small, the status of a permanent change.**

Ensure that all plans, results and changes are recorded and updated.

**2. Follow up every change.**

Remove all factors that may cause the change to be reverted and even after the change has been permanently entrenched ensure that it is monitored to prevent backsliding.

**3. Understand that change in one area may mean changes elsewhere.**

Make sure that all necessary related changes are made.

**4. Communicate the changes to everyone.**

Reinforce changes by making them as well known as possible.

**5. Fix changes in each person's mind.**

Involve all affected persons in the improvement process. A good way to ensure commitment to the change is to make known the full reason and supporting evidence for the change.

6. Control the process of consolidating improvement.

Regularly review the change and monitor improvements in results. Make the progress of the improvements known to all involved so as to reinforce their commitment.

The final training assignment was the presentation of lecturattes by facilitators. This assignment is included to give facilitators hands-on experience in presentation. Facilitators are encouraged to ask the presenters questions.

The training concludes with the reminder that the only way forward is through the commitment and conviction of everyone in the company, that TQ is the key to the long term survival and success of the company, and that positive attitudes toward change need to be reinforced through training.



## **APPENDIX G**

### **Employee Training**

Appendix G is divided into the following sections:

- G1 Introduction
- G2 Programme for Day 1
- G3 Programme for Day 2

## **G1. Introduction**

The Adopter begins each Employee Training course with a short fifteen minute talk to the participants. The Adopter plays a very important role in the TQ initiative. He confirms the company's commitment to the TQ initiative and support for the Employee Training course. He assures participants of his return at the end of the training course to personally address issues raised and any other concerns they wish to discuss. The Adopter's role is usually filled by the CEO or Managing Director or by the member of the senior management team responsible for the implementation of TQM. The Adopter sets the scene for TQ by providing the participants with information of the company's TQ progress and the company's plan. He explains to participants that:

- The company has conducted Employee and Customer Surveys.
- The feedback from the surveys were analysed and the findings accepted by management.
- The management team has produced a structured plan to implement TQ. The priority areas to be dealt with are the weaknesses identified through the surveys.
- The Employee Training course marks the beginning of new and better things to come, both for employees and the company.

The Adopter leaves the training room and the facilitators begin the training session by:

1. Introducing themselves, giving their name, designation and function.
2. Asking the participants to introduce themselves briefly. Participants are provided with name cards.

Facilitators explain the objectives of the training are:

- To understand the principles of TQ and the tools and techniques.
- TQ is a culture change within the company that will only be successful through the participation of everyone.

Before distributing the course material, facilitators assure participants that no one will be forced to give presentations. The following Ground Rules were also explained:

- Be candid and honest.
- If a participant is interested in another's view or needs clarification, ask for it directly. Do not make assumptions.



- Each person will be given the opportunity to contribute on each topic.
- Silence is assumed to be agreement.
- Be constructive.

## **G2. Programme for Day 1**

- Total Quality Video.
- What makes a Quality Company?

Coffee break

- Syndicate Exercise.
- Customers and Suppliers – External and Internal.
- Syndicate Exercise.

Lunch

- Customer Satisfaction Video.
- Teamwork – Discussion and Exercise.

Coffee break

- Feedback on Exercise Results.
- Prevention not Detection.

Facilitators introduce and explain the seven key principles of TQ, emphasising these principles must be understood and accepted by everyone in the company before any change can be achieved.

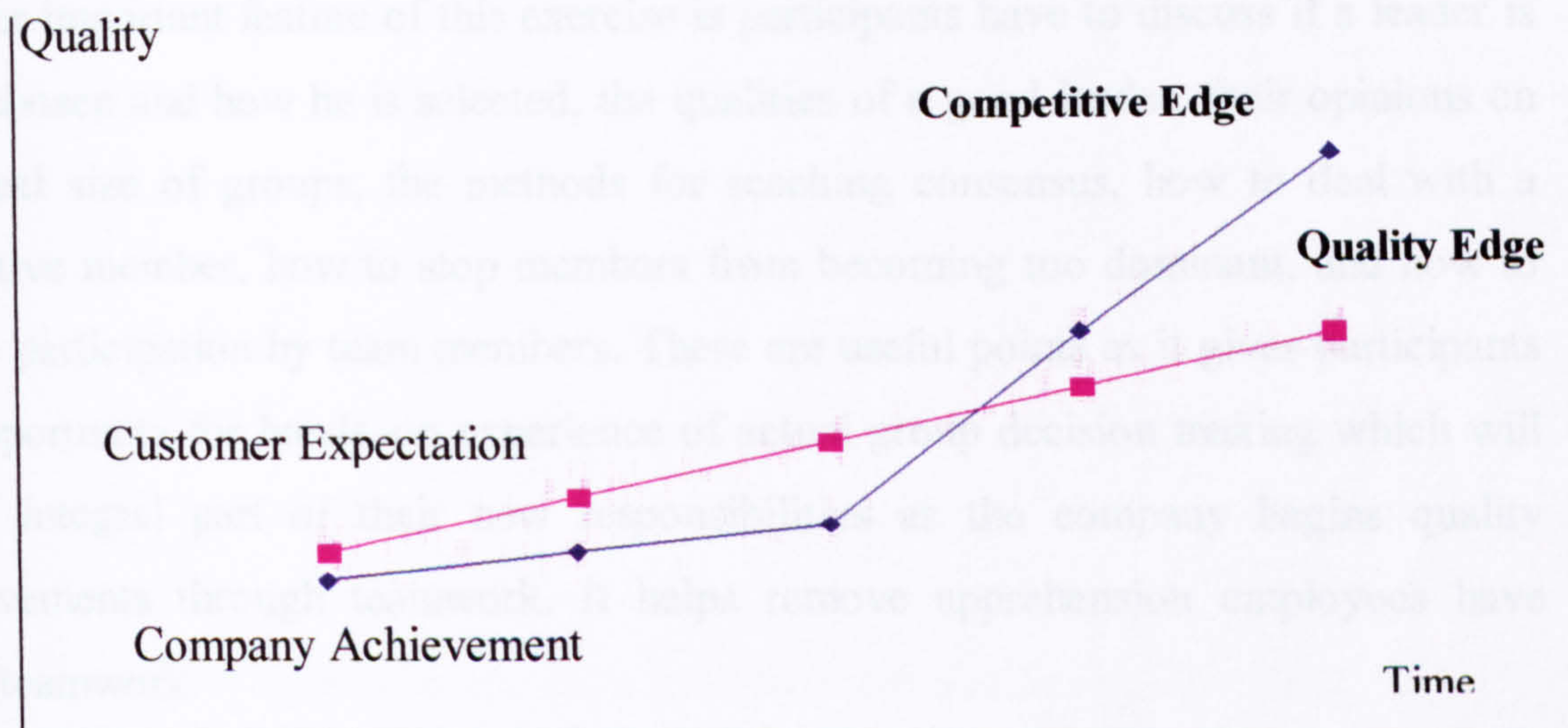
Participants learn that a company moves from being a good company into a quality company through the following route:

- Quality begins with customer's needs.
- Quality products and services start with quality in the company.
- A quality company comes from:
  - Quality of management
  - Quality of the workforce
  - Quality of operations and service
- Total Quality turns good companies into quality companies.



It is emphasised to participants that the quality of operations and services are achieved through people. Hence a quality company comes from the collective quality efforts of everyone.

A graphical representation is used to illustrate the competitive edge a quality company has in meeting the continually rising levels of customer expectations.



The first syndicate exercise looks at the “Characteristics of a Quality Company”. This exercise reveals how employees perceive the company against the characteristics of a quality company.

The next topic concerns customers. The learning objectives are: the definition of ‘meeting customer requirements’, the concept that everyone has internal and/or external customers and that the only way to meet customer requirements first time every time is through a system of prevention. Results from the company’s Customer Survey Report are discussed with participants to show how customers rate their satisfaction with the company. Participants are taught that a company is made up of sets of customer and supplier links. Achieving lasting satisfaction for the end customer depends on the quality of each internal supplier/customer link. The customer must come first, regardless of whether he is an internal or external customer.

The next syndicate exercise deals with “Everyone has a Customer and Supplier”. Participants are divided into three groups, making sure that the members in each group do have a supplier/customer link.



Facilitators next discuss the importance of teamwork and its benefits. The syndicate exercise is “Lost At Sea”. The aim of this exercise is to illustrate the benefits of group effort compared to individual effort. This exercise gives participants the opportunity to experience working as a group. Employees are grouped differently from the previous exercise. Each group includes people from different functions or departments to give them the experience of team working with ‘outsiders’.

Another important feature of this exercise is participants have to discuss if a leader is to be chosen and how he is selected, the qualities of a good leader, their opinions on the ideal size of groups, the methods for reaching consensus, how to deal with a disruptive member, how to stop members from becoming too dominant, and how to ensure participation by team members. These are useful points as it gives participants the opportunity for hands-on experience of actual group decision making which will be an integral part of their new responsibilities as the company begins quality improvements through teamwork. It helps remove apprehension employees have about teamwork.

Next on the agenda is ‘Prevention not Detection’. Participants are told the best way to produce quality is to prevent poor quality. Prevention is defined as tackling the cause and not the effect through solving the problem at the source and not managing around it. This solves the problem once and for all.

The accompanying exercise is ‘Counting the F’s’. Participants are asked to count the number of F’s appearing in a given phrase, the aim of the exercise being to illustrate the flaws in using detection to produce a quality product. The exercise successfully demonstrated that detection is a waste of effort, demotivating and not foolproof.

The last item on the agenda for Day 1 is ‘Cost of Quality’. Participants are shown that cost of quality comprises Prevention costs, Appraisal costs and Failure costs. The exercise involved facilitators giving participants ten statements describing actual tasks performed within the company and asking participants to allocate them to the categories of prevention, appraisal or failure.

### G3. Programme for Day 2

- Introduction – Review of Day 1 Learning
- Quality Improvement Process
- Problem Definition

Coffee break

- Brainstorming
- Problem Solving Video
- Cause and Effect

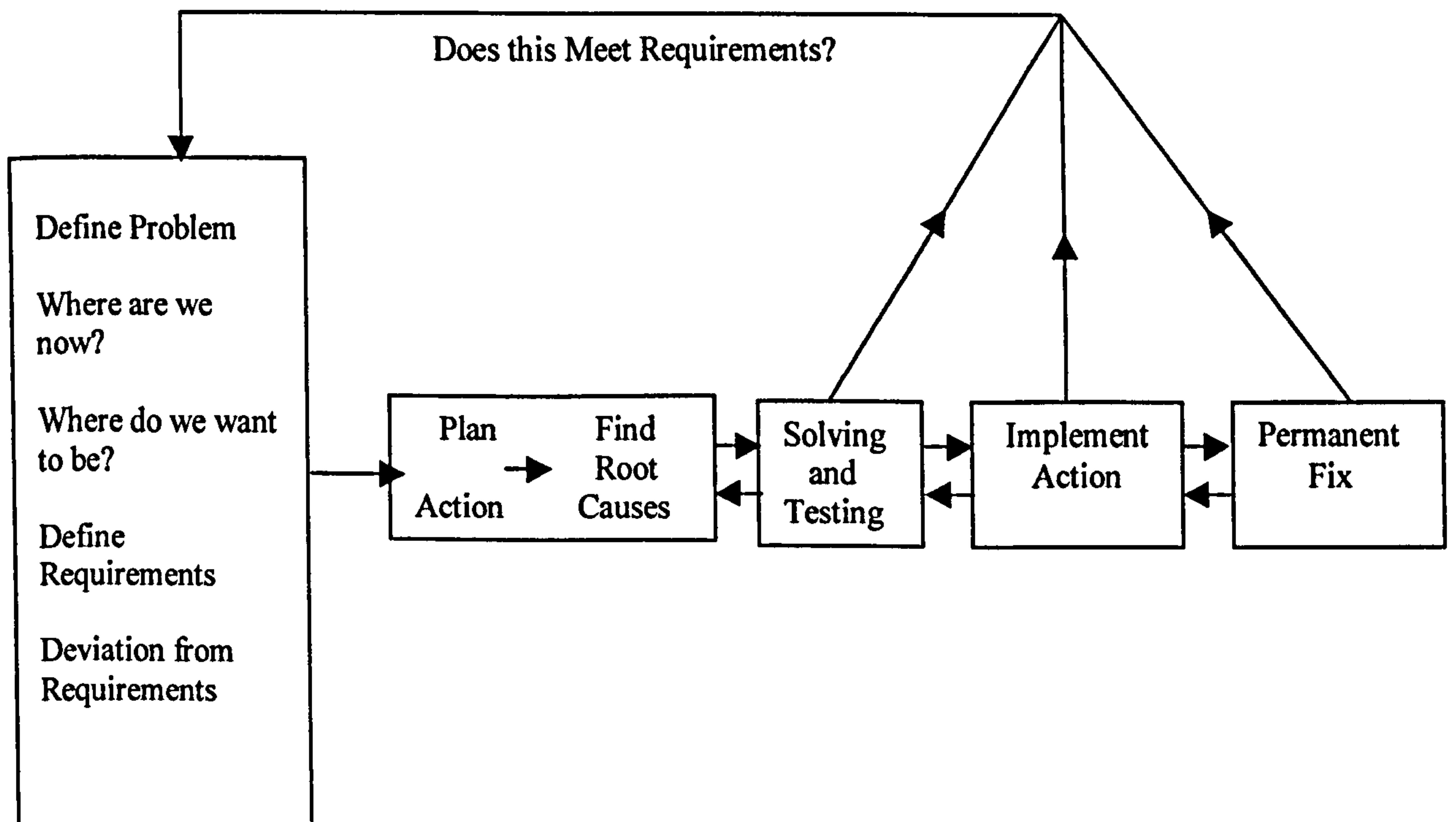
Lunch

- Barriers
- Total Quality Video

Coffee

- Conclusion by Adopter

The quality improvement process is discussed using the following flowchart:



**Figure G3.1: Quality Improvement Process**



Before deciding on the action to take to solve a quality problem, it is necessary to have:

- Clearly defined requirements.
- Clearly defined deviations from requirements.
- Identified the effects the problem is having.
- Identified the potential savings from solving it.

Participants are shown and taught to use the Quality Problem Definition Sheet. This is an effective formal approach to problem definition. This is shown in Table G3.

	<b>Current Situation</b>	<b>Requirements</b>	<b>Opportunity from Difference</b>
Simple definition of the problem and requirements			
Quantification of the problem and requirements			Potential Gains
Who, when, where, how long, details of the problem and requirements			Likely Time Scale
Cost of the problem and requirements			Estimated saving/benefits

**Table G3: Quality Problem Definition Sheet**

Facilitators familiarise participants with the procedure of Brainstorming which is designed to bring creativity to problem solving. The underlying assumption in brainstorming is the range of ideas generated tend to be rational and feasible because people in group situations have the tendency to carefully judge and measure their contributions. Brainstorming is based on the premise that the richer the supply of

ideas, the more complete will be the exploration of a problem, hence providing a better solution. It allows the users to collect as many ideas as possible for discussion. The optimum group size is between five and seven people.

The ground rules of Brainstorming are:

- Clear definition of problem.
- Generation of as many ideas as possible.
- No criticism, no evaluation.
- Everyone has an opportunity to contribute.
- Record every idea, even unconventional ones. There must be no editing.
- Choose a leader and have the right team.
- Allow time for ideas to be discussed and developed.
- Maintain a relaxed atmosphere.
- Encourage freewheeling.

The next problem solving technique is the Cause and Effect Diagram. It is a very useful technique for identifying the problem and defining the root causes. Also taught is the Solution Effect Diagram. This provides a means for establishing what effects the proposed solution will have on the process.

The final topic covered in the employee training is Barriers. Participants look at five different barriers they were most likely to encounter and how to overcome them. These barriers and their most common causes are:

1. Barriers to Establishing Customer Requirements.

- Believing that meeting customer requirements is only about product requirements.
- Not believing that everyone has a customer.
- Forgetting that meeting customer requirements is a continuous process.
- Lack of feedback.

2. Barriers to Meeting Requirements.

- Not willing to bear the increased short-term cost of prevention.
- Fear that new technology and improvements will bring job losses.
- Employees not feeling they have contributed to making improvements.



This happens because they are neither not told why things are done differently nor are they allowed any input in developing new ways of working.

- Tradition – “We’ve always done it this way”. This is the most common barrier.

3. Barriers to Measuring Quality.

- Not knowing what to measure or how to measure it.
- Being afraid to expose the real problem.

4. Barriers to Maintaining the Improvement.

- Slipping back into the old ways.
- Losing the impetus for improvement.
- Total Quality is seen as a ‘flavour of the month’.
- Other priorities taking over.

5. Barriers We Create Ourselves.

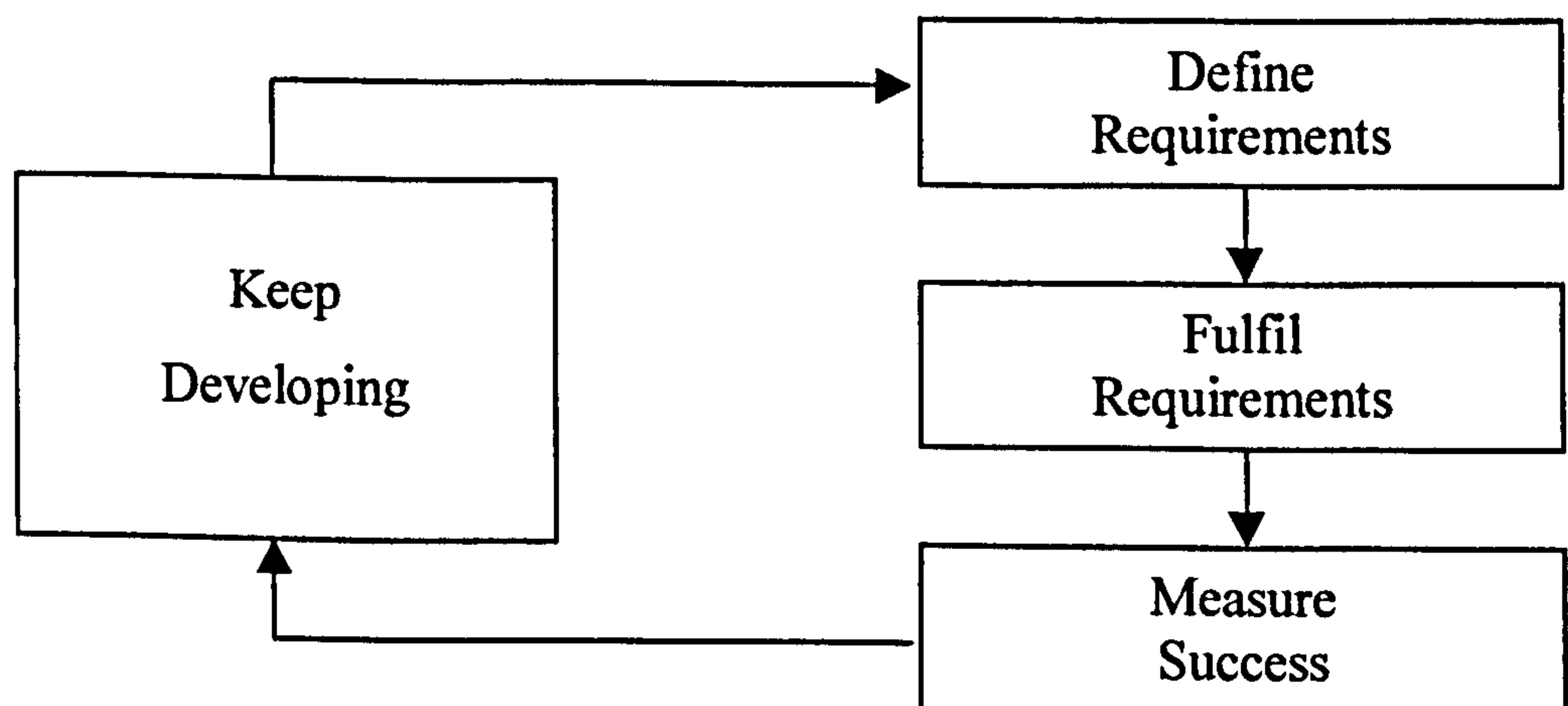
- Our attitude and behaviour.
- Failure to be consistent.

For example, one day quality will be all important then the next day urgent orders are rushed through, by-passing the quality system.

- Discouraging creative behaviour.

This is done by not taking up ideas, or worse, by not giving any explanation for why the ideas were not accepted.

The following flowchart was used to illustrate the procedure to overcoming barriers:



**Figure G3.2: Procedure for Overcoming Barriers.**

Participants are encouraged to use the Adopter Session to discuss their concerns and views. The Adopter is presented with the results and issues from the two days' requiring management response. These are written on a flip chart so that the Adopter will address all the items raised.

The Adopter begins this final session with a brief talk about 'The Way Forward', which is:

- The Total Quality process is headed by the facilitators serving as TQ champions with full support from the management team. The group is informed who all the facilitators are.
- The new culture of listening and asking will hopefully create many quality improvement ideas which will be successfully implemented.
- As needed, teams will be set up to deal with quality improvement process ideas/actions.
- The active involvement of everybody in the company.
- It may not be possible to include everybody in teamwork.
- Change will not happen overnight, but will take time.

Facilitators take over from the Adopter and assure the group that they will be kept informed about decisions made and the actions to be taken. The group is also informed that a meeting with management will be held after all employee training courses are completed to address all issues raised.



## **APPENDIX H**

### **Management Style Questionnaire**

## MANAGEMENT STYLE QUESTIONNAIRE

Company Name: \_\_\_\_\_

Date: \_\_\_\_\_.

### 1. MANAGEMENT COMMITMENT

	YES	NO
<b>A. Commitment</b>		
1. Is there a very high level of management commitment towards quality?		
2. Is there a very high level of management commitment towards productivity?		
3. Is there a very high level of management commitment towards the customer?		
4. Does management lead by example?		
<b>B. Organisation Culture</b>		
1. Is the organisation structure pyramid-shaped?		
2. Are jobs directed towards a common goal?		
3. Is there more than one supervisor per worker?		
4. Does management place emphasis solely on machinery?		
5. Is emphasis placed solely on human resources?		
6. Are human and material resources well co-ordinated to ensure maximum efficiency?		
7. Are company policies and plans communicated to employees?		



<b>C. Management Style</b>	<b>YES</b>	<b>NO</b>
1. Is there good relationship between management and workers?		
2. Is authority centralised, i.e., is authority and power concentrated at the upper levels of management?		
3. Is authority routed from the top of the company?		
4. Is authority vested in the position, i.e., is the authority of a person the result of his position?		
5. Is there a sense of justice and kindness shown by management when dealing with subordinates?		
<b>D. Training and Development</b>		
1. Is management committed to employee training?		
2. Are financial resources allocated specifically for employee training?		
3. Does the company have scheduled employee training?		
4. Is there scheduled training for the further development of management?		

<b>2. EMPLOYEE PARTICIPATION</b>	<b>YES</b>	<b>NO</b>
<b>A. Employee Satisfaction</b>		
1. Is there a sense of commitment among workers for the common good of the company?		
2. Do management actively ensure employees are motivated?		
3. Do management meet employees regularly to update them on the progress or otherwise of the company?		
4. Is there a conscious policy by management to ensure good working conditions for employees?		

<b>A. Employee Satisfaction</b>	<b>YES</b>	<b>NO</b>
5. Does the company have a formal employee welfare policy?		
6. Are job rotations planned to avoid the situation of work monotony arising?		
7. Is there a high literacy rate among workers?		
8. Is the employment of new staff in line with long term company needs, avoiding high turnovers?		
9. Is (a sense of) co-operation fostered in the company?		
10. Is there a high level of inter-departmental co-operation?		
11. Is there a high level of intra-departmental co-operation?		
12. Do employees have a high level of work discipline?		
13. Do employees place the interest of the company over and above their personal interests?		
14. Do employees have a sense of job security?		
<b>B. Employee Motivation and Involvement</b>		
1. Is teamwork encouraged within the company?		
2. Are there work improvement teams?		
3. Is the employee specially trained to cope with his area of work?		
4. Are employees highly skilled in their work?		
5. Do all employee receive detailed work instructions?		



	YES	NO
<b>B. Employee Motivation and Involvement</b>		
6. Are employees given responsibility for their quality of work?		
7. Are there daily performance charts to monitor the performance of individual employees?		
8. Are employees strongly encouraged to participate in relevant decision making within the company?		
9. Are employees encouraged to act on their own initiative when the need arises?		
10. Are growth and development opportunities available to employees?		
<b>C. Communications</b>		
1. Is there good and effective communication among employees?		
2. Do employees have open communications with management?		

3. CUSTOMER FOCUS	YES	NO
<b>A. Customer Satisfaction</b>		
1. Is there an active search for customer feedback?		
2. Is customer satisfaction monitored to identify trends and to initiate quality improvements?		
3. Is there a specific customer contact employee to deal with specific customers?		
4. Are customer complaints communicated to all employees?		
5. Is the complaint fed-back to the relevant operator?		

<b>B. Continuous Improvement</b>	<b>YES</b>	<b>NO</b>
1. Is there a program to continuously improve product quality?		
2. Is there a program to continuously improve service quality?		
3. Does the company compare customer satisfaction levels with that of competitors?		

<b>4. ADDITIONAL INFORMATION</b>	<b>YES</b>	<b>NO</b>
1. Is the company certified to ISO9000/BS5750?		
2. Are all work processes documented?		
3. Does the company work closely with suppliers?		
4. Is there a formal cost accounting system for the cost of quality?		
5. Are company records (minutes, financial statements, documents) kept for future decision making and for the purpose of efficiency (learning from mistakes and the identification of successful activities) and continuity?		