

*Final
12/05*

UNIVERSITY OF STIRLING

**FACULTY OF MANAGEMENT
DEPARTMENT OF MANAGEMENT AND ORGANIZATION**

**CLIMBING THE QUALITY LADDER:
AN EMPIRICAL INVESTIGATION OF THE APPLICABILITY OF THE EUROPEAN QUALITY
AWARD TO THE NEEDS OF SMALL AND MEDIUM-SIZED FIRMS IN SCOTLAND**

BY

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**SUBMITTED FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY**

2004

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ACKNOWLEDGEMENTS

A thesis reflects our capabilities and training for independent scholarly work. However, the past few years have been rich with experience; incurring the development of many friends and acquaintances who have, to varying degrees and in numerous contexts, helped me along the twisting and occasionally disheartening road to research. This is my opportunity to thank all these people for their valuable contributions, suggestions, friendly ears and timely distractions.

Firstly I would like to thank my God (Allah almighty) for providing me with the strength, patience and determination to undertake this study. Many thanks are due to my supervisor, Adrienne Curry, for her support and feedback throughout my period of research. Her support and guidance cannot be overstated. She has been a constant supplier of insightful and invaluable guidance, and has never (apparently) lost patience as a consequence of having to deal with a multitude of draft chapters and telephone calls. I can say without reservations that she is one of the most patient and wonderful persons I have ever met. She always opened her door to counsel my awkwardness as a researcher and teacher. The time she spent with me is priceless.

Due acknowledgement is given to Frank Martin and Peter Rosa who have given me time out of their busy schedule to talk about small firms and provided me with important directions in my research.

I would like to express my gratitude to those organisations that responded to the research questionnaires and especially those who agreed to participate in the research

interviews. All participants in the research interviews deserve individual mention for their kindness shown to me during the research; issues of confidentiality prevent me from doing so.

I would like to extend my appreciation to Dr Ian Glover, Dr Geoff Southern, Prof. Richard Weaver, Prof. Luiz Moutinho and Dave Herbert for their support and guidance throughout this research. Last, but not least, I would like to thank my mum, dad, my wife and my daughter for their support and patience while I worked for this degree. Whilst all of the above have greatly contributed to this thesis, the content, and consequently any errors or omissions, remain my responsibility.

ABSTRACT

Quality has been recognised as a key competitive weapon in the global markets. Organisations world-wide are making considerable efforts to implement Total Quality Management (TQM) to gain global competitiveness and small and medium-sized enterprises (SMEs) are no less concerned with quality than larger organisations, but they are less comfortable with the formal approaches. However, little is known about the use of TQM models in SMEs and more specifically, into the applicability and relevance of the European Quality Award (EQA) model to the needs of SMEs. The EQA model was developed to accelerate the acceptance of quality as a strategy for global competitive advantage, to assess the development of quality improvement activities and to recognise companies, which excel in business excellence.

The purpose of this study is to explore the applicability and relevance of the EQA model to the needs of SMEs in Scotland. The researcher intended to answer the research question by studying and evaluating the experience and perceptions of SMEs' owner-managers in Scotland. To achieve the research objective, 300 questionnaires were distributed to Scottish SMEs and 180 returned questionnaires were considered usable. In addition, 15 interviews were conducted with SMEs' owner-managers, to explore issues concerning the applicability of the model to the needs of SMEs in Scotland.

The research instruments (postal questionnaires and interview questions) were developed based on the criteria underlying the EQA model. The reliability and validity of the research instruments were tested and validated. Various methods were employed for these tests and validation. It was concluded that the research instruments in this study were reliable and valid. Therefore, researchers will be able to use these research instruments for developing quality management theory.

The EQA model found to be significantly correlated to organisational performance in Scottish SMEs. The model was found to be appropriate and applicable to the needs of SMEs in Scotland, which implied that they are willing to implement and practice the EQA model to achieve organisational success. Further, the study concluded that managers and owners of Scottish SMEs recommended other useful constructs, which can be incorporated into the EQA framework to make it more suitable and applicable to the needs of SMEs.

Scottish SMEs were found to be willing to implement and practice the nine constructs underlying the EQA model, and more specifically, leadership was identified as playing an important role in stimulating quality consciousness. This is evident from the fact that Scottish managers and owners of SMEs had positive attitudes towards the nine constructs underlying the EQA model. Moreover, the EQA model was correlated significantly to performance in terms of customer satisfaction, quality, productivity and financial performance, which in turn can lead to enhancing the performance of Scottish SMEs. To confirm this further, the EQA constructs are regarded by the participants interviewed to be necessary for achieving success. Through the implementation of the EQA, organizations can achieve high quality products and services which are the essence of a company's survival and

competitiveness, while continual improvements in quality are critical for achieving and sustaining financial and operational performance. Therefore, it was clear that the EQA model seems to be an appropriate model to be used in Scottish SMEs for achieving organizational objectives and success. Additionally, the present study noted how SMEs in Scotland had recommended other constructs, which could be incorporated into the EQA framework to make it more applicable to their needs and help them to achieve the desired outcomes.

TABLE OF CONTENTS

	Page No.
Acknowledgements	II
Abstract	IV
Table of Contents	VII
List of Figures	VI
List of Tables	XIV
List of Appendices	XX
Chapter One: Introduction	
1. Introduction	1
1.1. Background	2
1.2. Motivation for the topic: Reaching Out	5
1.3. Research question	8
1.4. Aims of the research	9
1.5. Justification for the research	9
1.6. Research methodology	12
1.7. Significance of the research	14
1.8. Organisation of the thesis	16
1.9. Definition of terms	19
1.10. Summary	21
Chapter Two: Small Firms	
2. Introduction	22
2.1. Definitions of small firms	23
2.2. Statistical outlook on small firms	28
2.3. The continuing strength and growth of small firms	30
2.4. The contributions of small firms	37

2.5.	SMEs and competitiveness: Identifying a suitable model	44
2.6.	Summary	50

Chapter Three: Quality

3.	Introduction	51
3.1.	Defining quality	51
3.2.	A historical perspective on quality leadership	57
3.3.	Quality leadership: A critique	70
3.4.	Quality: Uncertainty and changing environment	73
3.5.	Summary	77

Chapter Four: Total Quality Management

4.	Introduction	78
4.1.	Total Quality Management (TQM): Definitions	79
4.2.	The origins of TQM	84
4.3.	Principles of TQM	86
4.4.	In search of a theoretical foundation for TQM	94
4.5.	TQM and performance: A critical perspective	108
4.6.	Implementation of TQM	129
4.7.	TQM: tools and techniques	144
4.8.	TQM tools and organisational performance	163
4.9.	TQM and organisational size	176
4.10.	Theoretical framework	201
4.11.	Summary	203

Chapter Five: Research Methods

5.	Introduction	205
5.1.	Research design and philosophical positions	205
5.2.	Sources of data	211
5.3.	Literature review stage	212
5.4.	The postal questionnaire and design stage	213
5.5.	The interview stage	221

5.6.	Sampling stage	226
5.7.	Procedures for data collection	233
5.8.	Administration of research methods	236
5.9.	Analysis of the research data	240
5.10	Empirical assessment of the research instruments	246
5.11.	An assessment of the interview	256
5.12.	Summary	263

Chapter Six: Quantitative data analysis and discussion

6.	Introduction	264
6.1.	Organisational characteristics	264
6.2.	Total Quality Management (TQM)	274
6.3.	TQM constructs: EQA Model	280
6.4.	Correlation Analysis	298
6.5.	Quality performance	303
6.6.	TQM Maturity	311
6.7.	Summary	316

Chapter Seven: Qualitative data analysis

7.	Introduction	318
7.1.	Characteristics of the surveyed organisations	318
7.2.	Evidence of managers attitudes and behaviours/actions of TQM constructs(EQA model)	319
7.3.	Emerging new themes	351
7.4.	Summary	356

Chapter Eight: Discussion and Conclusion

8.	Introduction	357
8.1.	Organisational characteristics	357
8.2.	Knowledge and understanding of TQM	358
8.3.	TQM constructs (EQA model) management attitudes and actions/behaviours	359
8.4.	Organisational performance and maturity	394

8.5.	Proposed EQA model: Integrated business excellence model	395
8.6.	The new improved EQA : the integrated business excellence model	403
8.7.	Existing theory and the integrated business excellence model: Limits or strengthen	412
8.8.	The integrated business excellence model: Further evaluation and testing are needed	419
8.9.	The integrated business excellence model: Effective implementation issues	424
8.10.	Recommendations	427
8.11.	Final thoughts on the conclusions	429
8.12.	Research contributions	431
8.13.	Some limitations of the research	436
8.14.	Directions for future research	442
	Bibliography	446
	Appendices	485

LIST OF FIGURES

Chapter One: Introduction

Figure 1.1:	Research process	13
Figure 1.2:	The structure of the thesis	17

Chapter Three: Quality

Figure 3.1:	Definitions of quality	52
Figure 3.2:	Quality defined	54
Figure 3.3:	Eight customer-related dimensions of quality	55
Figure 3.4:	Concept of customer	56
Figure 3.5:	Deming's flowdiagram of the organisation as part of a system	62
Figure 3.6:	The Juran quality trilogy	65
Figure 3.7:	Quality planning road map	76

Chapter Four: Total Quality Management

Figure 4.1:	The evolution of total quality management	86
Figure 4.2:	Business system model	96
Figure 4.3:	Three components of TQM	97
Figure 4.4:	The system-structural view of quality management modified to reflect aspects of the managerial problem solving process	100
Figure 4.5:	The theory of quality management underlying the Deming management theory	104
Figure 4.6:	The company and market perceptions of product innovation	122
Figure 4.7:	The knowledge management process framework	138
Figure 4.8:	Five strategies for managing change	142

Figure 4.9:	Interaction between TQM and learning organisation	143
Figure 4.10:	Model of key system areas of ISO 9000: 2000	149
Figure 4.11:	The self-assessment procedure	153
Figure 4.12:	The Vanguard approach to self-assessment	153
Figure 4.13:	Model of business strategy	155
Figure 4.14:	Importance of customers among quality management models	156
Figure 4.15:	The European Quality Award	158
Figure 4.16:	The RADAR logic	160
Figure 4.17:	European business excellence model and ISO 9000 comparison	161
Figure 4.18:	The ISO 9000 implementation strategy	188
Figure 4.19:	Theoretical framework	203

Chapter Five: Research Methods

Figure 5.1:	Methods of data collection	211
-------------	----------------------------	-----

Chapter Six: Quantitative data analysis and discussion

Figure 6.1:	Distribution of the sample firms by business activity (N=180)	265
Figure 6.2:	Usage of quality initiatives among SMEs (N=180)	271

Chapter Seven: Qualitative data analysis

Figure 7.1.	Components of process management	342
Figure 7.2.	Plan-Do-Check-Act of process management	343
Figure 7.3.	Benefits of EQA model implementation	352

Chapter Eight: Discussion and Conclusion

Figure 8.1.	Examples of leadership practices	360
Figure 8.2.	Examples of policy and strategy practices	361
Figure 8.3.	Examples of people management	363
Figure 8.4.	Examples of resource management practices	364
Figure 8.5.	Examples of process management practices	366

Figure 8.6.	Examples of customer satisfaction practices	367
Figure 8.7.	Examples of people satisfaction practices	368
Figure 8.8.	Examples of impact on society practices	370
Figure 8.9.	Examples of business results practices	371
Figure 8.10.	Knowledge management and business system	389
Figure 8.11.	Quality systems/models and knowledge management as an integrated business system	390
Figure 8.12.	The integrated business excellence model	405
Figure 8.13.	The integrated business excellence model with the external environment	408
Figure 8.14.	Deming chain reaction	434
Figure 8.15.	The integrated business excellence model and small firms' performance	435

LIST OF TABLES

Chapter Two: Small firms

Table 2.1:	Simple employment size cut-off points for defining small firms	24
Table 2.2:	European commission definition of SMEs	24
Table 2.3:	Number of small firms among different types of businesses	29
Table 2.4:	Proportion of business, employment and turnover in small, medium and large firms at the start of 1997	30
Table 2.5:	Advantages and disadvantages of SMEs in innovation	41

Chapter Three: Quality

Table 3.1:	Where change is coming	74
Table 3.2:	Top issues for big companies	75

Chapter Four: Total Quality Management

Table 4.1:	Elements of total quality management	79
Table 4.2:	The dimensions of quality and the functions typically responsible for their provision	84
Table 4.3:	TQM and the classical theories of management	93
Table 4.4:	Constructs underlying the Deming management method	103
Table 4.5:	Summary of the empirical evidence on the relationship between TQM practices and performance	113
Table 4.6:	Reasons for total quality management implementation failures	115

Table 4.7:	The relationship between TQM and innovation	119
Table 4.8:	Similarities and differences of KM and TQM	139
Table 4.9:	Different strategies for managing change	142
Table 4.10:	ISO 9000 and quality assurance standards	145
Table 4.11:	Benefits of the self-assessment process	152
Table 4.12:	Criterion values and percentages	159
Table 4.13:	Matrix showing the impact of ISO 9000 on the parts of the EQA criterion processes	161
Table 4.14:	Benefits of the ISO 9000 system	165

Chapter Five: Research Methods

Table 5.1:	Overview of similar research studies on quality management	231
Table 5.2:	Results of pilot studies	235
Table 5.3:	Questionnaire response rate statistics	237
Table 5.4:	Respondents by number of employees and turnover (n=180)	238
Table 5.5:	Respondents by organisation size (n=180)	238
Table 5.6:	Responding organisations by industry sector (n=180)	238
Table 5.7:	Interview respondents by organisation size and sector (n=15)	240
Table 5.8:	Results of Cronbach's alpha for EQA constructs during pilot testing	247
Table 5.9:	Results of Cronbach's alpha for EQA constructs during the research (n=180)	248
Table 5.10:	Item to scale correlation matrix (Pearson Correlation)	249
Table 5.11:	Test-retest statistics for the EQA constructs	250
Table 5.12:	Results of factor analysis for the nine scales	252
Table 5.13:	Factor matrix for scale three (People management)	253
Table 5.14:	Factor matrix for scale eight (Customer satisfaction)	253
Table 5.15:	Bivariate correlation matrix (EQA scales)	255
Table 5.16:	Bivariate correlation matrix (Product and service quality measures)	255

Table 5.17:	Bivariate correlation matrix (EQA scale, product and/or service quality measures)	256
-------------	---	-----

Chapter Six: Quantitative data analysis and discussion

Table 6.1:	Sample distribution by business activity (n=180)	265
Table 6.2:	Grouping firms by number of employees (n=18)	266
Table 6.3:	Sample distribution by ownership (n=180)	267
Table 6.4:	Extent of ISO 9000 certification (n=180)	268
Table 6.5:	Usage of quality management initiatives among SMEs (n=180)	270
Table 6.6:	Usage of quality management initiatives versus ISO certification (n=180)	273
Table 6.7:	Comparison of ISO 9000 firms and non-ISO 9000 firms (n=180)	273
Table 6.8:	Usage of quality initiatives versus firm sizes (n=180)	274
Table 6.9:	Mean score for each statement (n=180)	276
Table 6.10:	Level of TQM and sector activities (n=180)	278
Table 6.11:	Level of TQM understanding among services and manufacturing SMEs (n=18)	278
Table 6.12:	TQM and certified and non-certified SMEs (n=180)	279
Table 6.13:	Significance tests of level of TQM understanding among ISO 9000 certified and non-ISO 9000 certified SMEs (n=180)	279
Table 6.14:	Mean ratings of the quality management criteria (n=180)	282
Table 6.15:	Management attitudes scores with regard to the EQA model (n=180)	284
Table 6.16:	Comparison of TQM constructs implementation levels among various studies	286
Table 6.17:	Manufacturing and services managers' attitudes to EQA constructs (n=180)	287
Table 6.18:	Comparison of services organisations versus manufacturing organisations	290

Table 6.19:	ISO certified firms versus non-ISO certified firms comparison (n=180)	291
Table 6.20:	Management attitudes to the EQA by firm size	296
Table 6.21:	Pearson's correlation among TQM constructs in SMEs (n=18)	298
Table 6.22:	Relationship between TQM constructs and quality performance measures (n=180)	300
Table 6.23:	Correlation matrix of the EQA constructs (independent variables) (n=180)	302
Table 6.24:	Product and service quality performance among SMEs (n=180)	304
Table 6.25:	Product and service quality performance among certified and non-certified SMEs (n=180)	306
Table 6.26:	Product and service quality performance measures between manufacturing and service SMEs (n=180)	308
Table 6.27:	Correlation between the six quality performance measures in SMEs (n=180)	310
Table 6.28:	Correlation between the EQA constructs and quality measures (n=180)	311
Table 6.29:	Levels of TQM maturity	312
Table 6.30:	TQM maturity among SMEs (n=180)	313
Table 6.31:	Quality management maturity among certified and non-certified SMEs (n=180)	314
Table 6.32:	Statistical tests of TQM maturity among certified and non-certified firms (n=180)	314
Table 6.33:	Pearson correlation between TQM maturity and organisational performance (n=180)	315

Chapter Seven: Qualitative data analysis

Table 7.1.	Interview respondents by business sector	318
Table 7.2.	Interview respondents by organisation size (No. of employees)	318

Table	7.3.	Main issues concerning TQM constructs (EQA model) emerged from the questionnaire survey	319
Table	7.4.	Emerged themes and sub-theme of leadership	320
Table	7.5.	Categories of management involvement	324
Table	7.6.	Similar behaviours and actions of strategic and operational plan development	326
Table	7.7.	Methods of communication and understanding quality	326
Table	7.8.	Perceptions and views of people management	327
Table	7.9.	Perceptions of employee training	328
Table	7.10.	Perceptions and views of performance appraisal (informal meetings)	331
Table	7.11.	Views of employee involvement	332
Table	7.12.	Behaviours of the interviewed sample concerning organisational information	333
Table	7.13.	Reasons for information analysis and discussion with employees	334
Table	7.14.	Co-operative relationships with suppliers in the interviewed sample	336
Table	7.15.	Elements to produce satisfying output	336
Table	7.16.	Reasons for managing processes in the interviewed sample	337
Table	7.17.	Different criteria for selecting suppliers	339
Table	7.18.	Consumer satisfaction measurement methods in the interviewed sample	344
Table	7.19.	Benefits of customer satisfaction	345
Table	7.20.	Conditions for sustaining employee satisfaction	346
Table	7.21.	Benefits of employee satisfaction in the interviewed sample	347
Table	7.22.	Measures of people satisfaction in the interviewed sample	348
Table	7.23.	The interviewed sample behaviours and responsibilities to the community	348

Table	7.24.	Improvements activities of TQM (EQA model) implementation	350
Table	7.25.	Issues face the interviewed sample in today's business	351
Table	7.26.	Perceived benefits of innovation in the interviewed sample	353

Chapter Eight: Discussion and conclusion

Table	8.1.	Illustration of few examples of quality and knowledge management strategies	388
Table	8.2.	The integrated business excellence model and other studies	397
Table	8.3.	Quick review comparing the integrated business excellence and other quality awards	399
Table	8.4.	Comparison between the integrated business excellence model and other quality awards	402
Table	8.5.	The integrated business excellence model – the criteria and their parts for self-assessment and benchmarking	409

LIST OF APPENDICES

Appendix A: Quality models

Appendix A1:	The Malcolm Baldrige Quality Award (MBNQA)	485
Appendix A2:	The European Quality Award	486

Appendix B: ISO 9000: 2000 and the components of the EQA model

Appendix B1:	Top management functions within ISO 9000: 2000	487
Appendix B2:	Process approach management functions ISO 9000: 2000	488
Appendix B3:	Customer satisfaction functions within ISO 9000: 2000	489
Appendix B4:	Continual improvement functions within ISO 9000: 2000	490
Appendix B5:	Components of EQA model	491

Appendix C: Letters of interest and study questionnaires

Appendix C1:	Pre-notification letter	492
Appendix C2:	Covering letter	493
Appendix C3:	Pre testing questionnaire copy	494
Appendix C4:	Modified version of the questionnaire sent to the sample	501
Appendix C5:	Reminder letter	508
Appendix C6:	Interview schedule and questions	509

Appendix D: Tables related to data analysis in chapter 6 **513**

Appendix E: Description of the new enablers criteria for self-assessment and benchmarking **536**

Appendix F: Description of the new results criteria **538**

Chapter One: Introduction

1. Introduction

The performance of any country's economy depends on the success with which its individual organisations produce goods and services that are more competitive than their international competitors. Achieving quality is a critical element in achieving competitive success (Montes et al., 2003). It is also evident that quality has given impetus to the creation of employee commitment and flexible management systems, which help to achieve success (McAdam, 2000). The existing Total Quality Management (TQM) approaches {e.g, Statistical Process Control (SPC); Just In Time (JIT); and Quality Circles (QC)} are not sufficient to guarantee quality that is superior to that of competitors (Huang and Lin, 2002). Therefore, organisations need to adopt a TQM approach that ensures the quality of their products and/or services satisfies and continues to satisfy customer requirements. The clear competitive significance of quality, together with the fact that best practice TQM does not always diffuse effectively throughout an economy, has led to public sector involvement in the promotion of quality initiatives such as the Malcolm Baldrige National Quality Award (MBNQA) and the European Quality Award (EQA). The main reason behind the acceptance of these models is that their underlying principles are commonly perceived as being beneficial and relevant to the development of most organisations in today's changing and competitive markets.

The researcher identified that most of the tools, models and concepts applied in the field of TQM are almost all based on case studies and the prescriptions of quality gurus. Whilst a considerable amount of research has been carried out into the format

of the EQA model and its use for self-assessment, little research has been carried out into the applicability of the model to the needs of small and medium-sized enterprises (SMEs). The researcher intends to use the experience and perception of quality practitioners in Scottish Small and Medium-sized Enterprises (SMEs) to identify the applicability and relevance of the model, management attitudes towards the model and problems encountered while implementing it.

1.1. Background

In 1993, Juran wrote of quality and stated that: *While the twentieth century has been the century of productivity, the twenty-first century will be the century of quality to achieve competitive advantage* (Juran, 1993, p. 47). Quality has been recognised as potentially important in the development of a competitive advantage in the twenty-first century (Feigenbaum and Feigenbaum, 2000), and organisational competitive advantage will be difficult to match (Rungasamy et al., 2002; Huang and Lin, 2002; Lai et al., 2002; Dwyer and Keating, 2001). Quality not only sounds intuitively desirable to be implemented as a strategy, but also has been linked empirically to advantages such as customer satisfaction and repeat business (Tari and Molina, 2002), large market share (Feigenbaum and Feigenbaum, 2000) and yields improved profitability due to reduced costs and higher margins (Tari and Molina, 2002; Bank, 2000).

A good deal has been written on how quality should be managed, on the different tools used for implementing and sustaining competitive advantage (Westlund, 2001) and on improvements in quality performance and financial performance (Brah et al., 2002; Agus et al., 2000). One of the most important developments in business over

the last ten years has been the growing recognition of the strategic importance of TQM (Lee, 2002; Huang and Lin, 2002; Agus et al., 2000).

TQM tends to provide an organisational paradigm for the development of quality systems (Gunasekaran et al., 1998). It can be described as a new way of thinking about the management of organisations and it encompasses an integrated view on all activities in a company, in order to ensure that the products and services provided by the organisation meet or exceed the requirements of the customers (Berry, 1998). TQM has come to mean that aspect of the overall management function that determines and implements the quality policy of the organisation (Jonker, 1998).

TQM is about transforming management practice to focus on customer requirements, teamwork and total involvement of all organisational members (Husband and Mandal, 1999). In this way, TQM is a concept or an activity for developing and achieving quality to which all organisational members are committed, and which they are responsible for organisational continuous improvement (Yong and Wilkinson, 2002). Moreover, TQM is vital in that it directs organisation goals and has a profound effect on the functions and operations of individual employees (Kuei et al., 2001; Foley et al., 1997).

There has been significant growth in interest from governments and commercial organisations in improving and enhancing the quality of products and/or services, to improve the international competitiveness of companies and economies (Chittenden et al., 1998). Organisations were encouraged to use TQM models based on quality awards such as the Malcolm Baldrige National Quality Award (MBNQA) (see

Appendix A1), the European Quality Award (EQA) (see Appendix A2) (Taylor, 1995). The essence of these awards is that quality improvement has to be seen in its relationship to the total strategy of the business and they have a greater stress on the management of process (Keating and Harrington, 2002; Samson and Terziovski, 1999). These quality awards are used to identify which companies use the best TQM practices (Rahman, 2001; Chittenden et al., 1998). There are agreement among authors in the literature that the use of these awards lead to strong quality and financial improvement (Adebanjo, 2001; Reed et al., 2000).

Small firms¹ have been identified as an important sector for the economic growth of a country. Small firms not only contribute to outputs and employment, but also affect the competitive ability of the larger organisations (Temtime and Solomon, 2002; Knight, 2001; Ghobadian and Galleary, 1996). Small firms can influence the competitiveness of large organisations by providing high quality inputs (Sturkenboom et al., 2001; Wiele and Brown, 1998). Therefore, small firms found themselves located at the centre on interest in the quality debate for several reasons. One is that large organisations will not be able to improve the quality of their products, services and processes, unless their suppliers (small firms) grow to a higher level of quality (Wiele and Brown, 1998).

Husband and Mandal (1999) observed that the existing TQM models of large firms (for example, Q-Base, Business Growth Through Quality, Balanced Scorecard) are not sufficient to guarantee quality in small firms. However, small firms failed to implement any of these models and these because of the differences between large

¹ The term small firms in this chapter refers to small and medium sized firms, where they employ fewer than 49 (small) and employ fewer than 249 (medium).

and small firms' characteristics (Rahman, 2001; Yousf and Aspinwall, 2000; McAdam and McKeown, 1999). Karlsson and Wiklund (1997) and Chalykoff et al. (1995) considered that the EQA is an appropriate model theoretically and that it includes all the functional principles for managing quality in small firms. It has been identified further that little empirical research has been conducted on the applicability of EQA in small firms (Armitage, 2002; 2001; Kuratko et al., 2001; Reed, 1998; Kaye and Dyason, 1999; Ramsey, 1998). Hence the rationale for the central theme of this thesis, which is to study the applicability of the EQA in small firms (small and medium-sized firms). This section has provided an overview of the gap identified in the field of TQM and small firms and the need for researching the proposed topic.

1.2. Motivation for the topic: Reaching out

Over the past 25 years, a range of national and international quality awards have been designed and developed in order to encourage the development of innovative total quality management. These awards are based on clear guides, which are considered by the awards' developers to be excellence models for total quality management. The growing importance and the considerable prestige that these awards hold, companies have become interested in adopting these awards, for example the European Quality Award (EQA). I came to be aware of the EQA during my final honours year, while I was studying operation management module. At that time I did not pay much attention to the model, till I came across the model again during my Master of Science in Entrepreneurship, where I gained an understanding and insightful knowledge of the model and its associated benefits. As I became interested in the EQA model, I have taken it further by performing a preliminary research project on different companies in Scotland to identify their level of awareness, and understanding of the model.

Based on the preliminary results which indicated that large companies were aware and understood the model, while the majority of small and medium sized enterprises were not aware of the model, reluctant to use it, and they showed interest in learning about the model, as they perceived it to be beneficial. However after the research project was performed, I started questioning myself:

- Can one model be suitable for all organizations?
- Why are SMEs not aware of the model?
- Is the model applicable to them or not?
- Can SMEs implement the model as it is?

A few weeks later the researcher met up with the managers of the SMEs to be interviewed to discuss the EQA report and based on the discussion, the researcher came to realize that the model could not be implemented in these organizations unless it had been proven to be applicable to their needs. As the researcher reached this conclusion, he remembered a statement made by one of his professors that not everything that applies to large organizations can be applied to small firms. From this point forward the researcher became interested in the EQA and this interest has been developed further through the following approaches in later years:

Different discussions took place with academic experts such as Prof Weaver, Prof Luiz Moutinho, Dr Geoff Southern, Dr Anne Smith (members of The Business School of Glasgow University), Prof Davis Littlejohn (Business School, Glasgow Caledonian University), Dr Bill Mayfield (Babson College, USA), and members of the Scottish Enterprise in Glasgow with regard to the applicability of the EQA to the needs of SMEs. All of them supported the idea that not much work has been done on this area, and it would be an interesting research idea. To develop and confirm this idea further, a

literature review has been performed and the researcher came across some interesting readings which formed a focus on the topic at hand.

Existing TQM models of large organizations are not sufficient to guarantee quality in small firms and this is due to SMEs' characteristics (McAdam and McKeown, 1999; Ghobadian and Gallear, 1996). SMEs have some distinctive characteristics, for example the dominant role of entrepreneurs-owners, who are often extremely sceptical about outside help and fairly unreceptive to organizational and managerial innovation; the close relationship between firm and family, the simple structural configuration and the low level of formalisation and standardisation, which are frequently accompanied by unfocused organizational roles; and a fairly unsophisticated entrepreneurial formula with informal strategies. This was supported further by Taylor and Adair (1994: 228) who stated that *what emerges from the literature is a need to acknowledge that SMEs do have different characteristics in terms of culture, identity, function and customer response to their larger counterparts.* Therefore, to identify the applicability of the EQA to the needs of SMEs, Wilkes and Dale (1998) conducted a study on seven small and medium sized enterprises in the North West of England to identify management attitudes towards self-assessment and the study suggested that self-assessment models such as the EQA cannot be implemented in their present format as large organizations are different from SMEs. However this study was only limited to seven small and medium sized companies in the manufacturing and service sector in one part of the UK. Therefore the results were very limited with regard to the sample size, sectors and location. Reed (1998) in his book titled "Using the Business Excellence Model in a small Service Business" reported that the business excellence model has not been extensive in SMEs and what

has been reported has tended to be limited in scope, supporting Wilkes and Dale (1998). Moreover, Taylor and Adair (1994), and Armitage (2001) suggested that SMEs are not using the model due to the inappropriateness of the model to their needs, and little research has been conducted on the applicability of the EQA in small firms. This is supported further as most of the research carried out into the format of the EQA model was based on large European companies (Hakes, 1998; Lascelles and Peacocks, 1996). Furthermore, the publications that are made available to aid self-assessment, such as the Guides to Self-Assessment published by the various national quality bodies, remain largely focused on the needs of large organizations, which indicates that the national quality organizations are unaware of the needs of SMEs in the UK economy due to the lack of research.

1.3. Research Question

How applicable is the EQA model to the needs of SMEs?

Small firms are no less concerned with quality than larger organisations, but they are less comfortable with the formal approaches (McTeer and Dale, 1994). Armitage (2002 and 2001), Kaye and Dyason (1999) and Ramsey (1998) concluded that there is comparatively little use of TQM models in small firms. This has been supported by the British Quality Foundation (BQF) (1996) which concluded that, only 3% of UK small firms use TQM models. Non-implementation of those models in small firms could be as a result of small firms' characteristics (McAdam and Mckeown, 1999). However, the EQA model has been identified to be an appropriate model theoretically, including all the functional principles for managing quality in small firms (Karlsson and Wiklund, 1997). Therefore, there is an identifiable gap in the field of TQM literature which is the non-existence of research carried out into the

applicability of the EQA model to the needs of small firms (Armitage, 2002; 2001; Kuratko et al., 2001; Wiele et al., 2000).

1.4. Aims of the research

The purpose of the study is to:

Explore the applicability of the EQA model for business excellence among SMEs in Scotland by evaluating the experiences and perceptions of quality practitioners among SMEs.

To answer the overall research question, the researcher developed a set of questions to obtain sufficient data to explore the applicability of the EQA to the needs of small firms along the following lines:

- I. What are the reaction and attitudes of small and medium-sized firm managers-owners to the EQA model?**
- II. Is the EQA model applicable to the needs of small and medium-sized firms?**
- III. What problems might occur while implementing the EQA model?**

1.5. Justification for the research

This section deals with the justification for this study into the applicability of EQA to small firms' needs, the importance of small firms to the country's economy and the lack of empirical research within this field. It is important to identify the applicability of the EQA model to small firms, to help small firms to achieve quality improvement, financial gains and achieve competitive advantage. This is especially important given the contribution of small firms to the economic growth of a country (Blankson and Stokes, 2002; Jarvis et al., 2001; Curran, 1998).

Small firms have played an increasingly important role in the UK economy, replacing the jobs lost in the recent structural reorganisation of the British economy. Heneman et al. (2000) demonstrated that about one third of employment created in the private sector can be attributed to small firms. The Organisation for European Co-operation (OECD, 1994) reported that many of its members had witnessed an increase in employment in small firms. Curran (1999) showed that there was a remarkable increase in the numbers employed in small firms and they represented 17% of the UK Gross Domestic Product (GDP). Carter and Jones-Evans (2000) suggested that small firms tend to generate 50% of employment in the UK and 70% in the European Union. Further, The Department of Employment concluded that firms employing fewer than twenty people accounted for 96% of firms in the UK, employing 35% of the private sector workforce and producing 21% of all UK turnover (Curran, 1999). Curran (1999) indicated further that the net job creation by small firms is greater than that of large organisations has supported this. Therefore, small firms have a critical element in the generation of jobs (Garibaldi, 2000; Ibielski, 1997; Harrison, 1994).

To make small firms competitive and able to survive, they should be able to respond and adapt to the environment (Tan and Tan, 2002). Kaye and Dyason (1999) and Murray (1996) explained that this could be achieved through competition on quality to meet all customers' needs. Therefore, quality has been recognised as important in the development of competitive advantage in the present era of new competition (Rungasamy et al., 2002; Lee, 2002). Holt and Henson (2000), Wiklund and Wiklund (1999) showed that quality in small firms has become the key to competitive success and long-term survival.

To achieve quality in small firms, it is suggested that the policy makers of those firms focus on better management of quality critical factors, so that improvement will result in quality and financial performance (Reid et al., 2002; Jonker, 2001; Bank, 2000). One of the most important developments in business has been the recognition of the strategic importance of TQM. Small firms need to adopt a system of TQM that better ensures that the performance of their products and/or services satisfies and continues to satisfy customer and employee requirements in order to achieve competitive advantage. To achieve this, Karlsson and Wiklund (1997) have recommended the use of the EQA model, while other researchers have suggested the EQA to be used by small firms theoretically, but the model has not been investigated empirically for suitability to their needs (Armitage, 2001; Wiele et al., 2000; Taylor, 1995; Reed, 1998).

Most of the research has been carried out into the format of the EQA model and was based on large European companies (Hakes, 1998; Lascelles and Peacocks, 1996), with none of the research focused on small firms to identify the applicability of the model (Armitage, 2002; 2001; Kuratko et al., 2001). Such a study would be essential as it is the first study to identify the applicability of the model to the needs of SMEs in Scotland, in order to help them to identify a suitable and valid model for achieving quality. Then the study can be replicated in other European countries to benefit SMEs in Europe. Based on the primary and most immediate outcome from the study findings, a valid and reliable integrative TQM model will be identified, which can be applied to the needs of small firms, whereby quality and financial improvement, competitive advantage and economic growth can be achieved.

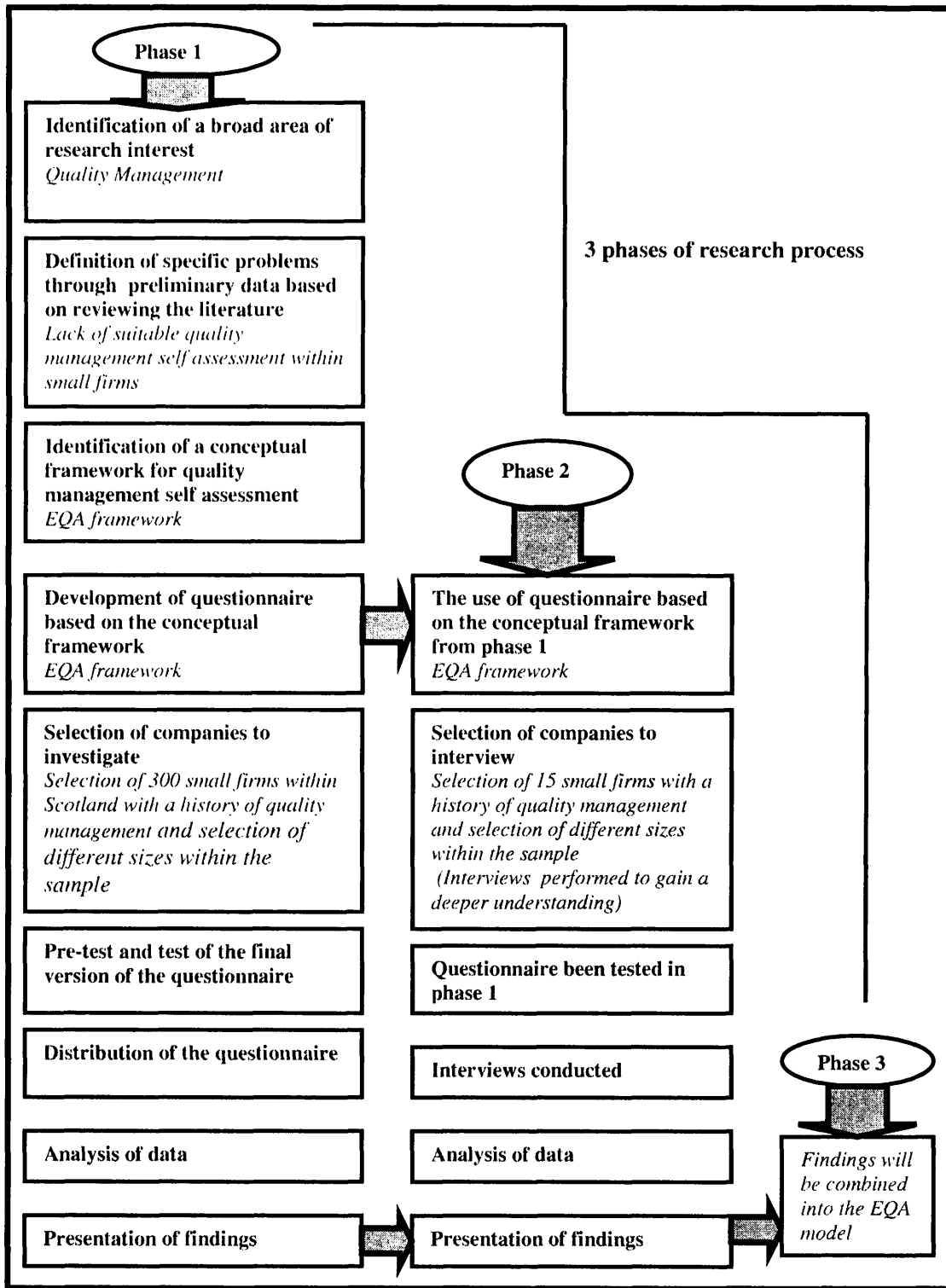
1.6. Research Methodology

To achieve the overall objective of this study, the researcher implemented different methods which included a literature review and a combination of quantitative (postal questionnaire) and qualitative (Semi-structured interviews) methods (see Figure 1.1).

The literature review was used to identify, evaluate and interpret the existing body of recorded work on quality, small firms, TQM and its effects on performance. Following on from the literature review, the research question, objectives, and research methods were developed. A combination of quantitative and qualitative methods were chosen to enable the researcher to provide a richer picture through the use of complementary data achieved from the two data collection methods (Jarrat, 1996), and it allows for triangulation which improves the reliability and validity of data (O'Donnell and Cumming, 1999).

The postal questionnaire method was chosen because of lower costs, geographic flexibility and time considerations (Baruch, 1999; Riley et al., 2000). Postal questionnaires enabled the researcher to achieve a substantial amount of numerical data, which has been manipulated in a statistical form. The questionnaires were sent to a target sample of 300 small firms in Scotland and the sample included a wide range of sectors and a diversity of company sizes (small and medium) to reflect the widely different characteristics of firms within the small firms category. The researcher used a five-point Likert scale for all items to ensure validity and higher statistical variability among survey responses (Roth and Miller, 1992).

Figure 1.1: Research process



The semi-structured interview method was used to validate, explore and explain themes, which emerged from the postal questionnaires (Saunders et al., 1997). This method enabled the researcher to collect detailed information from participants

through the collection of qualitative data. Semi-structured interviews were undertaken among a sample of 15 small firms' owner-managers in Scotland and included different business sectors and company sizes (small and medium).

The researcher used the statistical programme SPSS to analyse the quantitative data gained from factor, regression, and validity and reliability analysis. However, to analyse the qualitative data, grounded theory was used to allow the researcher to use a systematic approach to develop themes from the data.

1.7. Significance of the research

As mentioned earlier, this study investigates the applicability of EQA to small firms in Scotland. This study is considered important for the following reasons:

- I. From the literature search, the researcher identified that this study is the first to investigate the applicability of the EQA model in Scottish small firms. Thus its findings will be an original contribution to the field of TQM.*
- II. This study will contribute to the field of TQM, not only in Scotland but also in other European countries, which share similar business and economic environments. This study should also establish a foundation for further research in the field of TQM in small firms.*
- III. The use of quantitative and qualitative methods intends to reflect and validate the actual situation of the applicability of the EQA*

model. It intends also to explore the different opinions, attitudes and perceptions of the EQA model and other issues, which can be incorporated into the developed model.

- IV. This study will provide valuable assistance to small firm owner-managers and managers pursuing the implementation of the EQA model, knowing that the EQA model has proved to be valid and reliable as regards to the needs of small firms.*

- V. Quality agencies operating in the UK and EU can benefit from the attitudes and perceptions of their clients about the model they promote.*

- VI. The study will be able to identify and produce an integrative TQM model, which can be applied to the needs of small firms. This model will be constructed and validated.*

- VII. The study will provide a clear understanding of TQM factors, the ability to manage quality effectively and achieve quality improvement leading to different benefits.*

- VIII. Implementation of the model in small firms in Scotland would have a positive effect on company performance, and the success and growth of small firms will add to growth in the Scottish economy.*

1.8. Organisation of the thesis

This thesis is organised into different chapters, as illustrated in Figure 1.2. Chapter one provides an introduction to the study including background information on the proposed area of research, the research question and sub-questions, the aims of the study, the justification of the study, the study methods, the significance of the study, the organisation of the thesis, and definition of terms.

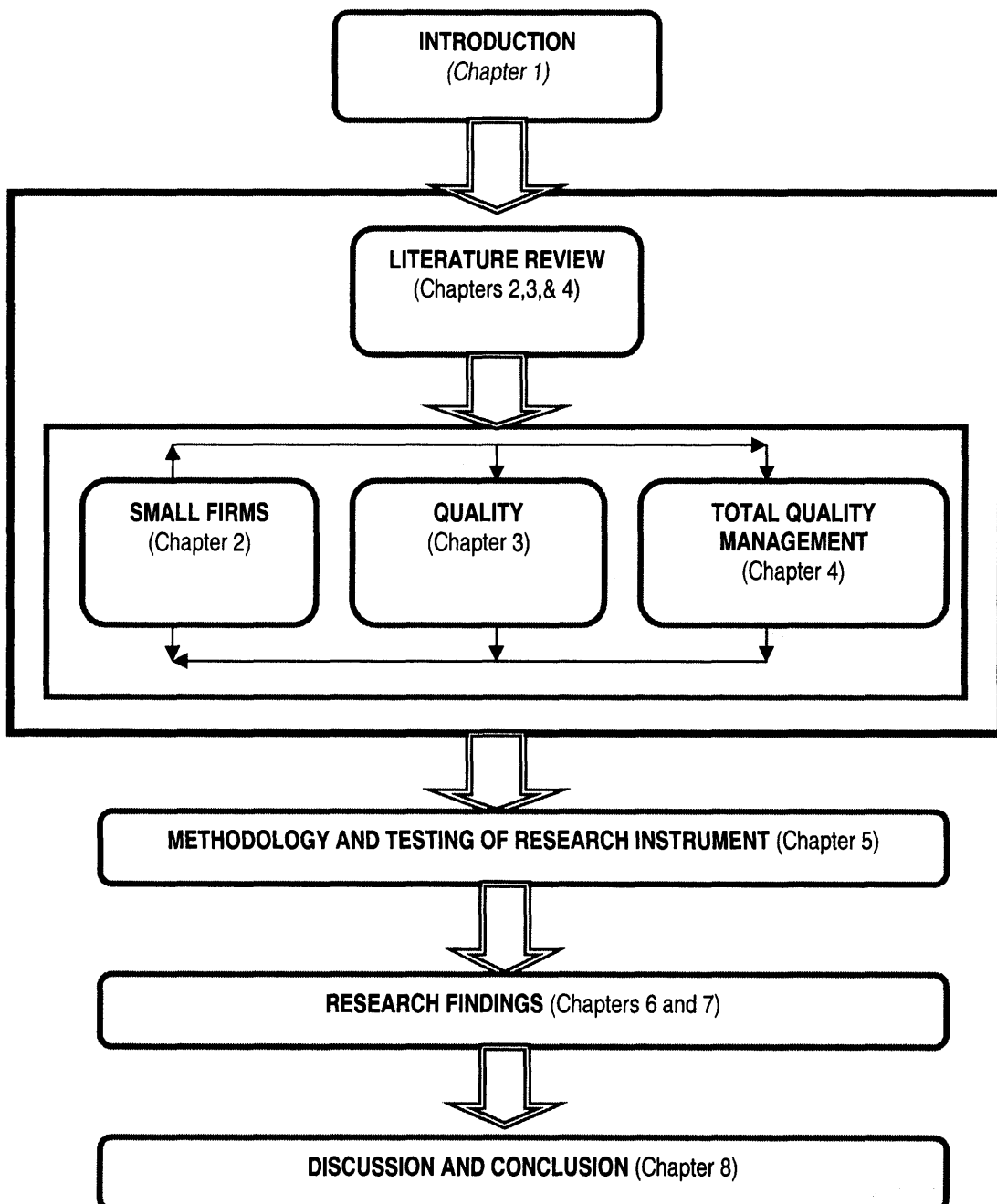
Chapter two outlines an introduction to small firms and the different definitions of small firms available in the literature. A statistical outlook of small firms is given, including historical view and an overview of small firms in the UK, the factors contributing to the continuing strength and growth of small firms and finally, the contributions of small firms are discussed.

Chapter three addresses the issue of quality in general, which includes an introduction to quality, their different definitions within the literature, an overview of quality leadership and to sum of those who contributed to the field of quality, namely Deming, Juran and Crosby, and finally the focus on quality as a strategy in the uncertainty and changing environment.

Chapter four offers an understanding of TQM. It provides an overview of TQM including the different definitions of it, its evolution, TQM theories, principles of TQM and the effects of TQM with regard to performance. Moreover, it explores TQM tools and techniques, for example, a detailed analysis of self-assessment, its purpose and its benefits for organisations, also it identifies TQM models and standards, including ISO 9000, the MBNQA, the EQA, and it offers a comparison of

the quality awards and standards. Furthermore, chapter four explains quality awards, and organisational performance in relation to small firms. This section describes the effects of quality awards and standards on organisational performance, then focuses on these awards and standards in small firms. More specifically, attention is placed on ISO 9000 and the EQA in small firms because the study is being conducted in a European country.

Figure 1.2: The structure of the thesis



Chapter five looks into the methods used for data gathering for this study. A theoretical overview of the different methods available to the researcher is presented. It focuses on the design of the questionnaires, interview schedules and sampling methods. This chapter also accounts for specific procedures used for data collection, which include pilot testing and several tactics of the administration of the methods chosen. Finally, the chosen reliability and validity methods are used to identify the level of reliability and validity of the study data.

Chapters six, seven, and eight outline the study's results, analysis and discussion. Chapter six presents and discusses the findings on management attitudes towards the EQA model in Scotland, covering company background, knowledge and understanding of Total Quality Management (TQM), TQM constructs (EQA constructs), organisational performance and maturity. Management attitudes towards the EQA model were examined in terms of sector of activity, size of firm, ISO 9000 and non-ISO 9000 certified firms, and levels of organisational performance and maturity.

Chapter seven considers management opinion and behaviours/attitudes toward the EQA model in Scotland, so as to conclude how applicable the EQA model is to the needs of SMEs. Management opinions and attitudes are examined in terms of the EQA model constructs.

Chapter eight looks into the development of a new improved EQA model to suit the needs of SMEs. Also a comparative analysis is made between the new improved EQA model and other models to ensure the suitability of the model to the needs of

Scottish SMEs. Moreover, a summary of the findings, recommendations, final thoughts on the study's conclusions, the contribution of the research to the field of quality management, limitations of the study and directions for further research. It is followed by the references and appendices.

1.9. Definitions of terms

1.9.1. Small firms

The Department of Trade and Industry (DTI) tends to employ the European Union (EU) definitions (small firms employ under 50, medium under 250 and large firms 250 or more employees), but stresses that there is no single definition (DTI, 1997). However rather than using a definition based on numerical data, for example, employee size, it is recommended that the Bolton Committee (1971) definition of small firms to be used. The Bolton Committee (1971, p. 2) defined small firm as *one that has a relatively small share of its market, it is managed by its owners or part owners in a personalised way, and not through the medium of a formalised management structure, it is also independent in the sense that it does not form part of a larger enterprise and that the owner-mangers should be free from outside control in taking their principal decisions*. This definition outlined three behavioural characteristics the Committee's members thought likely to contribute to the provision of a qualitative definition of the small firm².

1.9.2. Quality

Many scholars have expressed concern over the lack of a universal definition of quality (Yong and Wilkinson, 2002; Saad and Siha, 2000). However quality must

begin and end with the customer (Yong and Wilkinson, 2002). Therefore quality definition must start with the identification of customer quality requirements and end only when the product and/or service has been placed in the hands of the customers who remain satisfied (Kanji and Wong, 1999). Harry (2000) suggests that the customer focus simplifies all efforts to define the quality concept, and that quality can therefore be defined as *a state in which value entitlement is realised for customer and provider in every aspect of the business relationship* (Harry, 2000, p. 78). Further, in support of this, Oakland (1989, p. 34) stated that: *All organisations have customers internal and external. To allow a quality approach, a company must identify customer requirements and set about meeting them. Attention must always be focused on the customer supplier interface.*

1.9.3. Total Quality Management

Total Quality Management (TQM) is a philosophy for developing and achieving quality to which all organisational members are committed, and responsible for, and for continuous improvement of processes (Tsang and Antony, 2001; Zhang et al., 2000). Therefore, TQM can be defined as *a corporate management philosophy aimed at continuous improvement of all processes, products and services of an organisation. It provides a framework for transforming manufacturing and service industries into efficient, effective quality operations aimed at satisfying the needs of the customer, present and future* (Offner, 1993, p. 4).

² This qualitative definition is applicable to both small and medium sized firms, as the term small firms

1.9.4. Total Quality Management Self-assessment

Total quality management self-assessment provides a model against which managers can assess an organisation's strengths and weaknesses and measure the progress of its improvement process (Sun, 1999). Conti (1995) and Hillman (1994) provided a substantial number of self-assessment definitions, but the most suitable definition of self-assessment is the one used by the European Foundation for Quality Management (EFQM). The EFQM (1997) stated that: *Self-assessment is a comprehensive and regular review of an organisation's activities and results against a systematic model of business excellence. The self assessment process allows the organisation to discern clearly its strengths and areas in which improvements can be made and culminates in planned improvement actions which are monitored for progress* (EFQM, 1997, cited in Wiele et al., 1997, p. 242).

1.10. SUMMARY

This chapter has laid the foundations for this thesis. It has introduced the nature of the research and background to it, the main research problem and the main aims and objectives of the research. Also the methods used were briefly described and justified, definitions were presented, and the organisation of this thesis was outlined. On these foundations, the thesis proceeds with a detailed description of the entire process of the research.

include small and medium sized firms (The Bolton Committees, 1971).

Chapter Two: Small Firms

2. Introduction

The formation of small firms¹ has created one of the most remarkable changes in the UK economy since the early 1980s (Jarvis et al., 2000). The UK has experienced a wide predominance of Small to Medium-sized Enterprises (SMEs). This is because of the transformation of industry and society that we have seen since the 1980s (for example, the move towards employment in service, the reversal of the highly vertically integrated company structures, downsizing, the phenomenon of dot-com businesses and the increasingly loose corporate structure created through franchising and multi-level marketing arrangements); all suggests that small firms are likely to be the dominant business form (Day, 2000; Heneman et al., 2000).

SMEs can influence the competitiveness of larger organisations by providing high quality inputs (Kickul and Gundry, 2002; Heneman et al., 2000; Wiele and Brown, 1998). For example, SMEs provide large organisations with many of the services and quality materials to suit their requirements to run competitive business (Carter and Jones-Evans, 2000). Moreover, they are seen as major contributors to economic growth of a country, where they are identified as forming the backbone of the economics of many countries (Knight, 2001; Gulbro et al., 2000). Because of the importance of SMEs, it is important to provide a clear understanding of them and this can be demonstrated through small firm definitions, statistical outlook on small firms and small firm contributions.

¹ The term small firms in this chapter refers to small (employ fewer than 49) and medium (employ fewer than 249) sized firms.

2.1. Definitions of small firms

There is no single UK or universally accepted official definition of the small firm partly because of the diversity of businesses existing in the UK (Reed, 1998; Armitage, 2001). Government tends to adopt a range of definitions depending on the particular piece of legislation or policy (Storey, 1995), while the Commission of the European Communities (1992) recognised a need for flexibility in defining small firms. A small firm is defined as *one that is between start-up and maturity. Maturity is used to describe a company that has developed the skills and systems needed for long-term viability. The phase between start-up and maturity is a company's adolescent period. The company is striving to build on its early successes and to build organisational systems capable of supporting growth. A company may mature without necessarily becoming large* (Price and Chen, 1993, p. 98).

McMahon et al. (1993) argued that it is often simpler to describe, rather than to define the meaning of small firm. Attempts were made to define firms as small in terms of measurable variables such as number of employees, assets or turnover. The European Union (EU, 1996) adopted simple employment size cut-off points for defining small firm (see Table 2.1) and proposed a more complex conceptualisation, combining employment with turnover, balance sheet total and independence² to be applied across countries (see Table 2.2) (Carter and Jones-Evans, 2000).

² The term independence refers here to the maximum percentages owned by one, or jointly by several enterprises(s) not satisfying other criteria with regard to number of employees, annual turnover and annual balance sheet total (Carter and Jones-Evans, 2000).

Table 2.1: Simple employment size cut-off points for defining small firms

Business	Employees
Micro-business	0-9
Small business	10-49
Medium business	50-249
Large business	250 or more

(Source: Carter and Jones-Evans, 2000, p. 25)

Table 2.2: European Commission definition of SMEs

Criterion	Micro	Small	Medium
Max. number of employees	10	50	250
Max. annual turnover	-	£7m	£40m
Max. annual balance sheet total	-	£5m	£27m
Max. % owned by one, or jointly by several enterprise (s) not satisfying the same criteria	-	25%	25%

(Source: Carter and Jones-Evans, 2000, p. 25)

Definitions of small firm based on characteristics such as turnover, or any other measure of size expressed in financial terms, such as capital employed or net assets, tend to suffer from important disadvantages in times of inflation (Dewhir and Burns, 1989). For example, when the USA's Small Business Administration (SBA) changed its turnover definitions of small firms in 1984 to consider the effect of inflation, an additional 46,000 organisations were brought within the definition (Zimmerer and Scarborough, 1988). Definitions of small firms based on net assets tend to suffer from valuation difficulties, and as for statistical aggregates based on number of employees, inherent problems exist in times of rapid introduction of labour saving technologies. The Australian Bureau of Statistics (ABS, 1993) adopted a small firm definition of non-agricultural business for statistical purposes. *Manufacturing*

industry businesses with fewer than 100 employees and non-manufacturing industry businesses with fewer than 20 employees (ABS, 1993, p. 1). On the other hand Beddall defined the small firm as *being independently owned and managed, being closely controlled by owner-managers who also contribute most, if not all, of the operating capital and having the principal decision making functions resting with the owner-managers* (Beddall, 1990, p. 9).

Definitions of small firms applied to business, mainly over the period of 1930 to the early 1990s, have recognised some common variables which have been used persistently, for example, number of employees (Osteryoung and Newman, 1992). To illustrate this example of the number of employees, the Bolton Committee of Inquiry (1971) proposed a definition of the small firm based on the number of employees. This definition stated that: *A small firm might be defined broadly as one with not more than 200 employees, but this should not be regarded as a rigid definition* (Bolton Committee, 1971, cited in Atkins and Lowe, 1997, p. 42). The UK Bolton Committee felt that this definition of small firm was inappropriate (Storey, 1994).

Researchers tend to adopt definitions to suit their purposes and/or studies with little uniformity (Atkins and Lowe, 1997). One obvious reason for this variability is that business size distributions are sector-dependent. For example, oil refineries are likely to have much higher capitalisation, numbers of employees and turnover than car repairers so that a small oil refinery is not easily comparable with a small car repairer (Curran, 1999). This suggests that definitions of small firm which relate to objective measures of size, such as number of employees, sales turnover, and profitability are appropriate (see Table 2.2). However when examined at a sectoral level, this means

that in some sectors all firms may be regarded as small, while in other sectors there are possibly no firms which are small (Storey, 1994; Curran, 1999).

Definitions tend to vary considerably between sectors and countries. This can be supported through the work of Cross (1983) and Ganguly (1985) who found 40 different definitions of small firms in use in the OECD. Moreover, the USA's Small Business Administration defined the small firm as having fewer than 500 employees (Hendrick, 1992). A more detailed employment breakdown can be given as follows: less than 20 employees, very small; 20-99, small; 100-499, medium-sized; more than 500, large (Hodgetts et al., 1999). These employment breakdown figures are consistent with standard business employment, assets and receipts size classes established by the Office of Management and Budget for use by all Federal agencies in the USA (Hodgetts et al., 1999). This emphasises the importance of the relative size and number of firms. This employment breakdown of small firms in the USA could not be compared with small firms in the UK and Australia, where the USA definition of a small firm would embrace some of the larger Australian and British businesses (Mckenna, 1991).

As a result The Bolton Committee realised the danger of losing some of the essence of what is recognised as being characteristic of a small firm through statistical outlook alone (Atkins and Lowe, 1997). Therefore, The Bolton Committee (1971) attempted to overcome this problem by pointing to three behavioural characteristics that they thought likely to represent a qualitative than a quantitative definition of small firm. The Bolton Committee defined small firm as *one that has a relatively small share of its market, it is managed by its owners or part owners in a personalised way, and not*

through the medium of a formalised management structure, it is also independent in the sense that it does not form part of a larger enterprise and that the owner-managers should be free from outside control in taking their principal decisions (The Bolton Committee, 1971, p. 2). Clearly The Bolton Committee uses the management style and the influence on the economy as criteria to define whether a company is a SME (Sturkenboom et al., 2001).

Overall the main conclusion reached here is that a uniformly acceptable and consistent definition for the small business remains elusive. The literature has revealed that governments and legislation are basically employing two complementary, yet conflicting approaches in seeking an adequate and persuasive definition of SMEs. According to Curran and Blackburn (1994), they either provide some qualitative definitions, which try to capture the meanings, beliefs and behavioural aspects, which distinguish a SME from a large business, or some quantitative definitions, which try to place small firm, within impinged boundaries, marked out in terms of number employed, level of turnover and other purely quantitative measures. It is the extreme variability in the characteristics of SMEs, which undermines the attempts to apply simple and complex qualitative definitions across the entire range of activities in which an enterprise might be engaged. On the other hand, and as Storey explains (1994), neither is there a single uniformly acceptable quantitative definition of SME. Moreover, country studies testify that the different concepts, typologies and definitions that have been provided are subject to variation from country to country.

2.2. Statistical outlook on small firms

2.2.1. Historical view

The small firm sector was ignored and poorly understood by researchers until the 1980s (Carter and Jones-Evans, 2000). The introduction of powerful computers and large data sets have enabled researchers to provide a far better understanding of the economic role of small firms (Curran, 1999). Brock and Evans (1989) examined changes in small businesses over the period 1958 to 1980, and concluded that they were outperforming their larger counterparts by focusing on customer needs and providing a quality service. There were about 15.8 million firms employing just below 95 million people working in non-primary sectors in the European Union (Eyre and Smallman, 1998). Of these, 13,000 firms were thought of as large firms, that is 0.08%, with small firms representing over 95% of commercial organisations in the European Union, accounting for 72% of employment and 80% of turnover (European Network For SME Research, 1994). Therefore, small firms can be regarded as national and international economic unit (Swartz and Boaden, 1997), and this is explained further in the following section through the number of small firms in the UK economy.

2.2.2. Small firms in the UK

It is simple to set up a business and register the business owner as self-employed, they need not register the business as a company if they do not wish to be incorporated (Storey, 1994). Businesses in the UK tend to focus on one of the following forms: sole proprietorship, partnership or company or public corporation (Curran, 1999), and the numbers of small firms among these different appropriate forms are detailed in Table 2.3. There were an estimated 3.7 million businesses in the UK at the beginning

of 1997 (Department of Trade and Industry (DTI), 1997). 25,000 of these 3.7 million businesses are medium-sized firms (50 to 249 employees) and only 7,000 are large (250 or more employees) (Carter and Jones-Evans, 2000). Moreover, small firms including those without employees, account for over 99% of the entire business population (Brooksbank, 2000).

Table 2.3: Number of small firms among different types of businesses

Types of businesses	Small Firms * %	Small Firms ** %
Sole proprietorships	67.2	28.6
Partnerships	16.1	20.0
Companies and public corporations	16.7	51.5
Total	100.0	100.0
* Business with under 50 employees including single person enterprises.		
** Businesses with at least one employee but under 50.		

(Source: DTI, 1998, p. 3)

Small firms, those with fewer than 249 employees, are responsible for almost 57% of employment and almost 65% of turnover. In contrast, larger companies, those employing more than 250 employees accounted for 43% of employment and 46% of turnover. According to Table 2.4, small firms tend to contribute a slightly higher rate to employment in the UK's economy than large organisations representing 56.8% of total employment. Furthermore, the creation of small firms tends to create most new jobs in a country (Taylor, 1999) and most small firms are in services (Curran, 1999).

The formation rates of SMEs have been increasing since the 1980s (Campbell and Daly, 1998). The DTI (1997) estimated that there were around 2.4 million in the UK at the start of 1980. According to the same source, the total rose to 3.8 million in 1989, then declined until 1993. Since then, it has risen to 3.7 million in 1997

(Campbell and Daly, 1998) and risen again to 3.8 million in 2001 (Kickul and Gundry, 2002). Therefore, it can be concluded that the formation rates have exceeded death rates of SMEs. Most of these new businesses are small (Curran, 1999). The UK's economy, like the economies of other advanced industrial societies, has always had many small businesses making a substantial contribution to employment and turnover (Storey, 1994).

Table 2.4: Proportion of businesses, employment and turnover in small, medium and large firms at the start of 1997

Key	Small	Medium	Large
Businesses	99.1%	0.7%	0.2%
Employment	44.7%	12.1%	43.2%
Turnover	39.5%	14.3%	46.2%

(Source: Carter and Jones-Evans, 2000, p. 26)

2.3. The continuing strength and growth of small firms

Storey (1982, p. 33) wrote of the vital importance and continuing growth of small firms in the UK and stated that: *Small firms in this sector cannot be underestimated.*

They represent the cutting edge of new technology; they can create jobs, wealth and make a major contribution to exports. For example, seven technology-based companies in the USA, founded between 1900 and 1935, had, by 1974, combined sales of \$26 billion and employed a total of 764000 people. Such firms not only grow rapidly, but also have a lower failure rate than other types of firm (Storey, 1982, p.33, cited in Scott and Rosa, 1997, p. 33). The small firms sector in the UK grew by a net average of 13% per year throughout the 1980s to about 3 million firms

by 1990 (Curran, 1999). These claims proved to be an indication of an impressive performance and have often been cited as evidence of a growing small firm culture in the UK (Wynarczyk et al., 1993). Ace and Audretsch (1990) have suggested a number of different reasons to explain the continuing strength and growth of small firms since the 1970s and they can be outlined and detailed as follows:

2.3.1. Unemployment

The rate of unemployment has been high since 1979 compared to the post-war period. Brooksbank (2000) concluded that the unemployment rate was under 0.5 million for most of the post-war period up to 1979. It reached 4.7% in 1979, then rose to 12% in 1986 before declining to 4.8% by mid 1998 (Curran, 1999). Because of this rise, individuals recognised that starting their own businesses was a potential alternative, which avoids unemployment and provides higher incomes than benefits. This was facilitated through the introduction of the Enterprise Allowance Scheme (EAS) in 1982-1983, which paid £40 per week for a year to unemployed people starting their own businesses (Stokes, 1995). The Natwest Review of Small Business Trends (1995) concluded that the EAS managed to help about 500,000 start-up companies from 1985-1990. Further, the EAS (now the Business Start-up Scheme) was predicted to help about 80,000 start-ups in 1997 and 1998. The Business Start-up Scheme managed to help about 65,000 start-ups in 2000 and 2001 (The Natwest Review of Small Business Trends, 2002).

Storey (1994) concluded that most of the organisations that had been created with the help of the EAS had failed once the EAS ended and argued that the support had not been received by those most likely to succeed. Therefore an alternative way to

identify the effect of unemployment on small firm creation is by examining the reasons that people offer for starting their own businesses (Labour Force Quarterly, 1993). Curran (1999) concluded that a third of the sample investigated had become self-employed because of an absence of jobs. Unemployment therefore can be classified as a factor in promoting self-employment and ownership of small firms.

2.3.2. Technological change

Technological change has affected self-employment and small firms ownership in different ways. Freel (1998) argued that new techniques allowed production in smaller units with no loss of profitability. This allowed small firms to compete on more equal footings with larger ones and also enabled them to respond more quickly to market change. Therefore, with the help of technological change, small firms started to compete in world markets and be part of the world economy (Beaver and Prince, 2002).

Many small firms innovate and develop new products and services and create new ways of delivering them to markets (Vossen, 2001). But whether this accounts for the increases in self-employment and the small firm population as a whole is debatable (Curran, 1999). Most new small firms are not new 'technology based' ones nor are they very innovative in other ways. Small firms are often simply replicas of existing businesses organised in traditional ways, using well established technologies to produce goods and services and marketing them in simple ways (Hine and Ryan, 1999). Harrison (1994) also argued that small and large firms innovate but that their innovation tends to be associated with specific types of product and process. Curran (1999) argued that there is an interaction between small and large firms in innovation.

Rothwell (1986) explained how in sectors such as electronics where there are many small firms with well-documented contributions to innovation, large and small firms play different parts in the innovation process. Large firms tend to be involved in the very expensive early stages of innovation while small firms tend to be associated with the innovative use of new technology in new products. Where new products succeed and new markets are opened, large firms may decide to enter the market, as small firms which have grown to large established firms using their financial power to enter new markets.

2.3.3. Red tape and privatisation

Removing red tape

Small business owners do not see red tape as a major problem and this can be supported through the Natwest Small Business Research Trust Quarterly (1997) which regularly asks respondents to select from a list of 14 items the most important problems facing their businesses. Government regulations as a problem area have never reached above 10% in any of the Natwest Small Business Research Trust Quarterly Surveys. Therefore, Curran et al. (1994) concluded that government legislation was largely irrelevant to owners-managers and their employees.

Privatisation and market opportunities

Privatisation was aimed at giving small firms greater access to the public procurement market. Government departments were given guidelines to buy more from small firms.

The most direct strategy to increase the private sector's share of the public goods and services market was Compulsory Competitive Tendering (CCT)³ for local authority services (Abbott et al., 1996). They investigated whether small firms had been successful in achieving orders under CCT. They concluded that small firms had been very unsuccessful at winning CCT contracts. Three reasons were identified for this failure:

- (1) The complexity of the tendering process and the large amount of management time needed to prepare tenders put off small business owners;
- (2) Local authorities preferred large contracts because they were easier to manage than a large number of small contracts;
- (3) Many tenders required suppliers to offer a mixed bundle of services and a large number of small firms did not have the capacity to meet this requirement.

However, a small number of small firms managed to win a share of contracts as second level suppliers (Curran, 1999). For example, small firms might provide specialist horticultural services. Moreover, local authorities were not keen on contractors subcontracting to small firms because of the difficulties in pinpointing responsibilities for failures in performance. Also, small firm owners were not very keen to be sub-contractors because of low profit margins. The issue of privatisation and market opportunities has not contributed to the continuing strength of small firms.

2.3.4. Outsourcing

Large organisations have tended to source more from outside suppliers, particularly support services such as catering and cleaning in the 1980s and 1990s (Curran, 1999).

³ Under the provisions of the 1999 Local Government Act the requirement to submit defined activities to Compulsory Competitive Tendering (CCT) was abolished in January 2000 (Martin and Hartley, 2000). The Best Value (BV) regime replaced CCT, and conferred on organisations a legal duty to provide best value service, service quality and value for money to council tax-payers and local businesses (Bowerman et al., 2001).

Johnson (1999) concluded that an increase in outsourcing did not necessarily mean that small firms were the main beneficiaries. Curran and Blackburn (1994) concluded further, that large firms mainly outsource from other large firms.

The high proportion of small firms which do not benefit in any way from outsourcing are those serving the needs of private consumers or involved in leisure activities (Johnson, 1999). Increased outsourcing has created more market opportunities but the extent to which these have created more opportunities for the self-employed or for small firms is less than the total increase might first indicate. Therefore, it can be concluded that small firms have only benefited from outsourcing to a limited extent and increased outsourcing cannot be seen as a major factor in explaining the strength of small firms.

2.3.5. Economic restructuring

The issue of economic restructuring⁴ has helped small firms in the following ways:

- (1) The decline of large manufacturing freed up resources for newer activities;
- (2) Services and knowledge based activities provided more opportunities for small firms because they produced much lower economies of scale than the activities they replaced.

Small firms have the ability to compete with large firms on issues such as quality of service (North et al., 1998). The concept of economic restructuring has managed to increase the number of self-employed people and the number of small firms (Storey, 1994). The expansion of services in the UK has favoured the development of small firms considerably (Keeble et al., 1994). However, there is a doubt as to whether the

⁴ Economic restructuring refers to the shift from an economy focused on mass production to an economy where the manufacturing sector is much smaller and services especially knowledge-based activities, have become much more important (Allen and Massey, 1988).

economic restructuring effect is likely to be permanent. Foreman Peck (1985) argued that in the last major period of restructuring in the UK in the 1920s and 1930s, the number of small firms increased but this reversed as the new economy matured, then the number of small firms increased again due to the economic restructuring.

Economic restructuring has proved to have a positive effect on the growth of self-employment and small firms in the period from the mid-1970s till now (Tan and Tan, 2002). Small firms have played an important role in the processes of economic restructuring, economic growth (Taylor, 1999) and economic globalisation (Tan and Tan, 2002).

Based on the above discussion, no single factor can be identified as providing an adequate explanation for the continuing strength of small firms in the UK. All the factors explained earlier have played parts in their continuing strength. For example, outsourcing by large organisations has increased and has created opportunities for small firms, especially where larger organisations persuaded employees to shift to self-employment while continuing to use the former employers. However, the economic restructuring issue tends to have prominence over other factors due to the flattening of the growth in the UK business population over 1995-1997 (Curran, 1999). Allen and Massey (1988) suggested that restructuring in the form of reduction in manufacturing and the increase in the importance of services began in the mid-to-late 1960s. Taylor (1999) and Curran (1999) indicated that restructuring accelerated in the late 1970s and especially the 1980s, the decade regarded by many as having really accelerated the rate of increase in the number of small firms.

2.4. The contributions of small firms

There is little disagreement on the critically important role small and medium-sized enterprises play in ensuring the future prosperity of national industrial economies (Carter and Jones-Evans, 2000). Over 95% of OECD organisations are SMEs and they account for 60% to 70% of employment in most countries (OECD, 2000). Moreover, SMEs contribute to economic development through the creation of wealth and high quality employment in a high growth area of economic activity; the beneficial impact of their services on the performance of their clients (other SMEs) which can lead to significant local income and employment multiplier effects; and their contribution on the development of the knowledge base of local economies, which can lead to sustained local economic development (Glancey et al., 1998; Bryson, 1996). The UK Labour government elected in May 1997 supported and promoted small firms' development because they have played an increasingly important role in the UK economy in the following ways:

2.4.1. Producing goods and services efficiently

The continued existence of small firms is in itself evidence of efficient small firm operation. For example, Henemen et al. (2000) and Blankson and Stoker (2002) concluded that small firms tend to differentiate themselves by superior efficiency and performance in highly competitive environments. This can be demonstrated by the example of the Fedal Engineering Company, a family owned manufacturer of metalworking machines, whose performance has won the grudging admiration of large firms in the USA and Japan (Longenecker et al., 1997). Small firms do tend to achieve cost and productivity advantage (DTI, 1998).

2.4.2. Aiding big business

Some large firms cannot survive without the existence of small ones, which sell the large organisation's products directly to the public, as well as providing them with many of the services and supplies they require to run competitive businesses (Carter and Jones-Evans, 2000). Longenecker et al. (1997) suggested that, if small firms were removed, large organisations would find themselves saddled with a substantial number of activities that they could perform only inefficiently. There are three functions where small firms can outperform large organisations and they are: the distribution function (a small business activity that links producers and customers); the supply function (an activity in which small businesses function as suppliers and subcontractors for large firms); and the service function (an activity in which small businesses provide repair and other services that help larger firms).

2.4.3. Introducing innovation

Technological changes tend to influence the growth of small firms by providing differentiated products, functional enhancement, product substitution capabilities, improvements in quality and reliability and cost and price competitiveness at the national and regional level (OECD, 2000). Beaver and Prince (2002) and Freel (1998) suggested that small firms could become highly innovative through the use of technological change. As Storey (1994) points out, the glamorous role which Schumpeter (1934) saw for the small firm was that of initiating 'gales of creative destruction' through the introduction of totally new products. The more commonly held view, and one which is supported by research evidence (Cosh et al., 1996) is that small firms play a key role in innovation by focusing on a niche market and by offering a product or service which is marginally different from their competitors.

Innovation is known as the process of taking new ideas effectively and profitably through to satisfied customers (McAdam et al., 1998), and is seen as the creative process through which new products, services or production processes are developed (Arias-Aranda et al., 2001). Moreover, innovation can be broadly interpreted through the three major forms of innovation suggested by Hine and Ryan (1999, p. 411):

1. Product (major and incremental);
2. Process, known both as technological and non-technological innovations. Technological innovations comprise new products and processes and significant technological changes of products and processes. An innovation has been implemented if it has been introduced on the market (product innovation) or used within a production process (process innovation);
3. Non-technological innovation refers to changes that occur within organisations that are not directly attributable to products/services and production methods. Non-technological innovations relate to management practices and processes.

Small firms are sometimes seen as technology leaders with a high propensity to innovate, while some larger organisations remain stuck in old technologies (Vossen, 2001; Vossen, 1998). The 1980s and 1990s saw rapid technological changes offering opportunities to small firms. These new opportunities have been seized by entrepreneurs (Hyrsky and Pellervo, 1998), where through the introduction of new products, they make valuable contributions to people's living standards (Vossen, 2001; Longenecker et al., 1997). Many new products and scientific breakthroughs have originated with small firms (Carter and Jones-Evans, 2000). For example 50% of all innovations and 95% of all radical innovations since the Second World War have come from new and smaller firms (Arias-Aranda et al., 2001).

The OECD (2000) concluded that some 30% to 60% of SMEs in the OECD countries are characterised as innovative. They are more likely to innovate through creating or re-engineering products or services to meet new market demands, introducing new

organisational approaches to enhance productivity, or developing new techniques to expand sales. Almeida and Kogut (1997) suggested that small firms are superior innovators. Moreover, Geroski (1994) concluded that SMEs have a higher share of innovations than large firms and that this innovation is achieved without high R&D costs, while Cosh et al. (1996) suggested that 1 in 5 SMEs were responsible for introducing either a product or process innovation, which was new to all industries. Geroski et al. (1993) found that the number of innovations produced by a firm has a positive effect on the firm by raising profit margins by some 16.5 per cent relative to the mean. They also make the point that the value of innovative effort is reflected in over-all firm performance and not just in the production of new products. Tether (2000) and Cosh et al. (1996) also found that innovation in SMEs led to an increase in market share, growth and profitability. Furthermore, recent studies continued to provide full support for the importance of the small firm's role in innovation (Beaver and Prince, 2002; Hine and Ryan, 1999). However, as Storey (1994) points out, although this may be true, this does not mean that an individual small firm will be more innovative than an individual large firm, as the majority of small firms will stay small.

The view here is that small firms are not able to bring about these 'gales of creative destruction'. Research carried out by Acs and Audretsch (1987) tested this hypothesis by analysing data from the US Small Business Administration. They found that large firms have the relative innovative advantage in industries that are capital intensive, concentrated and advertising intensive. By contrast, they found that small firms tend to have the relative innovative advantage in highly innovative industries, in industries at the start of their life cycle and in industries, which tend to be composed of a

relatively high proportion of larger firms. This work accords with work carried out by Rothwell and Zegveld (1982), who also concluded that the roles SMEs play in innovation depend upon a number of factors. They express this in terms of the advantages and disadvantages of SMEs in innovation (see Table 2.5).

Table 2.5: Advantages and disadvantages of SMEs in innovation

Advantages	
Marketing	Capability of developing expertise in certain specific areas, serving a narrow but sophisticated market. Achieved through close contact with customers and by reacting quickly and efficiently to both market and technological changes.
Entrepreneurial management	Dynamic entrepreneurial characters that are in a position to react swiftly to take advantage of new opportunities even though they may be risky. Large firms have an inherent bias against high-risk innovations.
Internal communications	Good internal communication and labour relations.
Disadvantages	
Manpower	Difficulty in attracting and financing more or more qualified engineer or scientist.
External communication	Difficulty keeping up-to-date and analysing information, such as new technological developments, government legislation, etc.
Management techniques/practice	Sometimes weakened by 'Dickensian', autocratic management style and/or owner managers lack management knowledge and expertise.
Finance	Lack of financial resources to fund innovation, which can be costly and risky.
Economies of scale	Economies of scale can be a significant barrier to small firms.
Government regulations	Cost of compliance to government regulations can be prohibitive, as can the level of knowledge and experience needed to comply with them.

(Source: Rothwell and Zegveld, 1982, pp. 45-54)

Rothwell and Zegveld have shown that the small firm, by virtue of its size and characteristics has inherent advantages and disadvantages to innovation. The work carried out by Acs and Audretsch also demonstrated that there are certain conditions under which small firms are better able to innovate, such as in innovative industries at the start of their life cycle and in industries composed of larger firms.

The innovativeness of small firms and their ability to explore new technologies is perhaps surprising since they are generally resource poor with small research and development budgets and limited manpower (Baldwin, 1997). Small firms tend to overcome their limited resources by turning to community networks (Saxenian, 1994). Small firms in Britain are seen as under-achievers in innovation compared to small firms in the USA in terms of their performance over the complete cycle from new product or process idea to final market (Vossen, 1998). This was due to government failures to support and stimulate small firms (Curran, 1999). Timmons (1997) suggested that small firms in the UK have not been well supported by venture capital institutions, whereas in the USA venture capital has been much more available for such firms.

2.4.4. Job creation

Recently, the interest in small and new firms has increased dramatically. A good deal of research had claimed that small and newly founded firms create most new jobs and that small firms' proportional share of job creation is substantially larger than that of the employment base (Garibaldi, 2000; Taylor, 1999). Indeed there is evidence that small firms create the lion's share of new jobs (North and Smallbone, 1995).

Hay and Kamshad (1994) show that about a third of employment created in the UK's private sector can be attributed to small firms. North and Smallbone (1995) pointed out that they have witnessed an increase in employment in small firms. Moreover, Kaufmann (1995) showed that there was a remarkable increase in the number employed in small firms and that they represented 17% of the UK Gross Domestic Product (GDP) and 35% of private sector employment. Therefore, small firms tend to

generate 50% of the employment in the UK and 70% in the European Union (Carter and Jones-Evans, 2000). Further, the Department of Employment concluded that firms employing fewer than twenty people accounted for 96% of firms in the UK, employing 35% of the private sector workforce (Keeble, 1990) and producing 21% of all the UK's turnover (Anon, 1999). Labour Force Quarterly (1993) suggested that over 90% of additional jobs created were in firms with fewer than 10 employees and such firms accounted for 18% of total employment.

More generally, Birch (1987) showed that small firms have a powerful role in generating new jobs. Later studies have supported Birch's conclusion. For example, Loveman and Sengenberger (1991) found that 1.3 million new jobs in manufacturing were created by small firms between 1976 and 1986 in the UK, while the number of manufacturing jobs in large firms fell by 100,000. Schreyer (1996) indicated that the net job creation by small firms is greater than that by large organisations. It is clear that small firms offer a critical element in the generation of jobs (Ghobadian and Gallear, 1997).

Carter and Jones-Evans (2000) concluded that large organisations had experienced employment loss, while employment by small firms had increased substantially in the European Union, due to the structural change, the so-called shift from manufacturing to services. This has been supported by The European Observatory for SMEs (1995) which identified a positive trend with regard to employment growth with an average annual increase in employment of 0.25%, whereas large firms displayed an average annual decrease of 0.5% between 1988 and 1995.

2.5. SMEs and competitiveness: Identifying a suitable model

There has been significant interest from the government and SMEs in improving and enhancing the quality of products/or services, to improve the international competitiveness of SMEs and economies (Chittenden et al., 1998). Therefore, SMEs need to adopt a system of TQM that better ensures that the performance of their products and/or services satisfies and continue to satisfy customer and employee requirements in order to achieve competitive advantage, as it has been noted that the existing TQM models of large organizations are not sufficient to guarantee quality in small firms (Husband and Mandal, 1999). This is due to the different characteristics associated with small and medium sized organizations and it has been noted that organizations of this size (small and medium) tend to operate very differently from those with more employees and will demonstrate a number of characteristics which differentiate them from large organizations, for instance:

- *SMEs have the ability to respond quickly to changing market conditions;*
- *They waste little time on non-core business activities;*
- *They tend to have high employee loyalty;*
- *They are more likely to deploy improvements quickly and therefore gain rapid benefit;*
- *SMEs are usually customer focused and they stay very closely in touch with their customers;*
- *Have excellent internal communication;*
- *Have employees who are multi-skilled;*
- *They provide focused training on skills needed to achieve targets;*
- *Employees in SMEs will usually be aware of how their job impacts on the business as a whole;*
- *Flat management structure;*
- *High flexibility.*

The implementation of TQM in SMEs requires large scale changes, both of the management tools used and those concerning the organizational structures, attitudes and behavior of all organizational employees. In order to choose an appropriate

model for SMEs, Husband and Mandal (1999) identified a series of factors that are unique to SMEs. These factors are used to help provide a conceptual framework for model development to suit their needs by identifying a series of dimensions. These are:

- *Core dimensions – products and/or service*
- *Fundamental dimensions – systems, people and measure*
- *Sustainability dimensions – leadership and planning, technology and innovation*
- *Integrative dimensions – customers, suppliers and partners*
- *External dimensions – competition*

Placing these dimensions into a quality system allows a framework to be developed around issues that are important and applicable to SMEs (Husband and Mandal, 1999; Thomas and Webb, 2003). In addition, generally speaking, there are nine areas that have been identified, validated, and established as the most important elements of TQM to be applicable across all organizations by some empirical studies (Saraph et al., 1989; Flynn et al., 1994; Ahire et al., 1996; Powell, 1995; Black and Porter, 1996). The most common elements were found to be leadership, process management, human resource management, customer focus and satisfaction, quality results, supplier quality management, and strategic quality planning. It seems clear that all these TQM elements listed are represented with the EQA, which is why TQM/EQA holds a great promise for small firms and appeals to them (Lee 1998; Ahire and Golhar, 1996). Based on these issues, the EQA has been suggested to be used as a framework for quality improvement, organizational competitiveness, effective implementation and the management of TQM, organizational learning and cultural change (Castka et al., 2003; Camison, 1998; McAdam et al., 1998), and also it fits with the factors developed by Husband and Mandal (1999). To illustrate the importance of the EQA to the needs of SMEs theoretically, Lee (1995) investigated

the implementation of total quality management within small and medium sized organizations and the study recommended that, for successful implementation of TQM in SMEs, they should consider the following elements:

- *Recognize the importance of top management leadership and involvement to provide the vision and drive the change through involvement of everyone in the organization;*
- *Recognize the need for improvement in processes across the organization, which calls for a holistic perspective;*
- *The use of people dimension, cultural change and the use of training to foster improvement;*
- *The need for a long term frame, as this is not a quick fix route to excellence.*

These elements recommended by Lee (1998) are presented with the EQA, which makes the model appropriate theoretically to the needs of SMEs. The EQA is a non-prescriptive framework which recognizes that there are many ways in which an organization may achieve excellence but which embraces TQM concepts, such as the importance of the customer (Porter and Tanner, 1996). The EQA is based on the following management philosophies and principles:

- *A clear understanding of the internal processes;*
- *Emphasis on management by fact, which requires the design of an information system consisting of a set of measurable and objective indicators relevant to the way provides value to customers;*
- *High level of participation by employees and teamwork;*
- *External focus and customer oriented quality programs, as it is necessary for a company managed in a total quality fashion to benchmark itself against its competitors and have processes and procedures in place to enable it to understand the needs of its customers and manage its customer relationship;*
- *Top management involvement/commitment where they can influence and alter the system, thus their role is crucial to the development of a total quality management, and their function to create the necessary environment for driving quality forward.*

With these philosophies of the EQA, SMEs seem to have advantage over large organizations with regard to customer focus, leadership and human resource management. The managers and employees of these firms (SMEs) usually have

frequent and face-to-face contact with customers. However the frequency of contact does not guarantee an accurate assessment of the needs and expectations of customers, however, it gives the firm a better chance to discover what customers want and try to respond quickly to their needs. With respect to leadership, leaders must create clear quality values, policies and strategies, as well as high expectations. Among these are innovations, risk taking in trying new ideas and methods to improve product/service quality and customer satisfaction. This is evident in SMEs, as the manager/owner has the ultimate power of decision making and this suggests that the manager/owner has an advantage in asserting a desire for a change in the organizational culture. Moreover, communication with employees is frequent and direct, and there is no need to go through layers of bureaucracy. This gives the manager/owner an excellent opportunity to set a good example in terms of quality value and the desired behaviour in achieving quality and customer satisfaction. Clearly these philosophies are applicable to the needs of SMEs, which is the basis of the EQA.

2.5.1. The EQA: The way forward

The EQA model contains a framework of analysis of the whole or a large part of an organization. This allows analysis of individual areas of the business, for example processes and human resource management (Taylor, 1995), which indicates that SMEs can select any area for assessment. The EQA focuses a significant amount of its effort on results in the belief that excellence is dependent upon balancing and satisfying the needs of relevant stakeholders. The essence of the EQA is that quality improvement has to be seen in its relationship to the total strategy of the business and it has a greater stress on the management of process (Keating and Harrington, 2002).

The EQA enables managers to appraise their own progress and performance against the specified criteria in order to help organizations to remain competitive and achieve business excellence (Woon, 2000; Moeller et al., 2000). The utilization of the EQA provides consistency and satisfaction in terms of methods, materials and interacts with all activities of the organization, beginning with the identification of customer requirements and ending with customer satisfaction (Anderson et al., 1999). It also provides an opportunity for integrating TQM into normal business activities due to its strong business orientation. Moreover, the model addresses all areas that are generally recognized as important for overall success and continuous improvement (Porter and Tanner, 1996). The EQA focuses on delivering improved value to customers and improvement of overall operational and financial performance (Wiele et al., 1997). The EQA has been identified as a broader and more far reaching business model (Tummala and Tang, 1996), and a credible route to a quality orientation (Buttle, 1996). The EQA is identified as an appropriate model theoretically and it includes all the functional principles for managing quality in small and medium-sized enterprises (Karlsson and Wiklund, 1997; Armitage, 2002; Wiele et al., 2000; Taylor, 1995; Reed, 1998)).

2.5.2. The EQA: potential benefits for SMEs

Organizations which have adopted the EQA have experienced an improvement in corporate performance, employee satisfaction, customer satisfaction, achieved employee satisfaction, customer satisfaction, higher productivity and improved profitability (Harr, 2001; Stahr, 2001; Adebajo, 2001; Ernest Osseo-Asare and Longbottom, 2002; Dwyer, 2002; Oakland and Oakland, 1998). However, in terms of

SMEs, Leonard and McAdam (2002); Seghezzi (2001); O'Brien and O'Hanlon (2000) stressed the importance of the EQA for achieving quality improvement, organizational performance and excellence in SMEs. In practical terms, the EQA has been implemented in small and medium sized hotels in Spain and it contributed in achieving customer satisfaction, quality improvement, and organizational performance (Camison, 1998; 1996). In addition, Taylor and McAdam (2003) investigated the benefits of the EQA in small and medium sized hotels in Northern Ireland; they suggested that the surveyed sample achieved interdepartmental communication improvement; improved atmosphere; employee recognition; saving costs; quality service improvement; learning from past experiences.

The implementation of the EQA will enable SMEs to identify organizational strengths and areas for improvement, which positively impact on the overall organizational results and ultimately improve quality (Mackerron et al., 2003). Moreover, Nwankwo and Richardson (1996) suggested that the model is considered as the important cause of successful differentiation and positioning. In addition, Zairi (1994) suggested that the implementation of the EQA can result in providing the opportunity for SMEs to take a broader view on how TQM is impacting on various business operations; measuring for improvement rather than for hard control; measuring performance of processes and enablers and their relationship with results; energizing the people and teams within an organization to maintain their pursuit of excellence; creating the desire to perform well; measuring internally and externally, including the community and the environment.

2.6. SUMMARY

In this chapter an extensive coverage of small firms is presented in four parts. The first part provided brief definitions of small firms. The second part included information about the number of small firms in the UK. The third part provided an extensive coverage of the reasons for continuing strength and growth of small firms, covering subjects such as unemployment, technological change, red tape and privatisation and outsourcing and economic restructuring. The fourth part of the chapter gave a brief summary of the contributions of small firms, covering elements such as job creation, producing goods and services, introducing innovation and aiding big business. The final part of chapter two provides the reader with an identification of a suitable model for managing quality management in SMEs, where they can achieve competitiveness and continue their economic impact. The next chapter introduces quality in some detail.

Chapter Three: Quality

3. Introduction

For SMEs to be competitive, they have to be able to respond and adapt to the environment (Tan and Tan, 2002). Kaye and Dyason (1999) explained that this could be achieved by developing and maintaining quality to meet all customers' needs. Consumers want quality products and/or services, therefore the concept of quality seems to be emerging in societies, which demonstrates a shift in the market paradigm (Dwyer and Keating, 2001). Yusof and Aspinwall (2002) noted further that quality in SMEs has become the key to competitive success and long-term survival. Therefore, improving quality is seen as a concept for better economic performance (Robledo, 2001). This is true from the macroeconomic perspective, for example, economic growth, and welfare in a country, as well as for individual firms, for example, with focus on profitability (Westlund, 2001). Clearly, there is increased recognition that quality has been an organisational cornerstone in today's competitive environment and a more detailed understanding of the term quality is needed, its contribution and the role quality plays in managing organisational change. The purpose of this chapter is to provide an overview of defining quality, quality leaders and the quality role in managing organisational change.

3.1. Defining quality

Defining such a multi-faceted concept as "quality" is difficult given the number of possible alternatives available (Dean and Terziovski, 2001; Walsh et al., 2002; Hardie and Walsh, 1994). Garvin (1984), in one of the first classifications to appear in the

literature, captures this ambiguity by differentiating between definitions of quality (see Figure 3.1) which are transcendent; product-based; user-based; manufacturing-based; and value-based. The primary point of Garvin's work is that quality means different things when people apply the term from different points of view.

Figure 3.1: Definitions of quality

- | | |
|------|---|
| I. | Transcendent involves an innate excellence of concept with which Persig and others have wrestled; |
| II. | Product-based means that the object or service incorporates the desire, attribute or ingredient, a definition likely to be used by someone involved in product design on marketing and a definition that could describe Luskins electronics products or plastic sandals in the Third World; |
| III. | A user-based definition means an item satisfies a user's wants which can range from a warm meal for someone to afford to eat regularly to a private jet for someone able to commute in luxury; |
| IV. | A manufacturing-based definition commonly employed by engineers means the item conforms to established specifications; and |
| V. | A value-based definition means the product or service embodies "affordable excellence" or what magazines that test and rate competing product quality call a "best buy". |

(Source: Garvin, 1984, p. 28)

Similarly, Reeves and Bednar (1994) suggested a four way classification of quality definitions that incorporates excellence, value, conformance to specifications and meeting and/or exceeding customer requirements. They argued that the term quality includes so many components that would be of little utility in any model that tried to include them all. Feigenbaum defined quality as *the total composite product and service characteristics of marketing, engineering, manufacturing and maintenance through which the product and service in use will meet the expectations of the*

customer (Feigenbaum, 1991, p. 7). Juran (1988) offers a somewhat different definition of quality. Juran (1988, p. 22) identifies two distinct meanings for the term quality. The first is that *quality consists of those product features which meet the needs of the customers and thereby provide product satisfaction*. This definition refers to the better the product features, the higher the quality. The second meaning is that *quality consists of freedom from deficiencies*. The second definition identifies that the fewer the deficiencies the better the quality. The distinction Juran (1995) notes is important as the product feature impact on sales and in this context higher quality (or features) usually costs more. On the other hand, product deficiencies impact on costs and higher quality usually costs less. These characteristics are illustrated in more detail in Figure 3.2. On balance, Juran (1995) argues that quality is cost-effective for organisations. Furthermore, Juran (1988) used the statement fitness for purpose to define quality to show that the user's evaluation of quality was based on whether the product was fit for use, and not on whether it conformed to the specification requirements.

Crosby (1979) defined quality as conformance to requirements, meaning the degree of conformance of all product features and characteristics to the product requirement specification and the stated requirements of users (customers). Crosby however, argued that his definition of quality was the one that should be used when referring to quality in a business environment because quality problems could be defined in terms of non-conformance. This is because failure to conform to design or the customer's requirements has the largest impact on the organisation's cost structure (Zhang, 2001). Beecroft (1999, p. 499) suggested three major areas affected:

1. **Resources:** the requirement of extra equipment, space and people to correct errors.
2. **Materials:** excess inventory, scrap or down graded materials needlessly generated.
3. **Lost opportunity costs:** not providing new products or services because valuable resources are consumed in redoing previous work.

Thus, conformance to design and customer requirements translates to quality, therefore higher conformance is higher quality (Crosby, 1979). Higher quality results in lower costs and increases competitiveness, leading to an increase in sales and market share, more jobs and improved profitability. On the other had, poor quality results in inferior products or services, excessive production costs and lost customers (Mohanty, 1998).

Figure 3.2: Quality defined

Product feature	Freedom from deficiencies
<i>Higher quality enables companies to:</i>	<i>High quality enables companies to:</i>
Increase customer satisfaction	Reduce error rates
Make products saleable	Reduce rework (waste)
Meet competition	Reduce field failure (warranty charges)
Increase market share	Reduce customer dissatisfaction
Provides sales income	Reduce inspections (tests)
Secure premium prices	Shorten time to put new product on market
Major effect is on sales	Increase yields/capacity
Usually higher quality costs more	Improve delivery performance
	Usually high quality costs less

(Source: Juran, 1989, p. 16)

Johnson and Schneider (1993) referred to quality as *the capability of a product or service to knowingly satisfy those pre-conceived composite wants of the user(s) that are intelligibly related to characteristics of performance or appearance and do not cause major covert or overt reaction by other people*. Spencer (1994) and Harry (2000) suggested that quality is satisfying or delighting the customers. Quality

comprises certain measurable and subjective characteristics and, thus, it is multi-dimensional (Mohanty, 1998). Garvin (1984) identified eight customer-related dimensions of quality (see Figure 3.3). Based on these eight dimensions of quality, a product may score badly in one dimension and well in another; it is neither possible nor desirable for all the dimensions to score highly in the rating. What is important is to select those dimensions which primarily meet customer requirements and deploy them throughout, as the customer wants them translated to product or service through market research, product design, process design, manufacturing and delivery (Mohanty, 1998).

Figure 3.3: Eight customer-related dimensions of quality

1. Performance (a product's primary operating characteristics);
2. Features;
3. Reliability (the probability of a product malfunctioning within a specified time);
4. Conformity (the degree to which a product's design and operating characteristics meet established standards);
5. Durability (a measure of product life which also has an economic component);
6. Serviceability (the speed, courtesy, competence, and ease of repair of the product);
7. Aesthetics (how a product looks, feels, tastes, sounds or smells);
8. Perceived quality (the image or reputation of a product).

(Source: Garvin, 1984, p. 41)

Based on the above discussion concerning quality definitions, one of the key elements identified is the concept of customer or user. Moreover, there is overwhelming agreement in the literature that customer orientation is a building foundation for defining quality (Silvestro, 1998; Foley et al., 1997; Dean and Terziovski, 2001). In terms of quality, a customer is anyone who is impacted by the product or process. To

clarify this further, Juran (1992) identifies customers as internal or external (see Figure 3.4).

Figure 3.4: Concept of customer

Internal customers: Impacted by the product/process and also members of the company that produces the product. They are often called “customers” despite the fact that they are not customers in the dictionary sense, that is, they are not clients.

External customers: Impacted by the product/process but are not members of the company that produces the product. External customers include clients who buy the product, government regulatory bodies, and the public (which may be impacted due to unsafe products or damage to the environment).

(Source: Juran, 1992, p. 8)

The different definitions discussed above show that there is no one universal or correct definition of quality. As Ishikawa (1985, p. 45) reflected, the meaning of quality is rather wide-ranging by stating that *quality is narrowly interpreted, quality means quality of product. Broadly interpreted, quality means quality of work, quality of service, quality of information, quality of process, quality of division, quality of people, including workers, engineers, managers, and executives, quality of systems, quality of company, quality of objectives, etc.* Therefore, it is safe to suggest that defining quality remains difficult and a vague concept. Also, it is useful to define quality in general terms rather prescribing a specific term that is applicable to every organisation.

The central aspect of a quality definition is the customer; quality might mean fitness for use, implying that the product, when it is fit for its intended use is of a good quality. In addition, quality might imply conformity to specifications, which once

achieved again indicates that the product bears quality. Whether quality implies fitness for purpose, fitness for use, or conforming to specifications, it has to satisfy and/or exceeds the needs of the customers who consume the product or use the service. The use of such a definition (customer-based definition) is one that has been used increasingly to drive quality initiatives and is known to be important in today's competitive business environment (Cronin and Taylor, 1992; Neergaard, 1999; Yong and Wilkinson, 2002). In support of this, The Economist Intelligence Unit (1990, p. 655) referred to: *anticipating or exceeding customer expectations in order to build customer loyalty and make customers into the most fervent (and effective) advocates of your company's goods and services*. In order to understand and achieve quality, it is important for the consumer to determine what in a product or a service represents quality. The customer determines which level of quality is high and which one is low. The consumer does this by using whatever information is available, whether from experience, expectations or deductive reasoning, and their needs or requirements should be satisfied. Clearly, customer focus and satisfaction are important in achieving and understanding quality.

3.2. A historical perspective on quality leadership

The early development and understanding of Total Quality Management (TQM) was substantially influenced by only a few quality pioneers¹ (Kruger, 2001). The list of these significant quality contributors grows each day, but some of the most notable individuals (Deming, Crosby and Juran) will be discussed here.

3.2.1. W. Edwards Deming

Deming focused on sampling and statistical control methods, which were credited with producing better quality products, higher production volumes and reduced scrap and rework (Hughes and Halsall, 2002).

Deming managed to reach over a hundred industrial leaders in 1950 and four hundred more the following year through his quality methods. As Hutchins (1990, pp. 76-77) emphasised: *Dr Deming did not, as many westerners think, introduce the Japanese to statistical quality control. These concepts and their importance were well known to the Japanese long before he even went there. However, the Japanese were struggling with the problem of conveying the mathematical concepts to their people...Dr Deming's contribution was to help them cut through the academic theory, to present the ideas in a simple way which could be meaningful right down to production worker levels.* Therefore, Deming played a significant role in rebuilding Japan's industry (Kruger, 2001).

Deming concentrated on the cultural aspects of quality improvement as a result of trying to improve quality in Western firms. Deming believed that quality values were quite important. As Saraph and Sebastian (1993) suggested, quality values are important for organisations to improve quality. Deming faced problems in the West of a more cultural and political nature stemming from poor training, leadership, motivation, standards of practice and reliance on technology rather than on people. These problems forced Deming to place greater emphasis on the responsibility of management. Therefore Deming promoted quality improvement through

¹ They are the quality scholars who first contributed to the field of quality management after the Second World War by establishing the initial concepts in the field.

management-based techniques rather than the statistics-based techniques. Deming (1986, P. 750) stated that: *Failure of management to plan for the future and to foresee problems has brought about a waste of manpower, of materials, and of machine-time, all of which raise the manufacturer's cost and price that the purchaser must pay. The consumer is not always willing to subsidise this waste. The inevitable result is loss of market.* This statement emphasised the importance of senior management responsibility, of senior management being responsible for quality problems (Markland, 1997). Chan (2001) and Terziovski and Dean (1998) reported that quality improvement would only happen if a committed management guides the employees.

The Deming approach to quality improvement focused on customer orientation, where delighting rather than merely satisfying the customer is important. Delighting the customer can be achieved by having an obsession with quality through a combination of total teamwork and a scientific approach. Deming developed a fourteen-point action plan for management to achieve quality improvement. However, the DTI (1991) argued that this fourteen point action plan provides a guide for management to stay in business, but only if each of the fourteen points is considered in the context of one's own organisation and the environment in which it operates. The DTI (1991) suggested that Deming's fourteen-point action plan provides an outline of the obligations of top management. However, Deming (1982) argued that it is not enough for management to commit themselves to quality and productivity, they must know what it is they are committed to and what they must do. They could not delegate these obligations because if management does not understand and are not involved, nothing will happen (Chan, 2001; Yeung et al., 2002; Antony et al., 2002).

Deming furthered his work on quality improvement by the development of seven deadly diseases of which only five are applicable to UK organisations (DTI, 1991). If any of these deadly diseases is present, quality improvement will not result. These diseases are as follows:

- ❑ A lack of constancy of purpose
- ❑ Emphasis on short term profits
- ❑ Appraisals and merit systems
- ❑ Mobility of management
- ❑ Management by use only of visible figures

To overcome these deadly diseases, Deming (1986) developed a seven-point action plan, as follows:

- ❑ Management struggles over the fourteen points, deadly diseases and obstacles and agrees meaning and plans direction.
- ❑ Management takes pride and develops courage for the new direction.
- ❑ Management explains to the people in the company why change is necessary.
- ❑ Divide every company activity into stages, identifying the customer of each stage as the next stage. Continual improvement of methods should take place at each stage, and stages should work together towards quality.
- ❑ Start as soon as possible, to construct an organisation to guide continual quality improvement using the “plan, do, check, act” cycle to improve each stage.
- ❑ Everyone can take part in a team to improve the input and output of any stage.
- ❑ Embark on construction of organisation for quality.

Flood (1993, p. 76) analysed Deming’s seven point action plan and stated: *Deming is thus advocating a systematic functional analysis of the stages of a company’s*

activities along side a number of people oriented steps. Deming differed in his approach to quality improvement from others. Maul and Gillard (1993) concluded that it is often wrongly omitted from continuous improvement programmes because management assumes their actions are correct and therefore do not need verification.

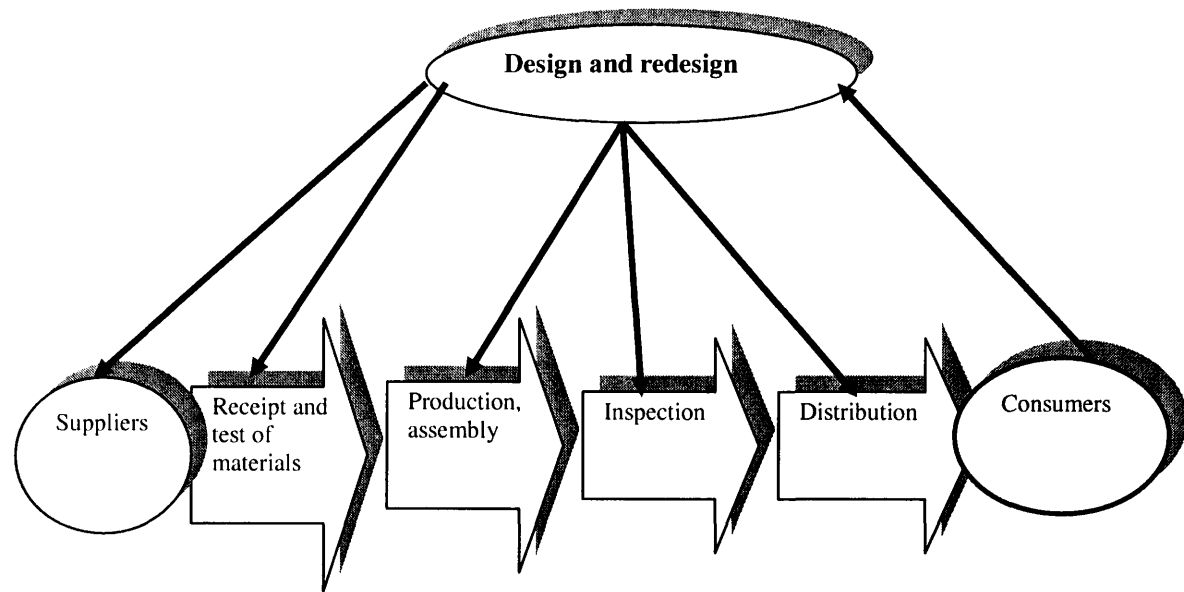
3.2.1.1. Deming's theory of profound knowledge

Deming's system of profound knowledge provides a new map of theory by which to understand and optimise the organisations that we work in, and thus to make a contribution to the whole country (Deming, 1993). The system has four interrelated areas of understanding which form a system's approach. They are knowledge about the system, knowledge about variation, theory of knowledge, and knowledge of psychology.

a) Knowledge about the system

The system is defined as *a series of functions or activities within an organisation that work together for the aim of the organisation* (Deming, 1993, cited in Schultz, 1994, p. 21). Further Deming (1994, cited in Schultz, 1994, p. 18) stated that *the flow of material and information from any part of the system must match the input requirements of the next stage.* This is illustrated in figure 3.5 to demonstrate Deming's view of the organisation as part of a system. The system contains inter-related components working together in harmony. Managers should ensure communication and co-operation among the different parts of the system and each component has a duty to contribute to the whole system. Therefore, it is not important if any of the components is losing money as long as it contributes to the success of the other components.

Figure 3.5: Deming's flow-diagram of the organisation as part of a system



(Source: Based on Deming, 1986)

b) Knowledge about variation

Deming emphasises the need to understand variations between people, processes, products, and outcomes; nothing remains constant. Managers should consider variations in process capability and control charts, and most importantly, variations in people. Therefore, it is clear that in order to improve processes it is important to know whether variation is caused by special causes or whether the variation is natural; due to common causes.

c) Theory of knowledge

One of the few references Deming makes to academic theories is to Clarence Irving Lewis, An American philosopher of the pragmatic tradition. Evidently has influenced Demings epistemological view. In short, planning required prediction, empirical data are the basis of prediction and theory, theory is important for understanding empirical

data, there are no obsolete truths. Therefore, it is clear prediction based on past experience is a very important element for managers. Deming claimed that there is no true value of any conditions; any experience might yield different results when different procedures are used. Deming introduced Plan-Do-Check-Act (PDCA)² cycle, which is a model for applying the theory of knowledge. The four steps should be repeated, leading to a helix that illustrates one of the fundamental concepts of Total Quality Management (TQM) which is continuous improvement.

d) Knowledge of psychology

Managers must have some understanding of psychology, because people are not all alike; they have different values and different learning styles. Deming differentiates between intrinsic and extrinsic motivation. Everyone is born with a natural inclination to learn and to be innovative. One inherits a right to enjoy his work (Deming, 1993, cited in Schultz, 1994, p. 25). Therefore, management should understand the human side of the organisation and the human interactions of employees. People differ and management should use these differences for optimisation providing incentives and motivation to succeed.

Based on the above discussion, it is clear that Deming's work has been accepted as having many strengths, but there are also some weaknesses associated with it. The strengths and weaknesses are summarised below:

Strengths

- A systematic approach which allows the identification of the required stages for quality improvement and quality culture development.

² Deming was introduced to the Plan-Do-Check-Act by the Statistician Walter Shewhart. Deming

- Stresses the importance of the interrelationship between an organisation and its suppliers.
- Emphasis on management before technology.
- Emphasis on leadership and motivation of employees.
- Strong on statistical and quantitative methods in appropriate circumstances.
- Recognition of the different cultures in Japan and the West and as a result the different methods of implementation.

Weaknesses

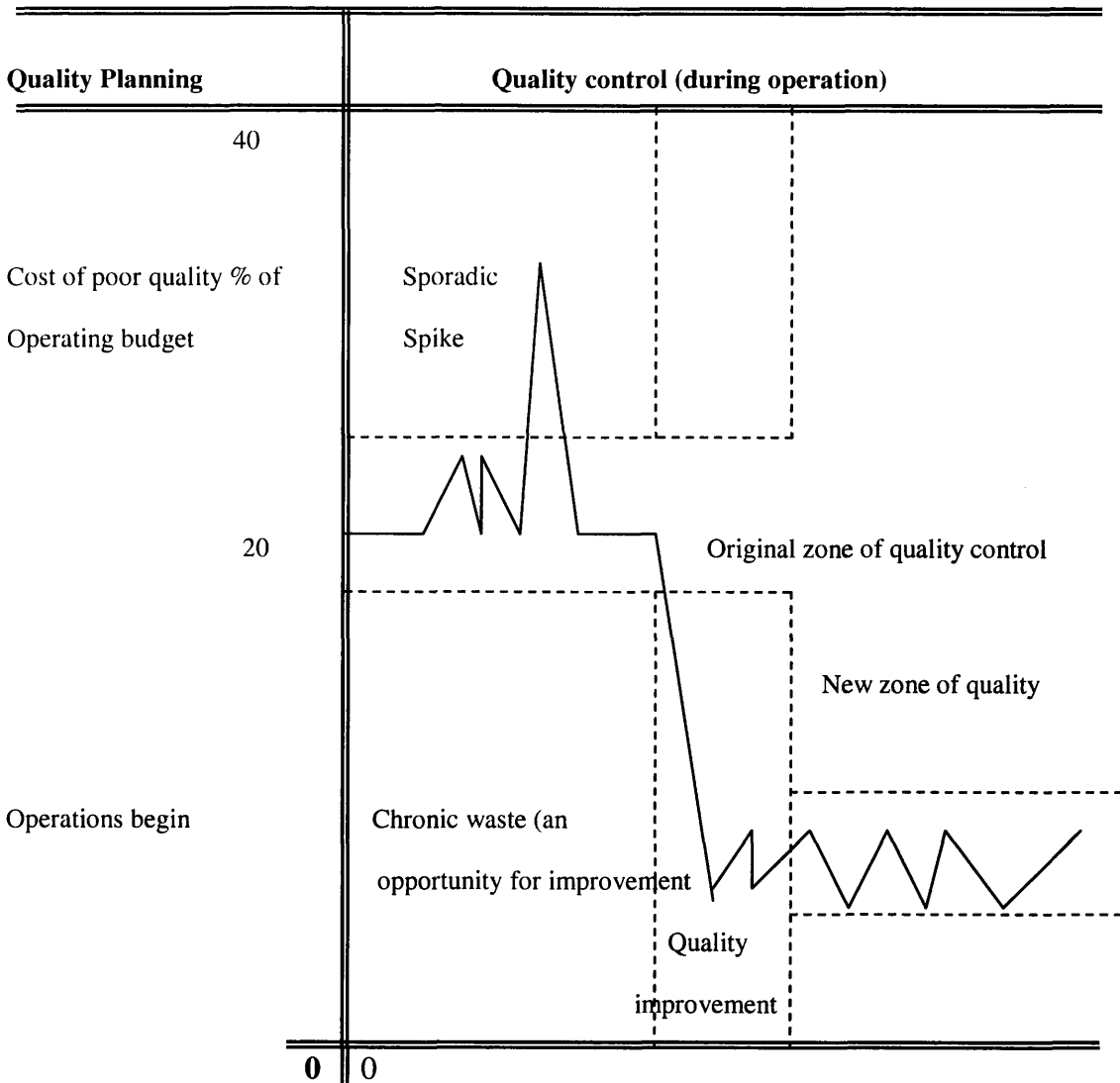
- Deming's approach is not as easy to understand as others are, some principles are too vague to be fully comprehended and implemented.
- Deming gives no indication of how to deal with the real problems in organisations resulting from internal politics and union issues, although he recognises these as having a bearing on successful implementation.

3.2.2. Joseph Juran

Juran became one of the world authorities on quality in the 1950s. His approach was directed at general management and focused specifically on the human elements of management. He believed that companies in the West could attain quality improvement, on the scale that the Japanese had already achieved, by following a human oriented approach. Juran (1981) believed that quality must be planned, and quality planning is one part of a quality trilogy (see Figure 3.6), quality control and quality improvement being the other two.

later replaced the word check by study (Schultz, 1994).

Figure 3.6: The Juran quality trilogy



(Source: Juran, 1988, p. 27)

Juran (1981) demonstrated that the Japanese had gained their present reputation for high quality on the basis of a training programme and annual improvement programme, all actions being launched with upper management leadership and support. Flood (1993) has summarised the trilogy as:

Quality planning

- ❑ Determine quality goals
- ❑ Develop plans to meet those goals

- ❑ Identify the resources to meet those goals
- ❑ Translate the goals into quality

Quality control

- ❑ Evaluate performance
- ❑ Compare performance with set goals
- ❑ Take action on the difference

Quality improvement

- ❑ Reducing wastage
- ❑ Improving delivery
- ❑ Enhancing employee satisfaction
- ❑ Becoming more profitable
- ❑ Ensuring greater customer satisfaction

Juran emphasised that quality implementation requires planning which can be implemented through changes in the organisational system. Juran (1988) also suggested that management should be the prime concern of any organisation looking for quality improvement and that the organisation should have structured annual improvements in quality, a quality oriented training programme and senior management leadership of the approach to product quality. Flood (1993) suggested that top management must maintain effective leadership, not only of the company's financial performance, but of its quality performance as well. Juran was conscious that having principles for quality improvement was one matter, but that actually implementing them was another. Therefore he suggested implementing quality improvement by following his nine-step 'quality planning road map'. In this map, he expanded on the need for customer orientation, from the first point of contact through to the operational process, and in doing so illustrated the level of integration required in the existing management controls.

Quality planning road map is as follows:

- ❑ Identify who are the customers
- ❑ Determine the needs of those customers
- ❑ Translate those needs into our language
- ❑ Develop a product that can respond to those needs
- ❑ Optimise the product features so as to meet our needs as well as the customer needs
- ❑ Develop a process which is able to produce the product
- ❑ Optimise the process
- ❑ Prove that the process can produce the product under operating conditions
- ❑ Transfer the process to operations

Juran continued to suggest that organisations should follow quality improvement programmes, which should involve employees, directly or indirectly, thus suggesting that human relations in quality improvement programmes are particularly important in achieving excellence in quality. Juran's approach has its strengths as well as its weaknesses. These are summarised below:

Strengths

- ❑ Rejects the use of the quality-hype and slogan approach and concentrates on the real issues of management practice.
- ❑ Emphasis on the importance of recognising the existence of both internal and external customers.
- ❑ Advocates assessing management involvement and commitment.

Weaknesses

- ❑ Lack of emphasis on motivation and leadership
- ❑ A more traditional approach based around control systems, which perhaps is not appropriate to the issues of the 1990s.

3.2.3. Philip Crosby

Crosby is best known for his use of quality slogans, such as 'quality is free', 'right first time', and 'zero defects' (Yong and Wilkinson, 2002). This shows that Crosby had an affinity for being able to simplify his quality approach, which could be understood more easily. The use of the Zero defects concept can be somewhat misleading in that it does not suggest that people never make mistakes, rather managers should not accept or expect that mistakes are inevitable (Yong and Wilkinson, 2001). Crosby (1997) suggested that quality control and improvement methods were measures of inspection and that prevention should be the aim instead. Crosby summarised this philosophy in his 'five absolutes' for quality management as follows:

- Quality is defined as conformance to requirements, not as goodness or elegance.
- There is no such thing as a quality problem.
- It is always cheaper to do it right first time.
- The only performance measurement is the cost of quality.
- The only performance standard is zero defects.

Crosby agreed with Juran and Deming about the issue that the responsibility for quality is based on management commitment and participation. Crosby (1979) believed that management has to set the quality standards so that the employees can follow them. Therefore employees should be consulted about the tasks they perform and as a result goals are then set for them to achieve. Those who are outstanding in completing their achievements are then recognised through award programmes. Crosby suggested that the plan including the 'five absolutes' might not be sufficient to implement quality improvement programmes. Therefore, Crosby (1979) developed a grid to assist his process, which is referred to as the 'quality maturity grid'. The grid

consists of five stages of maturity (uncertainty, awaking, enlightenment, wisdom, and certainty) and six measurement (performance, conformity, reliability, durability, defect rate and internal failure costs) categories and may be used to establish where an organisation is currently in terms of quality improvement, and provides a future direction to follow. Crosby's approach is certainly easier to understand in terms of implementation, but, like others, his approach has its strengths and weaknesses which are summarised below:

Strengths

- ❑ Crosby's approach is much easier to understand than those of the other quality gurus, his tools and methods of implementation are more practical and creative, reflecting his more recent experiences in industry.
- ❑ Emphasis on employee participation.
- ❑ Crosby does not suggest that people never make mistakes. Emphasis is placed on the organisation not to accept or expect that mistakes are inevitable.
- ❑ The simple approach gives organisations the confidence to implement quality improvement programmes.

Weaknesses

- ❑ Crosby's approach implies that the employees are to blame for quality problems which, may result in management believing they are blameless.
- ❑ The approach has too many slogans, which can result in masking the real problems that may be experienced in implementing quality improvement programmes.
- ❑ Crosby's fourteen-point plan is goal oriented and contradicts his belief that employees should be free from externally generated goals.

Crosby tends to differentiate himself from Deming and Juran, citing his zero defect goal as something practical, reasonable and achievable. However, he seemed to rank himself with Deming and Juran when he wrote: *It is not possible to take people with as much experience as Dr Deming and Dr Juran and I, and put us in boxes with clear labels like in a zoo. We all believe that the problem of quality belongs to management. We all believe that prevention is the way to get it. And we are all impatient that everyone is not leaping into what we see as a sensible mature philosophy of doing things. Dr Deming has emphasised statistics over the years and has brought that approach to thousands of people. Dr Juran is known for his engineering methods. If you do what they teach, you will do very well. They are dedicated people and worthy of respect. Dr Deming and I write notes back and forth. Dr Juran seems to think I'm a charlatan and hasn't missed many opportunities to say that over the years* (Crosby, 1989, p. 79).

3.3. Quality leadership: A critique

It is clear from the views of Deming, Juran, and Crosby, that their approaches to quality have lots of similarities and their quality message is the same, although they might use different dialects. The quality message is attack the system for the delivery of products and services and do not attack the employee; strip down the work processes whether it be in the manufacture of a product or the delivery of a service; identify your customer and delineate customer needs; find and eliminate the problems which prevent the continual satisfaction of customer need; eliminate waste; instill pride in performance and teamwork; create an atmosphere of innovation and continuous quality improvement (Oberle, 1990).

The quality gurus have tended to adopt a universalistic approach to quality, seeing people/the human resource as a fixed entity to be used by organisations (Hill and Wilkinson, 1995). Crosby (1979) recognises the need for quality awareness and communication by employees to management of the obstacles facing them in their job but little more. Crosby (1984) rejects outright the redesign of work, regarding work itself as a secondary motivator to how employees are treated. Juran (1988), however, sees little role for shop-floor employees, with primary responsibility resting with professionals and to lesser extent middle management, although he warns against exhortation. His emphasis is on training and top management. A greater emphasis on the employee is present in the work of Deming (1986). Deming's desire and emphasis are in driving out fear based on his 14 points and his classifications of variation according to "special causes" (i.e. variation relating to particular operators or machines requiring attention to the individual cause) are strong indicators of Deming's appreciation for the role of people in achieving quality. Clearly, achieving quality is recognised as a people phenomenon, and therefore organisations should have the right people, organised appropriately, managed effectively and focused on customer requirements (Dwyer, 2002; Langbert, 2000).

The quality gurus suggest that a process, which exhibits the above features, will lead to an increase in competitiveness and profit by increasing customer demand (Nwabueze, 2001). However this view is naïve because quality is not a detached and generally recognised standard of excellence, but something which is agreed between suppliers and customers, in order to ensure that external customers are always offered that for which they are able and willing to pay (Wilkinson and Witcher, 1993). To achieve this state of affairs requires a concise, comprehensive and holistic approach to

the implementation of quality, which is notable by its absence from the prescription of the quality gurus (Zhang, 2001). A holistic approach does not need to be mechanistic; rather it should take cognisance of the fact that organisations are not static but are, instead, vibrant and ever-changing human conceptualisations directed to the fulfilment of overtly stated purposes (Kruger, 2001).

The quality gurus tend to view the organisation as unitary and, hence barriers to organisational change are underplayed. As there is little recognition of tensions between the production orientated “hard” aspects of quality, which seek to emphasise working within prescribed procedures, and the “soft” aspects which emphasise employee involvement and commitment (Wilkinson, 1992; Logge, 1995). Moreover, it may be argued that quality gurus are blinkered in taking an integrationist view of organisational culture. They suggested that culture is an integrating mechanism with an emphasis on harmony, homogenisation and consensus; thus failing to appreciate the fact that the internal and external environments in which the organisation operates are indeed uncertain. The emphasis on cultural homogenisation does not promote or encourage quality improvement and learning (Nwabueze, 2001; Kruger, 2001).

In general, the quality gurus have provided advice about how to manage quality, but fall short on how to actually do it. For example, there is a lack of a conceptual framework and of a sound instructional methodology for business improvement, in particular, to identify which aspects of quality management matter, how much is needed, and how to establish customers’ needs satisfactorily. Moreover, they offer little guidance on the immediate and direct value or relevance to organisations. It is difficult to connect the general quality concepts and ideas to the specific

circumstances of an organisation to its markets, management practices and human resource management. Therefore, it is important for organisations not to apply the methods proposed by the gurus without examining them and matching them to specific requirements (Ghobadian and Speller, 1994; Chase and Aquilano, 1989). They have also failed to include broader organisational issues such as strategic thinking, exercise of power rather than leadership and continuous managerial renewal. The most immediate outcome of this is the lack of a conceptual understanding on the part of managers as to what constitute the essential organisational elements and requirements for the successful implementation of quality.

3.4. Quality: Uncertainty and changing environment

Globalisation, internationalisation of markets and increased competition have led to a focus on the satisfaction of customers' needs as a means of obtaining competitive advantage and even ensuring survival (Al-Khalifa and Aspinwall, 2000). One of the major strategic changes that has occurred in today's changing business environment, where many organisations are striving to satisfy customers' needs, is an emphasis on quality (Cao et al., 2000; Carr et al., 1997). The focus on quality in recent years is perhaps the most patent expression of the change and uncertainty in organisations (Bayo-Moriones and Merino-Diaz de Cerio, 2001). Change and uncertainty are high on the agenda of top management and organisations throughout the world. Harris et al. (1994, p. B2) state that *on both sides of the Atlantic, top executives have a common message about change: plenty more is coming*. Moreover they undertook a survey of chief executives from seven hundred and seventy-eight of the biggest companies in eleven countries in North America and Europe. The survey suggested that most executives identify significant changes impacting their organisations and also

suggested that there are national differences, however, the results are consistent (see Table 3.1).

Table 3.1: Where change is coming

Percentage of executives saying their companies will – in the next three to five years – make changes to...	US %	Europe %
...their marketing strategy	65	59
...their strategic planning process	50	43
...the diversity of their workforce	49	51
...their organisational structure	58	61
...their marketing compensation	45	45
...their international scope	46	53
...the composition of their board	28	27

(Source: Harris et al., 1994, p. B-1)

On a more detailed level, Harris et al. (1994) asked executives to rate twenty-two issues as critical, important or minor (see Table 3.2). The survey suggested that executives identified quality and customer satisfaction to be important amongst all participants in a time of change. Researchers associated with the 1990 Workplace Industrial Relations Survey (WIRS) conducted a study in almost 500 organisations to identify which features of their products and/or services were important for survival and competitive success. The study reported that quality was regarded as important for achieving survival and competitive advantage (Wilkinson et al., 1998).

Change and uncertainty are issues facing organisations and this trend will likely to continue in today's' business environment. In response to these issues organisations have sought to adapt quality strategy for their survival and for coping with change. The concept of quality is based on a clearer recognition of the importance of consumers and added emphasis on the planning process of organisations as illustrated

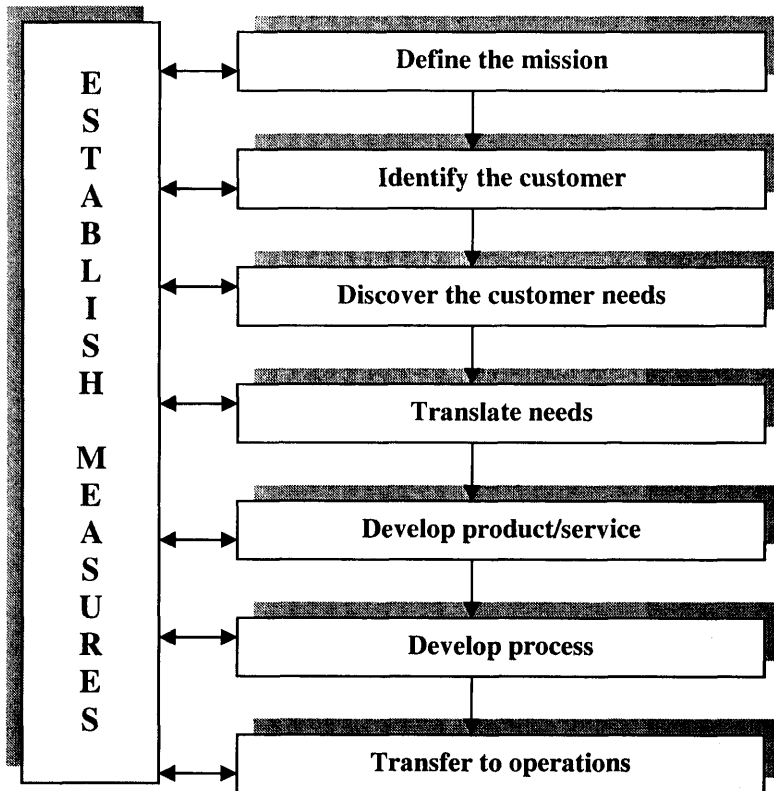
in table 3.1 and 3.2, and these elements are important for organisations to be successful. In recognition of the importance of planning, Juran (1995) developed a quality planning road map (see Figure 3.7). James (1996) and Juran (1995) are supportive of the concept of planning and strategic management as key elements of quality initiatives. As James (1996, p. 96) stated, *the systematic use of quality planning is vital to an organisation's success; and, virtually all Deming prize winners can point to clear, detailed, well communicated plans*; and the importance of planning to respond to uncertainty and a changing environment is illustrated in table 3.2.

Table 3.2: Top issues for big companies

Percentage of executives saying the issues will be critical (as opposed to important or minor) to their companies in the next three to five years	US %	Europe %
Total customer satisfaction	76	74
Product quality	70	67
Service quality	71	66
Cost competitiveness	78	69
Work force skills/training	45	50
Return on capital	53	38
Ability to innovate	58	50
Shareholder value	69	25
Changing customer demands	53	38
Globalisation	15	22
Industry restructuring	34	29
Regulation/deregulation	45	27
Emerging competitors	34	20
Geopolitical issues	11	14
Role of the board	25	26
Re-engineering	24	25
Management succession	31	34
Product rationalisation	17	22
Short term earnings	14	9
Environment	18	21
Restructuring your company	22	23
Executive compensation	8	5

(Source: Harris et al., 1994, p. B-1)

Figure 3.7: Quality planning road map



(Source: Juran, 1995, p. 3)

Clearly, quality is seen to play an important part in addressing change and uncertainty in today's business environment. Delavigne and Robertson (1994) suggested that one of the key aspects of quality is the recognition of the need for an organisation in which all elements have a strong knowledge and understanding of the goals of the organisation and the importance of the customer within organisational quality plan. However, Hammer and Champy (1993) and Walters (1996) suggested that there are new theories and models to respond to change and they are advanced and updated on a regular basis through the literature. Ircha and Tolliver (1989) provided some of the key elements of current management models to respond to change:

- I. **A belief in people:** Letting all employees know that management values their contributions by recognising individual differences and efforts;

- II. **Becoming partners:** Supporting the achievements of employees by providing positive feedback to them on their accomplishments;
- III. **Linking rewards to performance:** Reinforcing excellent efforts through tangible (although not necessarily financial) recognition;
- IV. **Creating a positive environment:** Setting a tone of positive achievement to encourage natural talents to bloom; and
- V. **Celebrating success:** With your employees, customers and others who have all helped to make the organisation a success

Whitney and Pavett (1999) and Wilkinson et al. (1998) found TQM to be used as a mechanism to respond to organisational change that has withstood the test of time. As Wilkinson et al. (1998, p. 184) stated, *quality management has a strong association with transformational change and quality programmes are often introduced as part of a wider change initiative*. Moreover, Ernst and Young (1993) concluded that organisations which have adapted quality and recognised the level of change occurring will succeed, whereas those who do not, will fail. The subject of TQM will be explored in more detail in the subsequent chapter.

3.5. SUMMARY

An attempt has been made in this chapter to provide a relevant coverage of quality issues. This has included definitions of quality given by quality writers. This chapter has also provided details regarding the most well known work of those known as the quality gurus, whose ideas established the foundation for quality and total quality management. This chapter has also highlighted the role of quality in an era of increasing change and uncertainty. In the next chapter, an extensive investigation of TQM and self- assessment models is provided.

Chapter Four: Total Quality Management

4. Introduction

Global competitiveness is getting increasingly acute as more countries are embracing the free market model and opening up their borders for investments and trading. To stay ahead, a company's fundamental business strategy is to focus on customers and stay lean (Wiele et al., 2002). The concept of Total Quality Management (TQM) provides the approach to realize this fundamental business strategy (Jonker, 2001; Li et al., 2001). The introduction of TQM has been one of the major developments in management practice. TQM began to be introduced in the US around the 1980s primarily in response to severe competitive challenges from Japanese companies. The recognition of TQM as a competitive advantage is widespread around the world, especially in Western countries, and today very few companies can afford to ignore TQM (Kuei et al., 2001; Sousa and Voss, 2002). Therefore, this chapter provides different aspects of TQM and is outlined as follows for simple guidance:

Section 4.1 provides the various definitions associated with TQM available from the literature and identify the most important elements in defining TQM.

Section 4.2 focuses on the origins of TQM which has resulted from four major quality eras and they are inspection, quality control, quality assurance and TQM.

Section 4.3 illustrates the principles associated with TQM, and identifies the well known studies in the TQM critical success factors. Moreover, the identified critical success factors based on the well known studies are briefly explained, such as top management commitment/leadership; quality information; process management; product design; supplier quality management; human resource management; customer focus/satisfaction; strategic quality planning; quality culture; quality evaluation and benchmarking.

Section 4.4 demonstrates that the field of TQM is based on various management theories and it is important to identify the various management theories associated with TQM to enable a better understanding of TQM. More specifically, it focuses on the management system view; the open system

view; the system-structural view; the strategic management view; the Deming-based theory of TQM and contingency theory.

Section 4.5 provides an understanding and a critical analysis of the associated link between TQM and performance through various examinations of different criteria of performance. It also provides an evaluation of the link between TQM and innovation and competitive advantage.

Section 4.6 focuses on the resulting elements from the implementation of TQM within organizations, such as organizational change, organizational learning, and identifies various strategies to manage TQM, organizational change and learning.

Section 4.7 demonstrates the various tools of TQM and provides an understanding and critique of TQM tools, such as ISO 9000; self-assessment; quality awards, with a comparative assessment between ISO 9000 and quality awards.

Section 4.8 focuses on the vital importance of TQM tools to organizational performance. This is illustrated by the critical examination of ISO 9000, the EQA and organizational performance.

Section 4.9 looks into the implementation of TQM in different sizes of organization, and more specifically into SMEs in order to identify whether TQM can be implemented in SMEs as it applies to large organizations without any changes to TQM tools, investigates the applicability of ISO 9000 and the EQA to the needs of SMEs and finally provides a summary of the key limitations of the existing literature on TQM with respect to SMEs.

Section 4.10 illustrates the theoretical framework which drives the idea behind the development of this study and finally section 4.11 provides a summary of the key messages from the literature that have contributed to the empirical research design.

4.1. Total Quality Management (TQM): Definitions

Increased competition has motivated managers to evaluate competitive strategies and practices with the aim of improving quality and performance (Neergaard, 1999).

Therefore the focus on better management in organisations would lead to improvement of quality performance and financial performance (Curry and Kadasah, 2002; Deming, 1986). One of the most important developments in business has been the growing recognition of the strategic importance of TQM (Li et al., 2001).

Managers are striving to define, implement and sustain TQM, because of diminished workforce and the need to sustain competitive advantage and performance (Terziovski and Samson, 1999). Therefore What is TQM?. Jeffries et al. (1996, p. 15) defined TQM as *a comprehensive and integrated way of managing any organisation in order to meet the needs of the customers consistently and achieve continuous improvement in every aspect of the organisation's activities*. In addition, Ho's (1999) definition of TQM requires that everyone in the organisation, including the customers and suppliers, is involved in continuous improvement for the purpose of meeting customers' expressed and implied requirements with the full commitment of top management. It is clear that TQM is a customer focused management philosophy that aims at the continuous improvement of the processes and management of an organisation through statistical control, procedure design, policy deployment and human resource management techniques (Au and Choi, 1999). Further, TQM is intended to empower every member of the organisation, promote continuous, sustained and long term improvement in quality and productivity and to eliminate employees' fear of change (Rahman, 2001).

The concept of TQM is described as a way of managing to improve effectiveness, flexibility and competitiveness of the organisation to meet customer expectations and requirements (Oakland, 1989, cited in Yong and Wilkinson, 2001). However, Oakland (1993, p. 16) expanded his definition of TQM as *essentially a way of planning, organising and understanding each activity of the organisation and depends on each individual at each level. For an organisation to be truly effective, each part of it must work together towards the same goals, recognising that each person and each activity affects and in turn is affected by others. TQM is also a way of ridding*

people's lives of wasted effort by bringing everyone into the processes of improvement, so that results are achieved in less time. The literature emphasised that TQM is a philosophy that integrates strategy, management practice, removal of defects and organisational outcomes to create quality organisations. As Yamin and Gunasekaran (1999, p. 182) stated that TQM is *a systematic way of guaranteeing that organised activities happen the way they are planned. It is a management discipline concerned with preventing problems from occurring by creating the attitudes and controls that prevent defects from happening in the company's performance cycle.* Therefore, TQM is about managing business processes to achieve external and internal customer satisfaction (Kuei et al., 2001; Agus et al., 2000). Clearly, TQM is not a model or a technique, but may best be described as a management philosophy (Neergaard, 2002; Dale, 1999).

The introduction of TQM has altered and re-shaped the work practices and management thinking of many organisations, and it has made new and profound demands on every organisation. Therefore TQM *provides the overall concept that fosters continuous improvement in an organisation. The TQM philosophy stresses a systematic, integrated, consistent, organisation-wide perspective involving everyone and everything. It focuses primarily on total satisfaction for both the internal and external customers within a management environment that seeks continuous improvement of all systems and processes* (Ho, 2001, p. 16).

The literature has provided different definitions of TQM which, showed that there is no single and clear definition of TQM available and there are a number of reasons for the lack of a universal definition. First much of the literature is written by consultants

and the question of *what is really TQM* has not interested the academia to a larger extent. Second the wide variety of activities, practices and techniques are used in organisations under the rubric of TQM which makes it difficult to maintain a clear definition of TQM (Wilkinson et al., 1998). Therefore TQM *has come to function as a sort of Rorschach test, to which peoples' reactions vary as a function of their own beliefs and experiences* (Dean and Bowen, 1994, p. 394).

4.1.1. TQM definitions: critical evaluation

Based on the above critical definitions of TQM, it is clear to suggest that the term TQM is used in organisations to manage business processes to prevent problems and achieve good quality products and/ or services, to achieve external and internal customer satisfaction. This is achieved by developing and meeting quality goals of the organisation. It directs organisations to focus on customer needs, the use of teamwork and the involvement of every member of the organisation in order to achieve quality improvement. Therefore, TQM tends to involve the following characteristics:

Customer orientation/satisfaction. The internal or external customer of the product or service becomes the focus for determining standards and for measuring performance. A top-down flow chart with vertical reporting relationships is the traditional view of the structure of work while lateral flows culminating in providing products or services to customers represents the TQM perspective. TQM focuses on the input, throughput, and outcomes in relation to customer needs and expectations, rather than on higher hierarchical reporting and power relationships (Cardy et al., 1995). Therefore, TQM fits with Levitt's (1960) notion that a business must be a customer satisfying process rather than a goods producing process.

Continuous improvement. The organisation strives for continuous improvement rather than achieving and maintaining a fixed standard. The most effective means of improvement is to use employees who do the job to identify and implement appropriate changes (Wilkinson et al., 1998). The term continuous rather than continual is used throughout in the literature to show that the organisation, its processes, programs and outputs are under unyielding, self-imposed pressure to become even better (Feigenbaum, 1991).

Universal responsibility. The responsibility for achieving quality products and services and ensuring the success of TQM initiatives (for example, benchmarking, teamwork, quality measurement and employee empowerment) lies with each member (e.g, top management and employees) of the organisation (Walsh et al., 2002). Therefore, a culture of universal responsibility should permeate the organisation at every level to ensure the maximum benefits are achieved.

Process and prevention orientation. Prevention rather than detecting defective products or inadequate services is part of TQM. Prevention is based on the idea that it is best to do things right the first time. While simple this prescription may be difficult to realise in practice. Therefore building quality into organisational processes with the use of statistical tools and empowerment is essential. Each process which, focuses on quality has a customer, stretching back from the external customer through the various internal customers to the start of the series. Workers are trained to use different tools to determine if a process is in control to produce products or services that are satisfactory to consumers. In this way, TQM attempts to emphasise that all workers are ultimately involved in serving the final customer, so that quality matters at all stages, whilst teamwork and co-operation are important. Thus the customer orientation is regarded as a means of unifying processes as well as determining the objective of organisational activities (Grant et al., 1994).

To sum up, the TQM concept acts as a euphemism for closeness to the customer in order to achieve customer satisfaction through focusing on the following criteria identified through the various definitions of TQM:

- Prevention of quality problems in preferences to cure;
- Continuous improvement of products and services;
- Top management commitment and the commitment of every member of the organisation;
- Working in teams to solve problems;
- Getting things right first time;
- A drive to continuously improve all aspects of the business.

4.2. The origins of TQM

Models for improving and managing quality have evolved rapidly in recent years. Since the mid 1980s simple inspection activities have been replaced by quality control, quality assurance has been developed and most companies are working towards the implementation of TQM models (Wiele et al., 1997). In this progression, four stages can be identified: inspection, quality control, quality assurance and TQM (see Figure 4.1). A brief description of the four major quality eras will be described briefly.

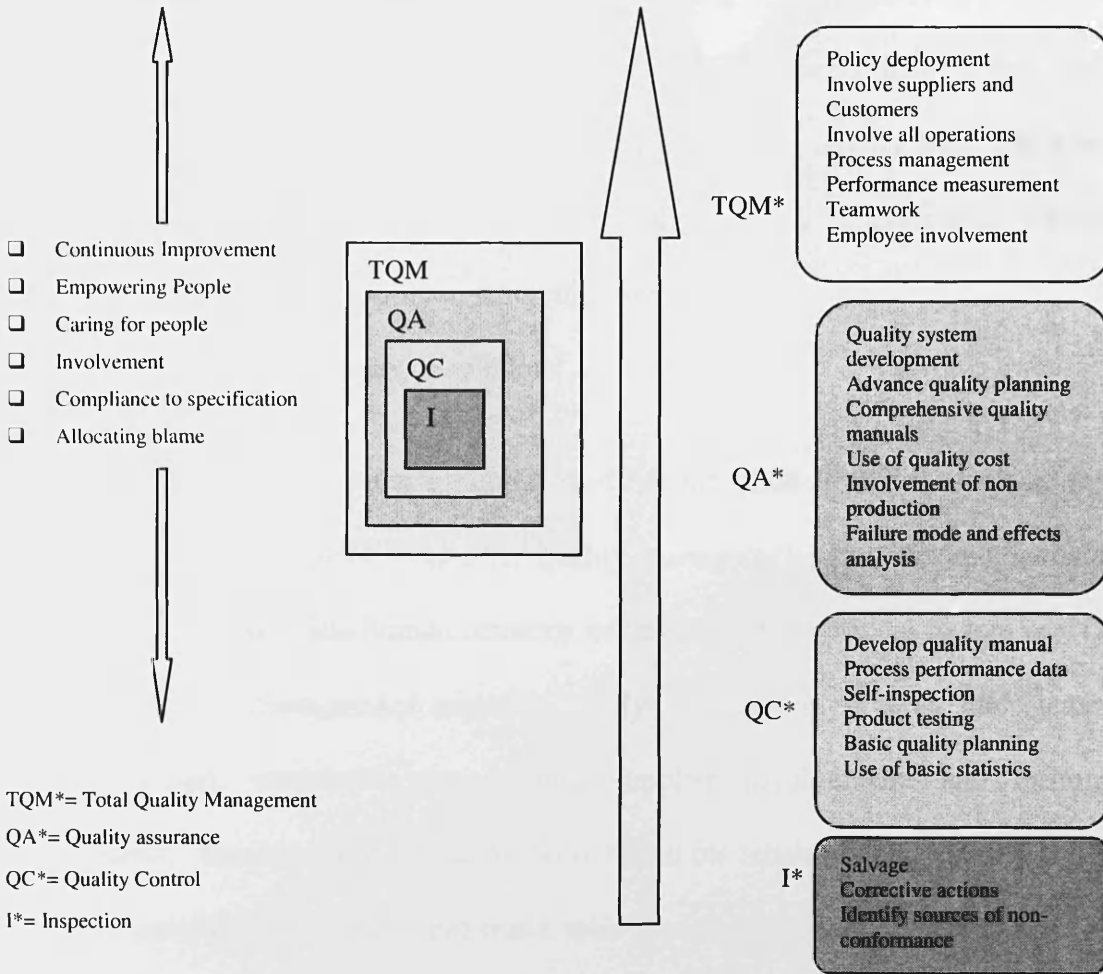
Inspection: Under the inspection system, one or more characteristics of a product, service or activity are examined and compared with a specified set of requirements to assess conformity. Materials, components, paperwork, forms, products and goods which do not confirm to specification may be scrapped, reworked, modified or passed on concession.

Quality control: Under the quality control system, there will be some sophistication of methods and systems for preventing off-specification products and services from being delivered to customers, again screening inspection, quality control leading to higher rate of control and a lower incidence of non-conformance. Quality control does not improve quality but identifies products and goods, which do not conform to specifications.

Quality assurance: Finding and solving a problem after a non-conformance has been created is not an effective means of eliminating the root cause of a problem. Continuous improvement can only be achieved by directing efforts towards planning and preventing problems occurring at source. This concept leads to the quality assurance stage where some of the quality control tools will be used, such as the check sheet, histogram and cause and effect diagram. There is also more emphasis on advanced quality planning, improving the design of the product, process and services, improving control over the process and involving and motivating people.

Total Quality Management (TQM): This stage involves the principles of quality management (that is continuous improvement and customer focus) to all aspects of the organisation (Curry and Kadasah, 2002). This stage tends to pervade every person, activity and function of the organisation. The spread of the TQM philosophy expected to be accompanied by greater sophistication in the application of tools and techniques and increased emphasis on people. The process will also include partnerships with suppliers and customers. TQM activities will be re-oriented to focus on the customer. Dale (1994) suggested that TQM consist of customer orientation; commitment and leadership of senior management; planning and organisation; using quality management techniques & tools; education and training; involvement and teamwork; and measurement and feedback. However, TQM has no specific criteria that have been agreed on by TQM practitioners or scholars (Dahlgaard et al., 1998), and this issue will be discussed further in section 4.3.

Figure 4.1: The evolution of total quality management



(Source:Wiele et al., 1997, p. 239)

4.3. Principles of TQM

There have been numerous studies examining the principles of TQM, what the common barriers to TQM implementation are, and what factors are critical for the success of TQM (Saraph et al., 1989; Flynn et al., 1994; Powell, 1995; Black and Porter, 1996; Ahire et al., 1996; Rao et al., 1997). Although these studies have provided different results, they have identified a common set of principles that are considered essential to the success of TQM. What are called principles are also, in the literature, called core values, dimensions, practices, elements, or cornerstones, which indicates that the terminology is unclear and inconsistent.

Saraph et al. (1989) identified and empirically validated critical areas of TQM based on the prescriptions of quality gurus, including Deming, Juran, Crosby, and Ishikawa. They identified 120 items, which were classified into eight critical factors, which were then empirically tested and refined. The eight critical factors were: the role of top management leadership, the role of the quality department, training, product/service design, supplier quality management, process management, quality data and reporting, and employee relations.

Flynn et al. (1994) conducted a similar study at the plant level based on multiple responses from staff, plant managers, quality managers, production and inventory managers, supervisors and human resource managers. Seven critical factors of TQM were found: top management support, quality information, process management, product design, workforce management, supplier involvement, and customer involvement. The seven critical factors were tested for reliability and validity and the authors reported that the instrument was a valid predictor of quality performance.

Ahire et al. (1996) identified, validated and tested the 12 critical factors identified from the use of a survey of 371 manufacturing firms. These factors were top management commitment, customer focus, supplier quality management, design quality management, benchmarking, Statistical Process Control (SPC) usage, internal quality information usage, employee empowerment, employee involvement, employee training, product quality and supplier performance.

Powell (1995) investigated the performance of TQM firms in comparison to non-TQM firms. 47 items and 12 factors related to quality were identified from reviewing the literature and interviewing consultants and quality managers. The 12 factors identified were: committed leadership, adoption and communication of TQM, closer customer relationships, closer supplier relationships, benchmarking, increased training, open organisation, employee empowerment, zero defects mentality, flexible manufacturing, process improvement, and quality measurement.

Black and Porter (1996) designed a questionnaire based on the Baldrige model as well as the perceptions and experiences of a range of TQM practitioners. A 39 item survey was developed and sent to 200 managers. The study analysis revealed the development of 10 critical factors and they were reliable and valid. The ten factors generated were: quality culture, strategic quality management, quality improvement, people and customer management, operational quality planning, external interface management, supplier relations, teamwork, customer satisfaction and communication.

Rao et al. (1997) identified, validated and tested 8 critical factors identified and they were found to be reliable and valid. These factors were leadership, customer focus, information and analysis, strategic quality planning, human resource development, quality assurance, supplier relations and quality results.

The above studies allow me to say, on the one hand, that the critical factors of TQM differ from one author to another, and therefore, there is no unanimous view of the key factors of TQM. On the other hand, that in practice firms may follow known, accepted, standard models as a guide to carry out TQM. In spite of this, this review shows that the above studies proved to be fully comprehensive and provided different

critical factors which have been empirically tested and validated. The researcher, therefore, intends to combine these identified critical factors of TQM among the above mentioned studies and produce a list of critical success factors of TQM. Table 4.1 shows the comparative detail of the critical factors identified in the above studies. Table 4.1 shows that there is no agreement on what constitutes TQM principles.

Table 4.1: Elements of total quality management

Saraph et al. (1989)	Flynn et al. (1994)	Powell (1995)	Black & Porter (1996)	Ahire et al. (1996)	Rao et al. (1997)
Top management leadership	Top management support	Leadership	Quality culture	Top management commitment	Leadership
Role of the quality department	Process management	Adoption and communication of TQM	Strategic quality management	Customer focus	Customer focus
Training	Customer involvement	Closer customer relationships	Quality improvement	Supplier quality management	Information & analysis
Product/service design	Product design	Closer supplier relationships	People & customer management	Design quality management	Strategic quality planning
Supplier quality management	Supplier involvement	Benchmarking	Operational quality planning	Benchmarking	Human resource development
Process management	Workforce management	Training	External interface management	SPC usage	Quality assurance
Quality data & reporting	Quality information	Open organisation	Supplier relations	Internal quality information usage	Supplier relations
Employee relations		Employee empowerment	Teamwork	Employee empowerment	Quality results
		Zero defects mentality	Customer satisfaction	Employee involvement	
		Flexible manufacturing	Communication	Training	
		Process improvement		Product quality	
		Quality measurement		Supplier performance	

However, the most common principles of TQM are:

1. Top management commitment
2. Quality information
3. Process management
4. Product design
5. Supplier quality management
6. Human resource management
7. Customer focus and satisfaction
8. Strategic quality planning
9. Quality Culture
10. Quality evaluation and benchmarking

Based on the comprehensive review of the TQM literature, 10 critical success factors (see above) were identified and they were considered to be the success factors critical for TQM implementation. Detailed explanations of the 10 critical success factors are presented in the following paragraphs.

4.3.1. Top management commitment/leadership

Behaviours and actions of top management with respect to goal setting, performance measurement, performance appraisal, and encouraging employee involvement are critical elements in the management of quality in organisations (Neergaard, 2002; Flynn et al., 1994; Morgan and Murgatroyd, 1993; Waldman, 1994a). Researchers and practitioners have identified top management commitment as one of the major determinants of successful TQM implementation (Tang and Antony, 2001; Rao et al., 1999; Motwani, 2001; Rahman, 2001). Top management acts as a driver of TQM implementation and the key to continuous improvement through the creation of values, goals and systems to satisfy customer expectations and to improve organisational performance (Easton and Jarrell, 1998; Ahire et al., 1996; Kanji and Wong, 1999). Moreover, Evans and Lindsay (1993); Morgan and Murgatoyd (1993) stress that, senior managers should be the leaders of TQM and should provide support, vision and recognition to all employees. If top management does not consider TQM as its main priority in the long term, employees might lose their enthusiasm (Zhang et al., 2000). Solis et al. (2000) and Hradesky (1995) suggested that the failure of many TQM programmes is due to a lack of top management commitment, while Oakland (1996) and Bank (2000) emphasised that top management commitment must be a constant purpose and must involve all departments, as well as customers, suppliers, and subcontractors. Chapman et al.

(1991) suggested further that top managers should participate in the process of quality management by performing different activities in order to build quality awareness and to achieve higher quality performance. These activities are:

- Management should establish and deploy quality goals and policies;
- Management should provide the resources required;
- Management must participate in quality improvement teams;
- Management should provide problem-oriented training to employees;
- Management should establish and review reward and recognition systems.

It is clear that the support should come from top management in the organisation for effective implementation of TQM. This is supported by the work of Chen et al. (1997). Their study investigated the impact of the quality manager involvement on the quality practice-quality performance relationship. The study revealed that it would be unwise to delegate sole responsibility of quality programmes to the quality managers, as their influence is not sufficiently pervasive. Solis et al. (1998) explored TQM practices among a sample of 131 manufacturing and 109 services companies in Taiwan. They showed that top management commitment was the most important critical factor in achieving organisational quality. Ghosh et al. (2001) investigated further the key success factors in achieving quality in SMEs in Singapore. They suggested that effective leaders and top management commitment were the key success factors. These studies confirm, support and provide further strong empirical evidence of the vital importance of top management commitment in implementing TQM, and consistent with the conclusions reached by Yusof & Aspinwall (2002); Keating & Harrington (2002); and Antony et al. (2002).

4.3.2. Quality information

Maintenance and improvement of quality requires continuous flow of accurate information about processes that generate the company's products (Rao et al., 1999).

Collection of information from different sources such as employees, suppliers and customers is vital for improving and maintaining the quality of products/services (Waldman, 1994b). Therefore, feedback on defect rates, compliance, and schedule adherence is a practice associated with disseminating quality information throughout a production plant (Flynn et al., 1994). Feedback to employees concerning their own level of performance is also a feature of managing quality information (Waldman, 1994b). Organisations use tools and techniques such as Statistical Process Control (SPC), flow charts, histograms, pareto analysis and cause-and-effect diagrams to provide quality information for top management and employees (Bank, 2000). The availability of quality information is therefore a prerequisite for effective and efficient TQM and also enables organisations to achieve competitive advantage (Solis et al., 2000). Moreover, the literature reveals that there is strong evidence to support the fact that there is a positive correlation between managing quality information and quality performance (Forza, 1995; Solis et al., 2000). Anderson and Sohal (1999) investigated further TQM practices in Australian SMEs, and they reported that information availability provided the greatest positive influence on the quality of output. It is clear that managing quality information is a key element of TQM.

4.3.3. Process management

It is considered to be a part of a TQM strategy. Juran and Gryna (1993) have referred to the process as a combination of tools, methods, machines, materials and employees engaged in production. Zhang et al. (2000) explained that process management focuses on managing the manufacturing process without delays or breakdowns. In order to implement TQM effectively, organisations should manage process effectively. Therefore, management should ensure that effective process management

includes clarity of process ownership and boundaries, documenting process management procedures and cleanliness/organisation of the workplace (Behara and Gundersen, 2001; Saraph et al., 1994; and Flynn et al., 1994).

Effective process management is based on documenting the different process procedures, with instructions for machinery operation in order to minimise the likelihood of operator errors. One of the most prominent process management procedures is the International Standards Organisation (ISO) 9000 series of standards which will be discussed in later sections (originally based on the British BS 5750 standard) (Seghezzi, 2001; Prabhu et al., 2000).

Process management is viewed as important in enabling organisations to achieve quality and performance (Lee et al., 2001; Morgan nad Murgatroyd, 1993). Pritchard and Armistead (1999) investigated business process management in European organisations. They reported the importance of process management, where it can enable organisations to achieve competitive advantage and improves performance. In Singapore, Quazi & Padibjo (1998a) found that managing process effectively was associated positively with business results in SMEs. In addition, Rahman (2001) investigated TQM practices and business outcomes in Western Australian SMEs and found a positive relationship between process management and organisational performance. These studies are consistent with those conclusions reached by Samson & Terziovski (1999); Cua et al. (2001); and Griffiths et al. (2001).

4.3.4. Product design

Product design is an important element of TQM (Ahire et al., 1996) and it requires investment of time and resources in achieving effective product design (Juran, 1981).

Effective design of products helps to meet or exceed the requirements and expectations of customers in comparison competitors, leading to an increased market share (Solis et al., 2000). Therefore, product design practices have a positive impact on quality performance (Forker et al., 1996). The development of effective product design is based on the use of cross-functional project teams, frequent design reviews, value analysis and systematic identification of customer requirements (Hanson et al., 1996). Further, new product design should be reviewed before production in order to avoid problems happening during mass production (Zhang et al., 2000). Experimental design (Zhang, 1998) and Quality Function Development (QFD) (Daetz et al., 1995) are two essential methods in product design. Product design contributes to all of Garvin's (1987) critical dimensions of quality (see table 4.2).

Table 4.2: The dimensions of quality and the functions typically responsible for their provision

Dimension	Description	Functions
Performance	A product's primary operating characteristics	Design
Features	Secondary characteristics – the "bells and whistles"	Design
Reliability	The probability of a product mal-functioning within a given period	Design
Conformance	The degree to which a product is manufactured to the agreed specification	Manufacturing
Durability	A measure of a product's life in terms of both its technical and economic dimensions	Design
Serviceability	The ease of servicing (planned or breakdown) to include the speed and provision of after-sales service	Design and after-sales
Aesthetics	How the final product looks	Design
Perceived quality	How the customer views the product	Marketing & design

(Source: Hill, 1995, p. 79)

4.3.5. Supplier quality management

The importance of incoming materials, parts, and services has highlighted supplier relationships as a vital component in achieving quality and competitive advantage in organisations. Supplier quality management is identified to be an important element of TQM. This is due to the fact that suppliers can make a significant contribution to the achievement of manufacturers' performance objectives (Tan et al., 1999; Dean and Terziovski, 2001), and suppliers now exert a major influence on a company's success or failure (Goffin et al., 1997). Suppliers' knowledge and experience have been identified to be valuable during the design of new products and in achieving higher quality and faster response to market needs (Solis et al., 2000). Therefore, the development of close co-operation with suppliers is vital which can quickly bring lower unit costs (Christopher, 1997) and highest quality at lowest cost in the long term (Larson, 1994; Szwajczewski et al., 2001). Dean & Terziovski (2001) investigated quality practices in Australian services SMEs and concluded that supplier relationships have positive effects on organisational performance.

Effective supplier management can also help manufacturers during the development of new products and processes, with long term quality improvements and cost reductions, and can provide enhanced delivery performance (Park & Krishnan, 2001; Tan et al., 1999; Waller, 1999). To manage close co-operation with suppliers, organisations should participate in supplier quality activities, have detailed information concerning supplier performance, give feedback on the performance of suppliers' products, regularly conduct supplier quality audits, and regard product/service quality as the most important element in selecting suppliers (Zhang et al., 2000). Managing supplier selection is identified as an element of supplier quality

management and its importance to the needs of organisations. Pearson and Ellram (1995) examined supplier selection and evaluation criteria in small and large electronics firms in the USA. They showed that quality, speed to market, design capabilities and technology criteria were found to be vital in supplier selection and evaluation. The findings of this study is further supported by Larson (1994); Goffin et al. (1997); and Gonzalez-Benito & Dale (2001).

4.3.6. Human resource management

It is seen to be the most important concept in determining the long-term success of TQM. There are two issues identified to be vital to the effective implementation of TQM and they are employee involvement and training and education.

TQM requires the involvement of all employees and their commitment to the effective implementation and success of a TQM programme. The basic idea behind employee involvement is that employees are in control of their work and are able to participate in the business of the organisation. The use of employee involvement will allow employees to suggest quality improvements and give all employees the ability, motivation and authority to improve continuously how the organisation operates (Garcia-Lorenzo et al., 2000; Magjuka, 1994; Morgan nad Murgatroyd, 1993). Moreover, employee involvement may enable them to improve their personal capabilities, increase their self-respect, commit themselves to the success of their organisations, and enable them to have a better understanding of product/service quality (Zhang et al., 2000). Matthes (1993) reported that in a survey of over 1000 respondents from different industries, they were asked to rate key issues facing human resource professionals. Employee involvement and empowerment ranked high with

45% of respondents rating it as one of their three top concerns, while Wimalasiri and Kouzmin (2000) reported that implementation of employee involvement initiatives achieve productivity and quality improvement, reduced conflict and improved employee satisfaction and performance. The findings of these studies are consistent with the conclusions reached by Wyer and Mason (1999), Chiu (1999), Garcia-Lorenzo et al. (2000), Keating and Harrington (2002), Hales and Klidas (1998). For the achievement of employee involvement, organisations may use teamwork, suggestion systems, and empowerment of the employees to act in quality related issues and communication across the organisation (Ahire et al., 1996).

Training and education are two important issues, not just for the implementation of TQM but for all activities of any organisation. Rao et al. (1999) suggested that training is an essential element of TQM. Achieving high levels of quality depends on the best use of talents and abilities of the entire company workforce. Evans and Lindsay (1993) emphasised the need for training at all levels of the organisation, and especially in quality awareness and in the special skills required for TQM programmes and continuous quality improvement. Moreover, Oakland (1996) and Ahire et al. (1996) consider training as the most important factor in improving quality, claiming that, training programmes should be assessed and reviewed to examine the contributions and effects of such programmes. However, Griffiths (1990) suggests that a firm needs to conduct orientation and educational programmes before training to clarify its mission, objectives, and goals, and to inspire all employees. Tenner and DeToro (1992) stress the need to include education programmes when introducing TQM suggesting that employees be made aware of the key elements of TQM and of

the benefits of applying the concept and of their roles and contributions to TQM programmes.

Curran et al. (1997) investigated training in SMEs in the UK across a variety of sectors. They concluded that over 55 per cent of their sample of 751 owner-managers did not use any form of external, but most of the sample used informal approaches to training. Schonewille (2001), Poole and Jenkins (1997) concluded that training in organisations has a positive effect on labour productivity, while Zhang et al. (2000), Hughey and Mussnug (1997) stressed the importance of employee training in achieving quality products/services. Moreover, Chandler and McEvoy (2000) demonstrated that small and medium sized manufacturing firms achieved quality results by focusing on employee training. It is clear that training and education are prerequisites for the effectiveness of TQM, and there is a strong link between training, education and productivity, product quality, process quality, speed and overall organisational performance (Richard and Johnson, 2001; Chandler and McEvoy, 2000). These studies are supported further by Antony et al. (2002), Koch and McGrath (1996), Rao and Raghunathan (1999), Redman and Mathews (1998).

Clearly human resource management has been recognised for its importance in achieving quality and financial performance (Reid et al., 2002; Wyer and Mason, 1999; Yung, 1997; Hendricks and Singhal, 1997). Moreover, Rahman (2001) investigated TQM practices among SMEs in Western Australia and found that people management showed a significant relationship with performance, while in Singapore, Quazi et al. (1998) noted that people management was significantly correlated with quality performance and customer satisfaction. Further, Koys (2001), Wood and

Menezes (1998) reported that the proper management of people enhanced organisational effectiveness, in terms of quality, employee satisfaction, customer satisfaction and financial gains.

4.3.7. Customer focus/satisfaction

The customer is the driving force of the organisation and the quality objective is to meet customer needs and demands. The new draft ISO 9001: 2000 (1999) makes the customer the focal point of its standard for quality management process, starting with determining customer requirements and ending with customer satisfaction. Garvin (1986) found that organisations with the highest levels of quality had permanent customer review boards, which tested and evaluated products from the customer's view. Similarly, Gale (1994) found that customer oriented organisations are rewarded with superior performance, and this is true in SMEs, as reported by Quazi and Padibjo (1998b). While, Hallowell (1996), Kandampully & Suhartanto (2000) supported the notion that customer focus/satisfaction was correlated positively with customer loyalty and organisational performance. These findings were consistent with similar results of Dubrovski (2001) in Slovenia, Terziovski and Dean (1998) in Australia, and Shaukat et al. (2000) in Singapore.

It is clear that the customer is the most important element of TQM and if companies maintain a positive perception of quality this will eventually increase customer satisfaction (Adebanjo, 2002; Evans and Lindsay, 1993). In addition, Roberts (1999) argues that being a customer oriented firm is critical to the success of a TQM programme and should be treated as the focal point of the decision making process.

Further, the importance of customer focus is also evident from the fact that it is assigned with the highest weight among the Malcolm Baldrige award criteria.

For the purpose of determining customer needs and requirements, Evans and Lindsay (1993), Hayes (1997) suggest the use of customer surveys and focus groups as well as feedback from the customers. Munro-Faure (1993) adds functional analysis and Quality Function Deployment (QFD). In addition, Griffiths (1990) emphasises the need for establishing a customer focus at the beginning of the quality effort and conducting a customer needs assessment directly with customers. Kanji and Asher (1993) suggested the collection of customer complaints information for analysis and feedback.

4.3.8. Strategic quality planning

In order to achieve superior quality for organisational long-term success, quality must be incorporated into the overall company strategy. Quality improvement is a long-term process when incorporated as a competitive strategy (Solis et al., 2000). Therefore, management should focus on strategic quality planning in order to achieve quality performance and competitive advantage. This is supported by a study undertaken by the American Quality Foundation and Ernst & Young (1992) in the US, Canada, Germany and Japan. The study suggested that strategic quality planning had significant effects on organisational performance. Moreover, Sureshchander et al. (2001) investigated the usefulness of TQM in services. They considered strategy quality planning to be important factor in the success of TQM. O'Regan & Ghobadian (2002), Solis et al. (2000), and Rao et al. (1999) supported further that strategic quality planning had significant effects on performance.

In order to implement quality plans effectively, it requires the integration of quality and customer satisfaction issues into strategic and operational plans (Rao et al., 1999). This integration allows organisations to set clear goals, objectives, targets, areas for improvement and allocate the required resources (Godfrey, 1993).

4.3.9. Quality culture

It is seen to be vital in TQM implementation in enabling employees to focus on quality and achieve organisational objectives (Tsang and Antony, 2001). Batten (1994, p. 61) describes total quality culture as *the concentration of all people and resources in a never-ending quest for greater quality and service in every dimension of the organisation*. Quality culture is driven by the general attitudes and perceptions of the employees towards quality. However, in order for organisations to implement TQM, organisational culture must be changed so that employees will be able to cope with the new requirements of TQM implementation (Dean and Evans, 1994; Jeffries et al., 1996; Stahr, 2001). Wai-Kwok and Wai-Kwok (1995) suggested that change should be the first priority of top management to ensure that all employees contribute to teamwork and problem-solving. In order to establish quality culture in organisations, Wai-Kwok and Wai-Kwok (1995) and Dahlgaard et al. (1998) suggested the following:

- Organisations should value their customers and meet their needs;
- Organisations should focus on improvement based on customer needs and business environment;
- The use of teamwork to change the culture;
- Development of quality awareness in all employees;
- Employees have defined goals and expectations.

When implementing TQM, employees may resist new changes, but this can be overcome by creating a quality culture in the organisation (Adebanjo and Kehoe, 1998; Sun, 2000).

4.3.10. Quality evaluation and benchmarking

It is important for organisations to evaluate their quality in order to identify and understand the extent of quality issues and the areas demanding improvement (Zhang et al., 2000). Benchmarking is a powerful tool to use as a continuous process of evaluating an organisation's products, services and processes against those of its toughest competitors. Benchmarking is one of the best tools for its significant impact on the improvement of a company's key business processes (Porter and Tanner, 1996). Rao et al. (1999, p. 1052) defined benchmarking as *the search of industry best practices that lead to superior performance*. Munro-Faure (1993) claims that benchmarking makes a firm understand the key success elements of the competition, alerts it to the best practices in the field, helps it to set high standards for itself, and helps it to gain inside information about competitors. Moreover, Evans and Lindsay (1993) describe the benefits of benchmarking for the employees and claim that they may be motivated because they are targeting goals that have been achieved by others and they will be less resistant to change since the ideas come from other competitors.

In order to implement benchmarking effectively, Zairi (1996) mentions that benchmarking should be looked at from a broader perspective as targeting continuous learning and prevention of complacency using the Deming approach of Plan, Do, Check, and Act (PDCA). In addition, Sheridan (1993) suggests that an organisation should link benchmarking to strategic objectives, starting from the executive level

downward, and include employees whose jobs are directly related to the benchmarking criteria. It can therefore be concluded that benchmarking is a vital tool in achieving continuous quality improvement as part of the TQM process.

The development of TQM principles as identified above were based on different classical theories of management (see table 4.3). Also the development of these TQM principles have helped to validate and legitimise the appropriateness of these different management theories in the context of modern time business. Moreover, TQM extends beyond operations and is increasingly cross-disciplinary with theories emerging from marketing, economics, strategic management, human resource management and supply chain management.

Table 4.3: TQM and the classical theories of management

Theory originator	Description	TQM concepts
Frederick Taylor	Scientific management	Management by facts, tools and techniques of TQM and problem-solving
Henri Fayol	Planning and organisation	Business process management
Max Weber	Theory of social and economic organisation	Leadership, empowerment and performance management
Alfred Sloan	Decentralised multi-divisional organisation	Business process management, business process re-engineering
Elton Mayo	Hawthorne experiments	Motivation and employee satisfaction
Douglas McGregor	The human side of enterprise	Employee motivation, empowerment, involvement and participation
Peter Drucker	Decentralisation, management leading, focus on results	Leadership, goal deployment and process-focus
Meredith Belbin	Team characteristics	Team dynamics and team work
Charles Handy	Internal culture	Culture, values and communication
John Adair	Leadership	Leadership and commitment
Henry Mintzberg	Leadership, strategic planning and management	Leadership, vision, mission and policy deployment

(Source: Dale et al., 2001, p. 447)

Section 4.3 has focused on presenting principles of TQM in a co-ordinated and organised supportive way. This section has identified 10 critical factors of TQM as recommended by today's leading and respected researchers and practitioners. Moreover these principles are used to compile different quality awards such as the European Quality Award (EQA), which will be discussed in subsequent sections. However, with respect to the implementation of TQM in organisations, the principles of TQM and not TQM tools (e.g, process maps, control charts, ISO 9000, Ishikawa diagram) drive TQM success, and these organisations which acquire those principles outperform competitors (Hansson and Klefsjo, 2003; Huarng and Chen, 2002). In other words, TQM principles are important in accomplishing customer satisfaction, continuously improving the processes and systems for achieving quality products and services, staying ahead of the competition and achieve overall operational and financial performance (Tsang and Antony, 2001; Tummala and Tang, 1996).

4.4. In search of a theoretical foundation for TQM

Neither the leading quality leadership, nor institutions such as the European Foundation for Quality Management (EFQM), have made serious attempts to identify the relation of TQM to scholarly organisational. Researchers' view range from TQM as a late version of scientific management, to a cultural approach (Thomsen, 1998; Hackman, 1995). Moreover, TQM comes from a different background from most management theory as illustrated in table 4.3. For example, practice is the background for TQM and not, as in most management theory, the different functional disciplines, which are then applied to the practical field of management. Management theories are based on the relationship(s) between single variables. However, TQM presents a departure from this tradition, and it looks at organisations as total or

holistic systems. Therefore, it is important to look at some of the theories behind the development of TQM.

4.4.1. Rejecting scientific management and rejoicing scientific method

Deming promotes a humanitarian management approach; advocating that business should be obliged to create wealth, eliminate waste, and create jobs (Deming, 1986). Deming appreciates the people have individual values, motivations and preferences (see theory of psychology in section 3.2.1.1). Deming strongly recommends restoring pride in workmanship and the removal of organisational systems that create fear.

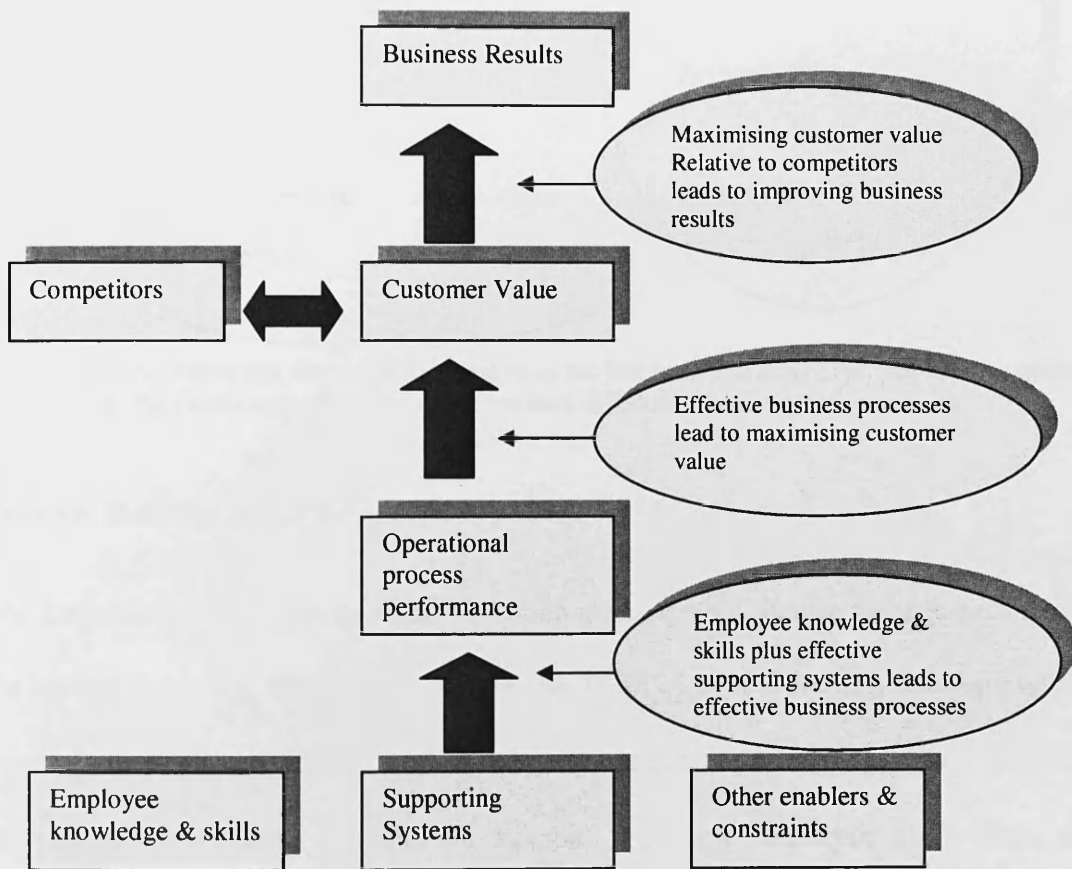
Quality leadership (Deming, Juran, and Ishikawa) agree on the importance of scientific methods (a constantly evolving theory interacting with empirical data), for controlling processes and quality. They strongly emphasise the importance of statistical method to monitor process performance and identify areas of improvement (Deming, 1986).

4.4.2. TQM: Management system view

Based on the above discussion (see section 4.1 & 4.3), it is clear that TQM is much more than principles. TQM is a management system, a system in the sense of Deming (1994, p. 50), *as a network of interdependent components that work together to try to accomplish the aim of the system*. The value of treating business, or TQM organisation as a system is that it helps to break down the complexity and provides a framework for understanding cause-and-effect relationships within the system (see Figure 4.2). Figure 4.2 provides a simplified model of a business system and is based on the balanced scorecard approach. The idea behind it is that a combination of

financial and non-financial metrics are important for effective TQM. Understanding the cause-and-effect relationships within the business as a system allows developing a more proactive and planned approach designed for prevention of problems and anticipation of customer and market requirements as opposed to constant fire-fighting mode reacting to problems and taking corrective action.

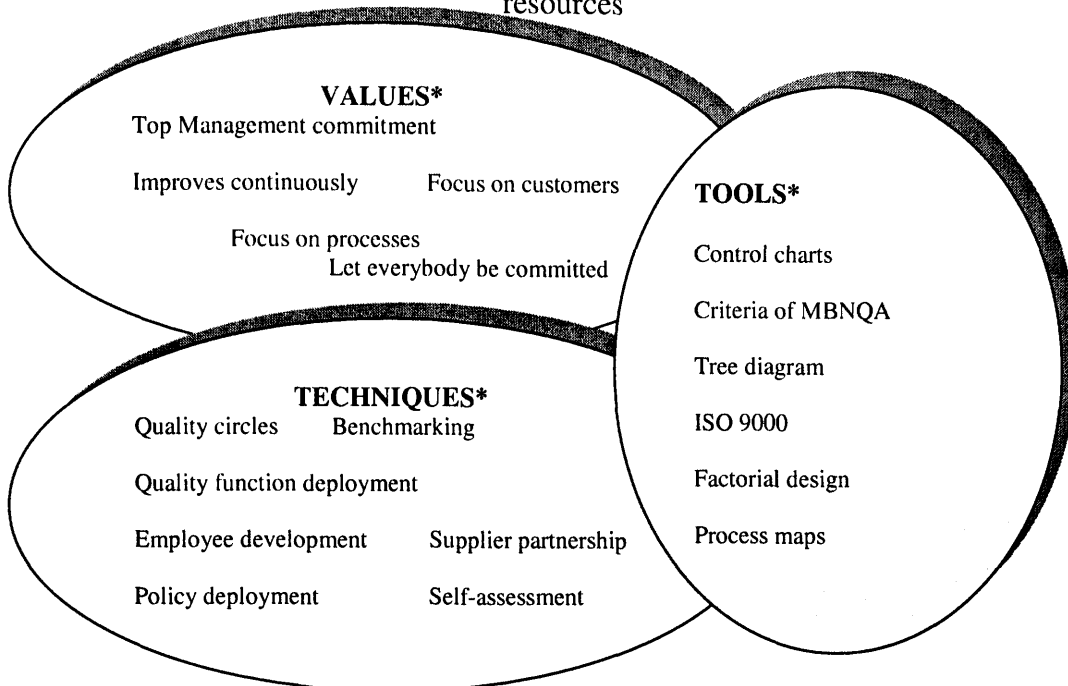
Figure 4.2: Business system model



Hellsten and Klefsjo (2000) viewed TQM as a system which consists of core values (core values are the basis for the culture of the organisation), techniques (a technique consists of a number of activities performed in a certain order), and tools (well-defined tools which have a substantial basis, to support decision making or facilitate analysis of the data). These three components are interdependent on each other and support each other (see Figure 4.3).

Figure 4.3: Three components of TQM

Aim: increase external and internal customer satisfaction with a reduced amount of resources



* it is important to note that the techniques, and tools are just examples and not a complete list, while in the same way the values may also vary a little between different organisations.

(Source: Hellsten and Klefsjo, 2000, p. 241)

The introduction of a system should have an aim, without an aim there is no value of the system (Deming, 1994). The aim of the TQM system is to increase external and internal customer satisfaction with a reduced amount of resources, through focusing on external customers, but also an internal focus on employee satisfaction and effectiveness. However, the aim of TQM system may vary between different authors, from Feigenbaum's cost effectiveness to Deming's and Juran's survival through profitability.

Core values of the TQM system might change over time. As an example, as Hellsten and Klefsjo (2000) suggested a change in the interpretation of the concept of customer from buyer to include different categories of external and internal customers. While,

some new tools will also be developed or take from other disciplines to be introduced into TQM. For example, the introduction of the new seven product development tools (Konda, 1995). Therefore, it is important to recognise TQM as a system.

The core values are supported by techniques and tools to form a whole, for example, the core value of let everybody be committed cannot be implemented without suitable technique (e.g, improvements groups or quality circles). However, these techniques will not work efficiently without use of specific tools (e.g, Ishikawa diagram).

The system view of TQM seems to focus on the totality and hopefully decreases the risk that an organisation will pick up just the components of the system, which is beneficial. The reason why some companies have failed with implementing TQM is that they just used some parts of the system, and not the system as a whole. Therefore, it is recommended for organisations to use the TQM system as a whole, where they start with the core values and ask: Which core values should characterise your organisation?, When that is decided, techniques suitable have to be selected and finally, the suitable tools have to be identified and used in an efficient way to support the techniques, and achieve the desired outcome.

4.4.3. TQM: An open system view

TQM represents a radical departure from classical theories, and early human relations more mechanical view of the organisation as a closed system of an equilibrium seeking, mechanical nature (Hackman, 1995). TQM emphasis on process, customer and continuous improvement, brings organic open system theory to mind. TQM's *voice of the customer* (Scherkenbach, 1991, p. 12) is a clear parallel to open system *negative feedback* (Morgan, 1997, p. 84).

TQM's view of processes as being an interaction of five types of resources: people, method, material, equipment and environment, resembles the ideas of socio-technical theory (Deming, 1986). Since people are important resources in a business process, therefore Deming (1986) and Argyris (1994) warn against the devastating effect of fear in the workplace.

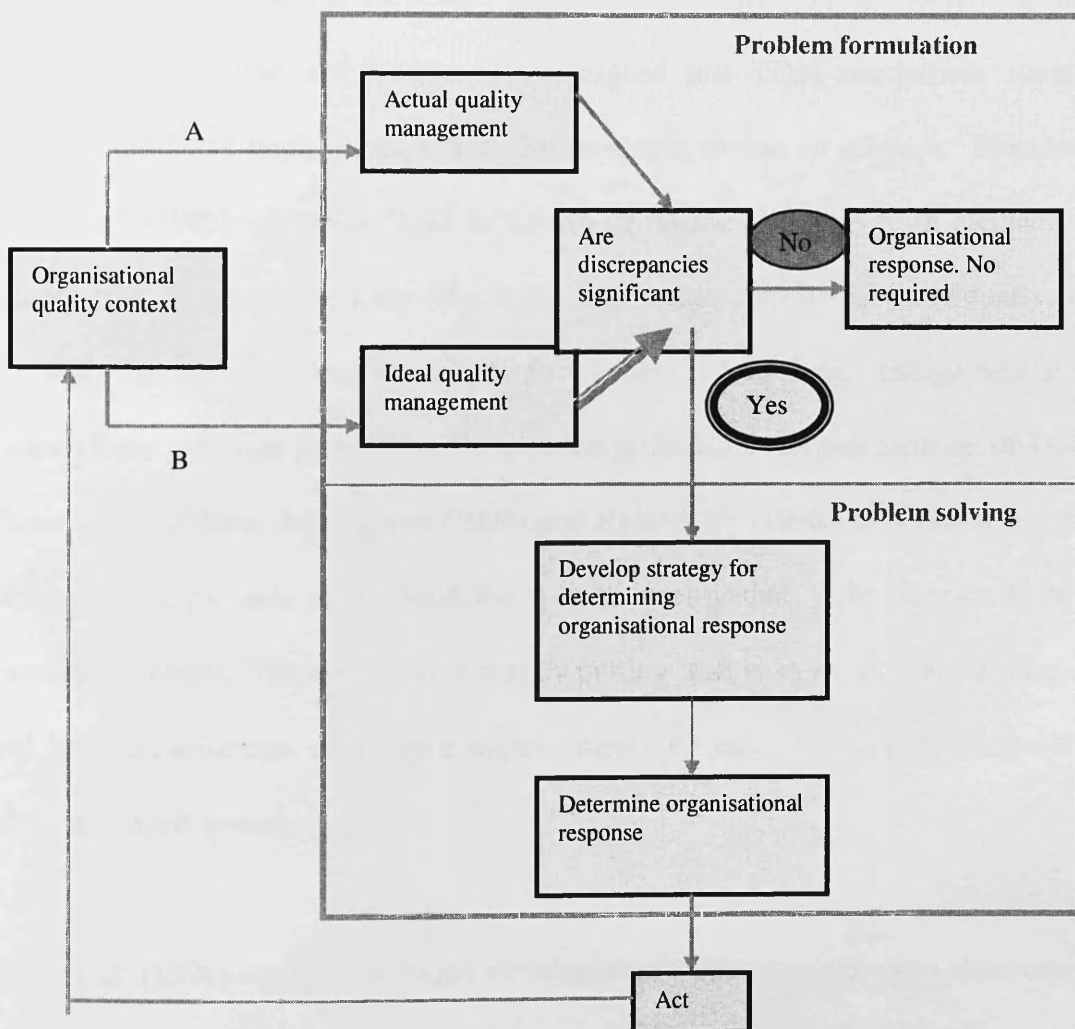
4.4.4. TQM: A system-structural view

The characteristics of TQM system are influenced by the external factors (referred to as context) that surround the firm, some of these external factors being customer demands, competitive pressures and government regulation. Such a system could be of the form suggested by Benson et al. (1991), which they referred to as a system-structural view of TQM. In the context of the system-structural view, TQM can be characterised as a simple three-stage. In stage 1, quality manager perceives the quality context (external quality demands, past quality performance, corporate direction and support in the area of quality). In stage 2, TQM change needs are developed based on management perceptions. In stage 3, knowing the context and the organisational change needs, the manager implements a response to maintain the desired quality performance outcome.

Benson et al. (1991) included an extension to the system-structural view by incorporating aspects of the managerial problem-solving process, as shown in Figure 4.4. The managerial problems are described as involving a gap between an existing or actual situation and a desired or ideal situation (Benson et al., 1991). In the system-structural model, the organisational quality context (managerial knowledge, corporate support, marketplace contextual variables, product/process, etc.) affects TQM

behaviour. In particular, they investigated the link between organisational quality context and actual and ideal TQM. The study results suggested that the organisational context influences managers' perceptions of both ideal and actual TQM. In the problem formulation part of the model, they hypothesised that if the discrepancies between actual and ideal management were not significant, then the firm would provide no response. On the other hand, if they were significant, then a problem-solving mode would ensue and create a strategy and a response by the organisation.

Figure 4.4: The system-structural view of quality management modified to reflect aspects of the managerial problem solving process



(Source: Benson et al., 1991, p. 1109)

It is clear that the system-structural view considers the organisation's external factors and its impact on the organisation. With quality problems being driven by external factors, the system-structural view is helpful in explicating a theory of TQM. While other organisation-theory models could be used to describe TQM, none features as prominently the role of external factors on the management of the organisation.

4.4.5. TQM: Strategic management view

From strategic management perspective, some authors have given strong support to the view that TQM must be adopted and applied as a strategic model (Garvin, 1988), and this view indicates the successful movement of TQM from an operational to a strategic level. Dean and Bowen (1994) argued that TQM emphasises strategy implementation, or deployment, rather than strategic choice, or content. Moreover, Reed et al. (1996) interprets TQM as a form of business strategy with elements of content (the what) and process (the how) that, when considered individually, are necessary but not sufficient conditions for success. Therefore, management must balance these elements in order to focus on the procedures and mechanisms of TQM. Those views of Dean and Bowen (1994) and Reed et al. (1996) are evident because TQM proponents have so elevated the role of quality that TQM appears to be a transcend strategy. The end result is that by putting quality as an ultimate strategy, it will help organisations to achieve improvements on other sources of competitive advantage, such as cost.

Reed et al. (1996) argued that TQM simultaneously encompasses more than one of the generic strategies of Porter's (1980) model, especially cost leadership and differentiation. The concept of cost leadership and differentiation are clearly

illustrated, when quality is concerned with providing better products/services that satisfy customers' needs, the orientation of the strategy is differentiation. However, at the same time, TQM leads organisations to reduce cost as a result of the elimination of defects and wastes and, therefore, also leads them to the adoption of a cost leadership strategy.

The literature showed that TQM may encompass both a cost leadership and differentiation strategy, however, Deming (1982), Juran and Gyra (1993) and Crosby (1979) suggested that the emphasis of TQM is primarily directed towards cost leadership. As Deming (1982) suggests in his "quality improvement chain" concept, organisations can enhance their competitiveness by improving quality resulting in cost reduction through the elimination of scrap and rework.

The concept of TQM being closer to a cost leadership strategy is also related to another argument suggesting that TQM puts more emphasis on process rather than product (Gobeli and Browen, 1994). This view can be traced back to the origins of TQM in the idea of SPC which was oriented on improving the process to make it more efficient if its primary strategy is pursuing cost leadership (Porter, 1980; Reed et al., 1996).

4.4.6. TQM: A Deming-based theory

Anderson et al. (1994) articulated an integrative theory of TQM to describe and explain the process and effectiveness of adopting the Deming management method. The Deming management method consists of a set of 14 points aiming to improve the practice of management (Rungtusanatham et al., 1998). Foley (2001) indicated that

the majority of organisations, which have used and effectively implemented the Deming management method have managed to achieve competitive advantage, better operational and financial performance. Furthermore, the Deming management approach has been implemented world-wide suggesting an ease of transferability of the prescriptions in the 14 points (Hodgson, 1987), as well as the identified seven constructs (see Table 4.4) by Anderson et al. (1994). They conducted a study to identify and define the constructs underlying Deming's 14 points and the study led to the introduction of the following seven constructs: visionary leadership, internal and external co-operation, learning, process management, continuous improvement, employee fulfilment, and customer satisfaction (see Table 4.4).

Table 4.4: Constructs underlying the Deming management method

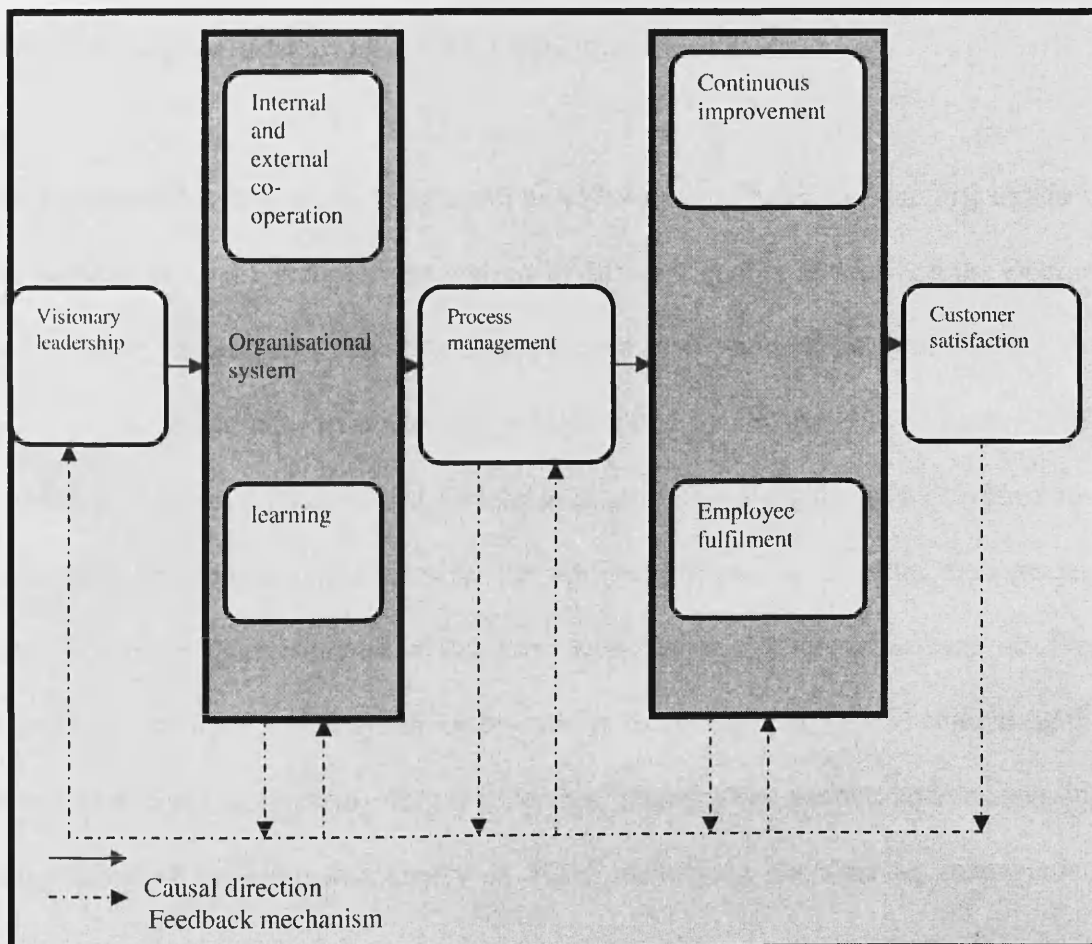
CONSTRUCTS	DEFINITIONS
Visionary leadership	The ability of management to establish, practice and lead a long term vision for the organisation, driven by changing customer requirements, as opposed to an internal management control role.
Internal and external co-operation	The propensity of the organisation to engage in non-competitive activities internally among employees and externally with respect to suppliers
Learning	The organisational capability to recognise and nurture the development of its skills, abilities, and knowledge base.
Process management	The set of methodological and behavioural practices emphasising the management of process, or means of actions, rather than results
Continuous improvement	The propensity of the organisation to pursue incremental and innovative improvements of its processes, products and services
Employee fulfilment	The degree to which employees of an organisation feel that the organisation continually satisfies their needs
Customer satisfaction	The degree to which an organisation's customers continually perceive that their needs are being met by the organisation's products and services

(Source: Anderson et al., 1995, p. 640)

In theorising the organisational performance impact of TQM adoption, Anderson et al. (1994) postulated the effectiveness of adopting Deming's TQM approach. They developed TQM theory by juxtaposing the resulting set of rational elements and statements shown in Figure 4.5. Figure 4.5 suggests four propositions:

1. Visionary leadership enables the creation of a co-operative and learning organisation. That statement stresses the important role that leadership plays in ensuring the success of TQM adoption.
2. An organisation that fosters co-operation and learning facilitates the implementation of process management practices. That statement emphasises the importance of co-operation and continual learning in helping organisations to implement process management practices that include human resource management (e.g, teams) and methodological techniques (e.g, Statistical Process Control).
3. Process management practices result in continuous improvement of TQM and employee fulfilment. This statement describes the two outcomes of continuous quality improvement and employee fulfilment that an organisation achieves from an effective implementation of process management.
4. An organisation's continuous efforts to improve its quality and to fulfil its employees lead to higher customer satisfaction. This theorises that continuous improvement in quality and fulfilling employees represent requisite conditions that, in turn, contribute to organisation's ability to satisfy present and future consumers.

Figure 4.5: The theory of quality management underlying the Deming management theory



(Source: Rungtusanatham et al., 1998, p. 80)

Clearly Figure 4.5 suggested that the theory of TQM underlying the Deming theory was concerned with the creation of an organisational system which leads to the implementation of process management practices, and in turn, it may lead to continuous improvement (Tam, 2000; Anderson et al., 1994). However, the Anderson et al., theory is not really a theory of TQM, it is, as they describe it, the formalisation of the theoretical context of the effectiveness of the Deming management method. The Anderson et al., theory was tested in a later study by Rungtusanatham et al. (1998) and Anderson et al. (1995, p. 639), and they stated that *the effectiveness of the Deming management method arises from leadership efforts toward the simultaneous creation of a co-operative and learning organisation to facilitate the implementation of process-management practices, which, when implemented, support customer satisfaction and organisational survival through sustained employee fulfillment and continuous improvement of processes, products and services.*

The proposed constructs by Anderson et al. (1994) are reflected to a varying extent in the writings of quality scholars, as well as in different quality awards and the Deming management method was found to be applicable world-wide (Hodgson, 1987). For example, the importance of leadership is highlighted by Crosby (1997), Juran (1988) and the European Quality award (Wiele et al., 1997). Yoshida (1989) argued that there may be cultural constraints on the applicability of the Deming management approach across different national cultures. However this problem has been resolved through an empirical investigation undertaken by Anderson et al. (1995) comparing the level and success of implementing the Deming management method and/or assessing the validity of the proposed theory of TQM underlying the Deming management

method across national cultures. The study validated the theory and found it to be applicable across different national cultures.

4.4.7. TQM: Contingency theory

The holistic and total character of TQM, and the view that its principles are applicable in any type of organisation in any type of environment, at first sight seem to conflict with the extreme focus on adaptability of the organisation to its environment advocated by the contingency theorists: *the effective operation of an enterprise is dependent on there being an appropriate match between its internal organisation and the nature of the demands placed upon it by its tasks, its environment and the needs of its members* (Burrell and Morgan, 1978, p. 164). But on the other hand, Burrell and Morgan (1978, p. 169) suggested that contingency theory's subsystems include:

- *The strategic control subsystem*
- *The operational subsystem*
- *The human subsystem*
- *The managerial subsystem*

The subsystems of the contingency theory can be spread nicely on the European Quality Award.

4.4.8. TQM: Configurations of organisations

The interpretation in this section is based on the five configurations of organisations that Henry Mintzberg presents in his book "Structure in five" (Mintzberg, 1983).

■ Prime TQM co-ordinating mechanism: standardisation of work processes

The system approach in TQM implies a high degree of standardisation of skills, work processes in order to produce predictable, standardised outputs.

■ Key part of TQM organisation: Techno-structure and strategic apex

It is suggested that the Techno-structure that we find typical TQM activities; work-study, analysis, planning, monitoring and control. Scherkenbach

(1991) claims that Deming urged that every organisation should have a leader of statistical methodology, reporting directly to the director. Deming also stress the role of top management (Neave, 1990).

■ **Main design parameter in TQM: Behaviour formalisation**

TQM anticipates vertical and horizontal job specialisation, team work and improvement processes enlarging in both directions. The predominant design parameter in TQM is behaviour formalisation, which is supported further by Mintzberg (1983).

■ **Typical TQM situational forces: Control in a stable environment**

TQM originated in mass production firms with a tradition of bureaucratic control, in relative stable environments.

4.4.9. Summary of theoretical foundation of TQM

Based on the above discussion and consideration, the following obtained elements represent the basic ideas of TQM:

- TQM is designed for long term operation and survival of organisation in stable environments;
- TQM assumes that employees care about the performance of the organisation;
- TQM regards the organisation as holistic, open system: theory of system, systems within the system. The survival of the organisation depends on how well it serves its customers and other stakeholders;
- TQM stresses continuous improvement for the benefit of all that are related to the organisation;
- TQM focuses on training and education;
- TQM focuses on work processes and cross functional teams;
- TQM advocates management by fact, interplay of theory prediction and collection of data, systematic data collection and interpretation to monitor processes and the understanding of variation;
- TQM appreciates that people are whole individuals, with individual learning styles, emotions (fear, pride etc.).

It can be suggested that a TQM organisation has likeness to machine bureaucracy configuration in Mintzberg's sense, but with an ultimate obsession with delighting the customer, fact based management and continuous improvement.

4.5. TQM and performance: A critical perspective

4.5.1. TQM and organisational performance: Empirical evidence

Studies designed to bring some light over this topic have shown different results. For example, The US Government Accounting Office (GAO, 1991) examined the impact of total quality improvement strategies on the performance of 20 US companies. The study finds TQM factors such as strong customer focus, senior management leadership, empowerment, commitment to employee training, involvement and application of systematic fact finding and decision making processes, to be strongly related to organisational performance measured by employee relations, quality, productivity, customer satisfaction, and profitability. Maani et al. (1994) examined the strength of the relationship between TQM practice and organisational performance. They showed that process output as measured by labour volume, labour cost and hourly output, was significantly related to sales, return on assets, sales volume and market share, proving that performance was significantly related to business measures. The relationship between quality and business performance was highly positive. Hendricks and Singhal (1997) further conducted a longitudinal analysis comparing the performance of companies before and after the adoption of TQM. They conclude that who firms had effectively implemented TQM outperform a control sample based on measures like profitability, revenues, costs, capital expenditure, total assets and number of employees. Clearly TQM affects the objective measures to monitor performance.

Dow et al. (1999) employed confirmatory factor analysis to identify nine quality practices based on 698 usable responses from Australian and New Zealand manufacturing organisations. Nine quality practices include workforce commitment, shared vision, customer focus, use of teams, personnel training, co-operative supplier relations, use of benchmarking, advanced manufacturing systems, and use of just-in-time principles. Using a structural equation model, the study showed that employee commitment, shared vision, and customer focus achieved a positive correlation with quality outcomes in a cross-sectional sense. Moreover, Samson and Terziovski (1999) used a large sample of 1024 from Australian and New Zealand manufacturing organisations to examine the relationships between TQM practices, individually and collectively, and firm performance. The study showed that the relationship between TQM practice and organisational performance is significantly in a cross-sectional sense. The performance elements include quality performance, operational and business performance indicators. These conclusions are supported by Sun (2000) who found that TQM criteria contribute to the improvement of customer satisfaction and business performance. However, Sun (2000) argued that not just an implementation of one of TQM criteria can guarantee enhanced business performance, but TQM criteria as a whole that contribute collectively to the improvement of performance.

Adam et al. (1997) conducted cross-cultural quality management research on the effect of quality practices on quality and financial performance. They grouped 52 quality practices into nine factors. Their research measured the relationship between each of these nine factors, and their effect on quality measures and financial measures. The results of this study suggest that although all nine factors affected the quality performance measures, the activities that most influenced the outcome were in

the top management. The impact of the nine quality factors on financial measures, however, was weak. Powell (1995) studies the relationship between TQM and the organisational performance of 54 firms. The findings suggest that there was no significant relation between the degree of implementation of TQM and financial performance. Moreover, Mohrman et al. (1995) collected an increasing amount of data on TQM practice from a series of surveys of fortune 1000 companies. The data found that a number of links between the adoption of TQM and organisational success. In terms of internal efficiency, the study revealed a positive relationship between TQM and employee productivity. There was also a relationship found between core TQM practices and market share, although, no significant relationship was found between TQM adoption and financial performance. Furthermore, Sluti (1992) studied 184 manufacturing companies in New Zealand, and found no conclusive evidence of the link between TQM practices and organisational performance. The results, however, showed that quality practices had significant positive impact on performance measures for work-in-process inventory levels, on-time delivery, product costs, process utilisation, and process output.

Other researchers have addressed the TQM dimensions and quality performance links as part of other research objectives. Anderson et al. (1995) and Rungtusanatham et al. (1998) focused on the Deming management method in their studies by addressing the effects of visionary leadership, internal and external co-operation, learning, process management, continuous improvement, and employee fulfilment on customer satisfaction. Poister and Harris (1997) studied the impact of quality improvement efforts on work quality and labour productivity in the highway maintenance industry. Li's (1997) study on hospital quality evaluated the relationship between service

quality management and the analysis of service process and workforce development. Grandzol (1998) and Parzinger and Nath (2000) evaluated the impact of top management on firm performance measures such as financial and operational results and customer satisfaction. The results of all these studies indicate a significant relationship between quality practices and organisational performance, which is supported further by various studies illustrated in Table 4.5.

4.5.1.1. Evaluating TQM and performance: A summary

Based on the above studies and other studies (see Table 4.5) based on sophisticated data collection and analysis approaches, it can be suggested that TQM practice and performance seem to indicate that, as a whole, TQM practices have a significant and strong impact on quality and operational performance. This relationship between the TQM implementation and the quality of the organisation products has been empirically validated (e.g, Choi and Eboch, 1998; Forza, 1995). While a large number of studies relate a better quality of the products and services to a better organisational operational performance (Easton and Jarrell, 1998; Forker et al., 1996; Golhar and Deshpande, 1999). However, many of the studies that examined the effects of TQM followed this sequence: firstly, a TQM programme is implemented, then, the company productivity and/or profitability improve, and hence it is concluded that this improvement is a consequence of the programme implementation (Raffion, 1992). But the improvements noticed could have actually originated as a result of the following:

- Other events concurrent in time with the intervention. That is, the relationship between the improvement processes and the organisational results could have been obscured by some exogenous shocks (e.g, environmental or market factors).
- The Hawthorne effect could have occurred, by virtue of which the organisational employees work harder and better when they are aware of their being under study.

- The time factor can also obscure the relationship between TQM and the results achieved (Whetton and Cameron, 1994), as some conclusions can be reached in the short term, without waiting for analysis of the consequences in the long run.
- The case may also have happened where the company managers had selected organisational units for pilot testing as part of an introductory stage of the TQM programme.

When the managers start planning the programme implementation, the workforce, workflow and internal organisation are examined in detail. Then, any cause of inefficiency detected at the moment of the implementation will be corrected. If, as a result, the organisational unit productivity increases, the TQM initiative will be deemed responsible for this improvement. Although this can actually be the case, there is also the possibility that the improvement occurred only as a result of the paraphernalia inherent to the initiative, and not as a result of the integral initiative itself. This approach makes it difficult to find an explanation for the reasons underlying the improvements (Hackman and Wageman, 1995; Powell, 1995).

As some studies show that TQM does not result in a significant improvement in performance (Fisher, 1992), while others reveal that performance of some organisations, in fact, deteriorated after the implementation of TQM (Eskildson, 1995), labelling TQM philosophy as just another fad (Sila and Ebrahimpour, 2002).

Table 4.5: Summary of the empirical evidence on the relationship between TQM practices and performance

Study	Sample	Infrastructure practices	Core practices	Main findings
Flynn et al. (1995)	41 manufacturing firms	Top management support, customer relationship, supplier relationship, workforce management and work attitudes	Product design, process management, SPC/feedback	Infrastructure practices related to core practices and quality performance. Core practices related to quality performance. Quality performance related to business performance.
Anderson et al. (1995)	41 manufacturing firms	Leadership, learning, co-operation, employee fulfillment	Process management	Infrastructure practices related to core practices and quality performance. Core practices related to quality performance.
Powell (1995)	54 manufacturing and service firms	Intangibles: executive commitment, adoption and communication of TQM, open organisation, employee empowerment, customer and supplier relationships	Tangibles: process improvement, zero defects mentality, measurement, flexible manufacturing, quality training, benchmarking	Overall, QM practices impacted on business performance. QM success appears to depend critically on several infrastructure practices and less upon core practices.
Samson & Terziovski (1999)	1024 manufacturing sites	Leadership, strategic planning, people management, customer focus	Process management, information and analysis	Several infrastructure practices (but none of the core practices) were significantly related to operational performance.
Dow et al. (1999) *	698 manufacturing sites (from the same original sample as Samson and Terziovski, 1999)	Shared vision, workforce commitment, use of teams, customer focus, supplier relations	Advanced manufacturing systems, just-in-time principles, benchmarking, personnel training	Several infrastructure practices (but none of the core practices) were significantly related to quality performance.
Adam (1994)*	187 manufacturing firms	Formality of quality approach, behavioural practices, customer focus, teams/empowerment	SPC, focus on design and conformance	Significant and strong relationship between QM practices and quality performance. Significant but weak relationship between QM practices and operational and business performance.
Adam et al. (1997) *	997 manufacturing firms	Senior executive involvement, employee involvement, employee satisfaction, employee selection and development compensation, customers	Design and conformance, quality knowledge, inventory reduction	Significant and strong impact of QM on quality performance. Significant but weak impact of QM on business performance.

Choi & Eboch (1998)*	339 manufacturing firms	Strategic quality planning, human resource management	Process quality, information and analysis	QM practices have significant impact on internal process quality and customer satisfaction. No significant relationship between internal process quality and customer satisfaction.
Hendricks & Singhal (1997)	463 firms that have won quality awards	No explicit measurement of QM practices. Winning of quality awards is taken as a proxy for the effective implementation of QM.		QM practices have a significant impact on business performance.
Dean & Snell (1996)	160 manufacturing firms	QM measured as a single construct		Use of QM was directly related to perceived operational performance.
* = Study does not explicitly categorise practices into core and infrastructure.				

(Source: Sousa and Voss, 2002, pp. 8-9)

Reasons offered for TQM's failure (see Table 4.6) to improve performance include ineffective implementation (Withers and Ebrahimpour, 2001), lack of a suitable corporate climate (Douglas and Judge, 2001; Lee and Zhou, 2000), poorly defined performance measurement (Brown, 1993), vague definitions of TQM (Pyzdek, 1999), lack of management support (Woon, 2001), attempting to replicate successful programs without adapting them to the unique features of organisations, and failure to integrate TQM with existing managerial systems (Brah et al., 2002). Organisations are found to apply a specific model for quality improvement rather than creating a program best suited to their own requirements (Brown, 1993).

Table 4.6: Reasons for total quality management implementation failures

Reasons	Descriptions
Organisational culture	Task of changing organisational culture is underestimated.
Technique emphasis	Stress is placed upon statistical techniques rather than management and leadership issues. Also, measurement is overemphasised and produces useless data.
Cost control	Efforts are concentrated on saving money rather than quality improvement and customer satisfaction.
Lack of top management support	Little commitment to quality from top; quality responsibility is delegated to others.
Too much change	Flurry of activity in which everything in the organisation is subject to be changed. Also, unrealistic time frame.
Slow start	Some companies wait too long and commit few resources.
Integration	Quality is not integrated into the organisation but becomes a dual structure of steering committees, teams, meetings, and paperwork.
Initial phase	Company becomes stuck in first phase of training and creating teams and never evolves to later phases of changing organisational systems and integration.
Rewards	Organisations fail to recognise and adequately reward employees' efforts.
Boredom	American organisations tend to follow management fads and become disenchanted quickly when sustained effort is required to achieve results rather than a quick fix.

(Source: Brown, 1993, p. 84)

Some other authors (e.g. Becker, 1993; Shin et al., 1998; Hansson and Klefsjo, 2003) suggested that it is not the concept of TQM, which fails, but the implementation strategies and processes. Implementation work can be viewed as a transformation made by actors in a human activity system (Pidd, 1999), and TQM implementation could therefore be considered as a comprehensive organisational change. The process of change involved in integrating the TQM into an organisation is complex and wide ranging (Dale et al., 1997). The changes refer to, for instance, training, coaching and development of employees as well as changes in organisational structures, values, attitudes, management style and the adoption of new working practices (McNulty and Canty, 1995; Dale et al., 1997). Therefore, TQM would succeed if implemented as a major organisational change and a long-term paradigm, rather than a quick fix. Brah et al., 2002) argued that success of TQM in organisations depends very much on organisational context, including the firm's size, the nature of its products, and industry characteristics. TQM requires significant investment in terms of financial, technical and human resources over several years before achieving the desired outcome (Santos and Escanciano, 2002; Lee, 2002). Sterman et al. (1997) suggest that in the long run, TQM increases productivity, raises quality and lowers costs, while in the short run it can disrupt prevailing organisational routines and accounting practices and creates operational and financial stresses that may undercut organisational commitment to continuous improvement. Clearly, TQM presents organisations with a trade-off between short and long term performance (Brah et al., 2000).

In continuing with this issue, the above studies on TQM and performance (section 4.5.1) and Table 4.5 suggested that the impact of TQM on business performance is

mixed, and not always significant. There are two reasons for explaining the mixed results concerning TQM and performance. Firstly, TQM practice may be beneficial to business performance and its weak impact can be attributed to research methodology and the difficulty in many studies to confirm that it is actually TQM that is being assessed, rather than some other managerial intervention. As Hackman and Wageman (1995) list several difficulties in detecting statistically the direct effects of TQM by using outcome criteria such as business performance. Also they revealed from analysing 99 papers on TQM and found that only four of them assessed the degree to which TQM was actually implemented. Secondly, the weak and mixed relationship of TQM practice on business performance is contingent on other factors, such as the nature of the market environment (e.g. in terms of market size and structure, e.g. perfect competition versus monopoly) (Karmarkar and Pitbladdo, 1997), or on the company characteristics (Hendricks and Singhal, 2001; Terziovski and Samson, 2000), and on organisational variables that really differ from one company to another (Douglas and Judge, 2001).

Based on these reasons, it clear that quality may not always be free. Therefore, the quality performance relationships proposes that an increase in quality performance may lead to increased operational and business performance. This relationship should not be taken for granted that the final result will be always increased performance. Within this context, quality improvements should be assessed by the return on the investment made as any other productivity enhancing or cost reducing programme (Karmarkar and Pitbladdo, 1997; Hendricks and Singhal, 1997). This supports Juran's ideas on optimal quality, according to which there is an optimum level of conformance quality above which it ceases to be advantageous for organisations to

invest in improving internal process quality (Juran, 1988). Although conceptually it is difficult to challenge this view, the relevant issue is to identify under which conditions quality may not be free and whether these conditions are bound to occur frequently in business organisations.

4.5.2. TQM and innovation: The evidence

There is a positive relationship between TQM and innovation (Beaver and Prince, 2002; Prajogo and Sohal, 2001; 2003; Lagrosen, 2000; Kaynak, 1997), which suggests that organisations which combine TQM in their system and culture will provide a fertile environment for innovation (Tang, 1998; Kaynak, 1997). Also to ensure effective innovation, it is important for organisation to have a supportive top management to provide the suitable environment for innovative products/ services (Amabile, 1996; Schein, 1992; Yukl, 2001; Jung, 2001). This is also evident within TQM as illustrated earlier in section 4.3.1.

Organisations which focus on customers tend to search consistently for new customer needs and expectations and, therefore leads them to be innovative in terms of creating and introducing new products as a continual adaptation to the market's changing needs (Juran, 1988). Also in meeting customer needs and expectations, organisations and suppliers need to be more creative to exceed customers' needs and expectations beyond conformance (Prajogo and Sohal, 2001). Similarly continuous improvement is associated with innovation where it encourages change and creative thinking in how work is performed (Zairi, 1999). Clearly there is a positive relationship exists between TQM principles and innovation (see Table 4.7).

Several empirical studies have supported the positive link between TQM and innovation (Kaynak, 1997; Karagozoglu and Brown, 1998; Prajogo and Sohal, 2003). Moreover, Baldwin and Johnson (1996) found that the adoption of TQM contributes significantly in differentiating the more innovative organisations from the less innovative ones. McAdam et al. (1998) compared TQM-as represented by continuous improvement – to innovation in 15 companies in the Republic of Ireland. They concluded that there is a significant correlation between the overall continuous improvement score and innovation score. This conclusion suggests the existence of a causal relationship, meaning that the introduction of continuous improvement over a period of time will tend to lead to increased innovation. Flynn (1994) reports on the relationship between TQM and the speed of product innovation. The findings of the study suggest that there are significant differences between fast, medium and slow product innovators based on TQM elements in terms of top management quality leadership, feedback, and product design characteristics. Similarly, the findings of Gustafson and Hundt (1995) support Flynn’s findings.

Table 4.7: The relationship between TQM and innovation

TQM Elements	Positive arguments
Customer focus	<ul style="list-style-type: none"> ■ Customer focus will encourage organisations to be innovative because they have to seek a better way to meet and exceed customers’ requirements. ■ Customer focus will provide a clear focus for innovation by linking innovation with customers’ needs.
Continuous improvement	<ul style="list-style-type: none"> ■ Continuous improvement will encourage change, innovation, and creative thinking in how work is organised and conducted.
Teamwork, empowerment and involvement	<ul style="list-style-type: none"> ■ Empowerment should make people feel they have a certain degree of autonomy, are less constrained by technical or rule-bound aspects, and self-efficacious in doing their work, which will make them innovative. ■ Cross-functional teamwork is one of the most effective channels of communication, and communication is recognised as the primary determinant in organisational innovation.

(Source: Prajogo and Sohal, 2001, p. 546)

Despite the above arguments that support the positive relationship between TQM and innovation, there are other arguments raised by several scholars (Tidd et al., 1997; Slater and Narver, 1998; Wind and Mahajan, 1997; Lynn et al., 1996; Hamel and Prahalad, 1994) rejecting the positive relationship between TQM and innovation. These scholars summarised the following arguments in support of the negative relationship between TQM and innovation:

a) TQM could hinder creativity through the use of standards or formalisation

Continuous improvement requires standardisation and activities (e.g. Plan-Do-Check-Act {PDCA}, and Standardise- Do- Check- Act {SDCA}) that are sufficiently routine to be well understood (Imai, 1986). Therefore, control and stability is the core principles of continuous improvement process (Jha et al., 1996). Whilst standardisation is vital for conformance and error reduction, from an innovation point of view it could trap employees into staying with what is workable and believe this to be the best option as supported by Kanter (1983). In simple terms, standardisation is seen to inhibit innovation because it reduces the ambiguity of any task that is important to enforce innovation. Moreover, it will raise the fear of breaking rules because of possible punishment for doing so (Morgan, 1993). The primary effect of standardisation is the development of routines. Whilst there is an advantage in having routines with which an organisation can operate continuously and smoothly, there is also a potential danger where an organisation can develop a stickiness on repeated or established procedures and not, thereby, explore and innovate new ideas or ways of performing activities (Morgan, 1993).

b) TQM could lead organisations to be narrow-minded concerning customers

Organisations that focus on their current customers and fail to search potential or untapped customers will fail to drive a generative learning by searching for customers' latent needs (Reed et al., 1996). As a result, these companies only see the world through their current customers' eyes (Slater and Narver, 1998) and may not be aware of the uncertainties of the future in turbulent market and, thus, not be prepared to deal with market discontinuity (Kim and Marbougne, 1999).

The concept of customer focus involves the development of a long-term relationship with existing customers. However, existing customers can substantially constrain an organisation's ability to innovate because a company will fear that producing innovations may disturb the way of performing business with current customers (Wind and Mahajan, 1997). Moreover, focusing on the majority of customers could result in perceiving risk of losing existing customers and will, therefore, prevent organisations from being innovative by pursuing conformance at the cost of innovation (Christensen and Bower, 1996).

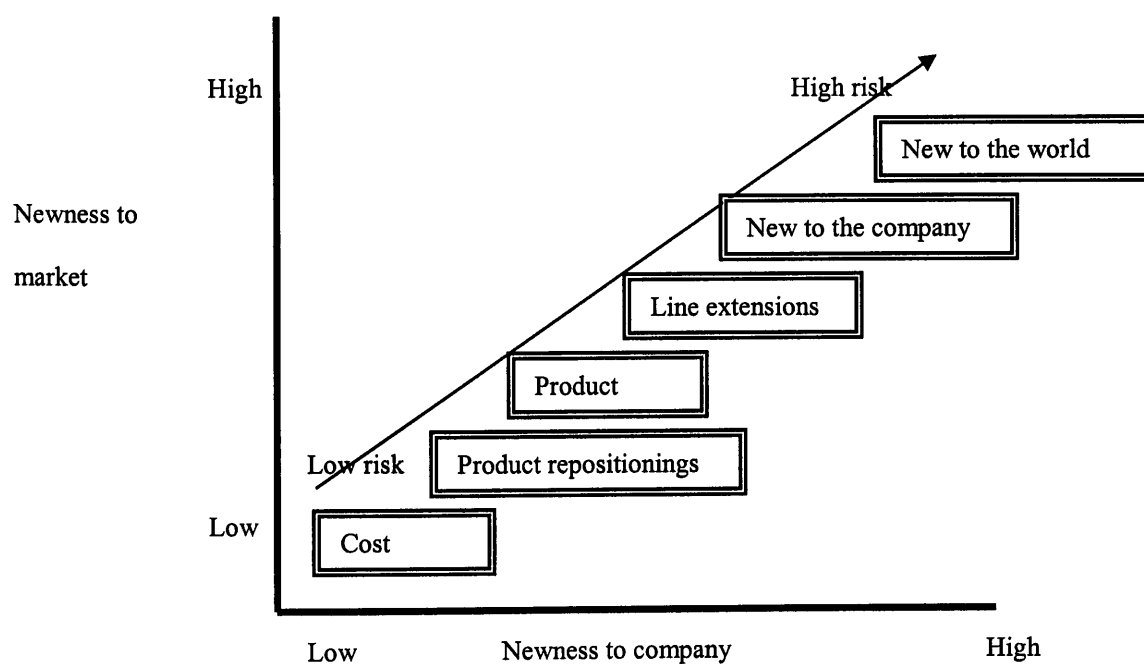
c) TQM could trap organisations in improvements or incremental innovations

Organisations with customer focus strategy tend to focus only on incremental improvements in their current products and services rather than trying to achieve and create novel solutions. Incremental improvement activities lead to the development of uncompetitive products and services rather than the development of innovative products or services (Wind and Mahajan, 1997). Davis and Moe (1997) described

product newness or innovativeness, in terms of risk from both company and market perspective as seen in Figure 4.6.

On this mapping in Figure 4.6, product innovativeness can be categorised based on the degree of the product's newness to both the market and the company. The newer the products are, the greater the risk the company must bear in investing its resources for developing such products. Atuahene-Gima (1996) supported this argument by suggesting that market orientation has insignificant and negative relationship with product newness. On the other hand, it appears that market orientation has a positive relationship with product advantage (e.g, conformance). This confirms the notion that customer focus will result in product conformance rather than product innovation.

Figure 4.6: The company and market perceptions of product innovation



(Source: Davis and Moe, 1997, p. 340)

Similarly, continuous improvement is perceived as possessing several key weaknesses with regard to innovation because it could hinder the introduction of more radical

innovations as it stresses a level of change that is incremental. Incremental change or improvement could lead employees to work on un-ambitious goals and derive solutions that are not novel (Harari, 1993a) and often slows down new breakthrough development in products and services (Harari, 1993b).

d) TQM limits the capacity and opportunity for innovation

TQM focuses on waste elimination and cost efficiency through the concept of process improvement (Imai, 1986). Emphasises on efficiency could minimise, if not eliminate, the availability of slack resources, something that has been found to be instrumental in organisational innovation (Nohria and Gulati, 1996). As Ahanotu (1998) suggested that there is no idle time and energy allowing employees to be involved in non-production activities, thus substantially reducing their opportunities to participate in the process of innovation.

4.5.2.1. Evaluating TQM and innovation

The above arguments concerning the positive and negative relationship between TQM and innovation seem to be more controversial and challenging, especially with the negative ones. Both arguments seem to be antagonistic to each other, while the negative arguments do not reject the positive view that TQM has positive link with innovation. However, the negative arguments suggest that TQM will only support innovation on a very limited basis and to a certain degree the implementation of TQM is likely to be detrimental for innovation. Therefore, the conflict between both arguments can be attributed to the difficulties in defining innovation and particularly in differentiating the incremental and radical types of innovation, which in turn are quite problematic (Dewar and Dutton, 1986). Even so, TQM scholars refer to any

type of change as the result of innovation, therefore suggesting that continuous improvement is one type of innovation (Dean and Evans, 1994). On the other hand, Abernathy and Utterback (1988) confined innovation in terms of radical change and to differentiate it from incremental change which, they prefer to label as improvement. Innovation scholars argue that improvement is simply doing something in a better way, but innovation is about doing something different (Kirton, 1976). To support this further, Prajogo and Sohal (2001, p. 545) stated that *the distinction between continuous improvement and re-engineering is based on the principles that the first focuses on the existing system and continually seeks ways to enhance its performance, whilst the latter re-starts everything from the beginning and thus establishes discontinuity with the past.*

With regard to the above positive and negative arguments, it is clear that there are different behavioural traits, ways of thinking, approaches and principles rooted in TQM in contrast to innovation. For example, the difference is shown in the issue of product innovation, whilst TQM supports the importance of product innovation, the approach is more reactive than proactive, indicating that TQM tends to encourage new product development only when there is demand from consumers. This concept is different in the view of innovative companies which, creates demand through innovation. Simply TQM is seen to be customer driven whilst innovation is product-push.

There is no definite answer concerning the debate on the relationship between TQM and innovation. However, a number of scholars have suggested that this conflict can be resolved if TQM is perceived as a multidimensional model instead of a single one

(Sitkin et al., 1994; Spencer, 1994; Moreno-Luzon and Peris, 1998; Karagozoglu and Brown, 1998). For example, Sitkin et al. (1994) suggested that TQM consists of three basic concepts (customer focus, continuous improvement, and total system) which embodies two distinctive and antagonistic concepts, namely Total Quality Control (TQC) and Total Quality Learning (TQL). They suggested that TQC is linked more with quality in terms of conformance, and TQL is associated more with innovation. They have argued further that the singular emphasis on TQC has characterised traditional approaches to TQM implementation and this has resulted in the rise of the negative view concerning the relationship between TQM and innovation. Similarly, Spencer (1994) discusses TQM practices in relation to three organisation models, namely mechanistic, organismic (similar to the organic model proposed by Burns and Stalker, 1961), and cultural. She believes that an organisation that adopts TQM can be characterised by any of these models because there is a linkage between TQM practices, as advocated by its proponents, with each of the three models. She argues further that organisations that practice TQM may hold strictly any one of these models; rather, they may oscillate among them or have an orientation toward one of them. For example, Spencer argued that the goal of TQM to improve quality is associated with the mechanistic model, because in practice the real objective of pursuing quality could well shift into productivity and efficiency, something on which mechanistic organisation focus. On the other hand, the concepts of employees' empowerment and cross-functional teamwork are linked closely to the organic model. It then has to be concluded that, rather than attempting to support or reject the notion as to whether TQM is positively related with innovation performance, the focus should be to accept that TQM is a multidimensional concept.

Spencer (1994) agrees with the strong association between the mechanistic model and the control orientation discussed by Sitkin et al. (1994). Spencer (1994) and Burns and Stalker (1961) described the organismic or organic model of organisations as a typical model that support innovation. It appears that the organismic model is closely linked to the learning orientation. With regard to this in mind, when referring to the mechanistic or control orientation model, TQM will focus more on quality by conformance, and thus appear to meet all negative views concerning its relationship with innovation.

4.5.3. TQM and competitive advantage: The link

As seen in section 4.5.1 there is a growing body of empirical research supporting a direct relationship between TQM and improved firm performance. Given the theoretical link that exists between competitive advantage¹ and performance, it is perhaps not too surprising that it has been claimed that TQM is linked to competitive advantage (Curkovic and Pagell, 1999; Seawright and Young, 1996; Foster and Gallup, 2002). Moreover, TQM literature proposes that product/service quality improvement is an important basis for achieving competitive advantage (Crosby, 1979; Deming, 1982; Reed and Mero, 2000; Chandler and McEvoy, 2000).

Competitive advantage is achieved by lowering unit costs, increasing market shares and decreasing price sensitivity (Juran, 1988; Aaker, 1989; Morgan and Piercy, 1996; Wilkinson et al., 1998). However, based on the number of times these claims have arisen in TQM literature, it is apparent that they have gained face validity, but

¹ Competitive advantage is the way in which organisations create value for their customers. Competitive advantage is achieved in organisations by outperforming their competition on various dimensions, which allows organisations to establish and sustain a defensible position in their markets (Porter, 1985; Flynn et al., 1995).

intuitive appeal does not substitute for theoretical and empirical evidence. Therefore Powell (1995) employed the resource-based approach and other theoretical perspectives to examine TQM as a source of competitive advantage. He states that resource theory provides a useful perspective and that success derives from economically valuable resources that other firms can not imitate and that resource bundles remain basically heterogeneous. Powell (1995) reported that TQM could produce competitive advantage².

Forker (1996) examined the contribution of quality to business performance within the furniture industry. Using data collected from 65 firms, Forker concluded that managing quality effectively helps a firm to gain a competitive advantage by delivering goods to the marketplace that meet customer needs. To support the link between TQM and competitive advantage further, Crosby (1996), Deming (1986), Feigenbaum (1991), Ishikawa (1985) and Juran (1992) pointed out the purpose of TQM is to reduce costs and improve customer satisfaction.

These views of the above authors fit closely with the market-based view of competitive advantage *arising from a superior cost structure or being able to differentiate products in a way that adds value for customers; i.e., the reduced rework and savings that emerge from improving product quality can help lower a firm's cost structure, and by producing products that better satisfy the requirements of customers, there is the potential for differentiation* (Reed et al., 2000, p. 12).

² Competitive advantage per se was not operationalised in the research, the conclusion was drawn from the existence of superior firm performance.

Beyond this argument, an examination of Reed et al's. (1996) study helps to provide validity. They argued that TQM includes four main components generating a market advantage, enhancing product design efficiency, boosting product reliability, and increasing process efficiency, and they deduced that a fit is required between the orientation of the firm, the firm's environment, and the four main components of TQM to improve performance. For example, customer focus organisations operating in environments with high levels of uncertainty should focus on developing a market advantage and on product design efficiency to improve revenues and reduces costs. For operation focused organisations operating in low uncertainty environment, a focus on product reliability and process efficiency will provide improved income and reduced costs. A market advantage arises from being market driven as suggested by Day (1990), which provides the potential for offering product/service differentiation through the identification of consumers' needs and the ability to anticipate competitors' product offerings. Likewise, organisations which provide higher reliability products than competitors are, in effect, differentiating their product offerings to consumers, while Hill (1988) and Porter (1985) reported that differentiation in organisations can increase market share. Better product design and efficiency reduces costs by eliminating components that do not add value to consumers and makes products more expensive to produce, and improved efficiency, which arises from experience curve effects and learning, also reduces costs. Therefore it can be concluded that there is a strong and a positive correlation between TQM and competitive advantage theoretically.

From a practical point of view, organisations such as Allied Signal, Du Pont, GE Plastics are achieving a higher rate of performance³ from TQM implementation (Hunter and Schmitt, 1999). These improved organisational performances tend to give credence to the conclusion that there is a positive link with competitive advantage. But more convincingly that some managers, such as those at GE Plastics (Bouchard, 1998) and Stanley Engineered Components (Roethlein and Mangiameli, 1999), perceive a real positive relationship between the effective implementation of TQM and competitive advantage, and this is supported further by Flynn et al. (1995), Ismail et al. (1998), Douglas and Judge (2001), and Reed et al. (2000). Then it can be suggested that TQM practices operate as an interdependent system that can combine with other organisational assets and resources to achieve competitive advantage.

4.6. Implementation of TQM

4.6.1. TQM and organisational change

The introduction and implementation of TQM leads to major change⁴ within organisations (Cao et al., 2000). The centrality of organisational change in the implementation of TQM is highlighted through the fact that *TQM is an integrated, corporately led programme of organisational change designed to engender and sustain a culture of continuous improvement based on customer-oriented definitions of quality* (Joss and Kogan, 1995, p. 12). The major change is associated with organisational processes (McNulty and Canty, 1995), and changes in values, beliefs

³ It has been reported that TQM practices contributed an additional US\$ 500 million to Allied Signal's profits in 1998, and it is anticipated that they will contribute some US\$ 625 million in 1999 (Hunter and Schmitt, 1999). GE's management team explained that TQM practices had improved the firm's operating margin from 10% to more than 15% (General Electric, 1998).

⁴ Change is defined as *a dynamic process, with change in any one dimension often resulting in compensatory change in others* (Cao et al., 2000, p. 1888).

and human behaviour in terms of relationships to social rules and practices (cultural change) (Cao et al., 2000).

Organisational processes change perspectives and TQM. Organisational processes involve material flow from raw materials to finished products, cash flow from investments to profits, and human resource input. Therefore, Hammer (1996) suggested that one of the key issues in change management is dealing with changes in organisational processes and controls over processes. TQM emphasises that each step of the production process is viewed as a relationship between consumers and suppliers. However, since TQM uses scientific methods, including SPC, it may be argued that organisational process change is central to the concept of TQM. This view is supported by Peters (1994) who suggests that TQM always involves addressing key business processes and constructs a five-level “road-map” to help the implementation of TQM:

1. Operational sub-process improvement
2. Intra-process improvement
3. Inter-process relationship improvement
4. Process redesign
5. Total process re-conception

Moreover, Lee and Dale (1998) suggested that TQM is related to business process management. Waldman (1994b), Schalkwyk (1998) and Zairi (1994) suggest that the main purpose of TQM is to continually improve organisational processes, resulting in high quality products or service. Therefore, TQM is best suited in helping with the design of organisational processes so that quality products and services are provided.

TQM and cultural change. Effective implementation of TQM requires organisational culture⁵ in different aspects such as the working relationship of the staff,

⁵ Culture is transmitted through contact with others in our environments and is shared amongst them (Schermerhorn et al., 1995). Its nature is of groups rather than individual and it develops strength

communication channels and empowerment of workers (Powell, 1995; Clover, 1993; Amsden et al., 1996). The literature suggested that there is a relationship between TQM and culture (Bowen, 1996; Sinclair and Collins, 1994), as Kanji and Yui (1997) described TQM as the culture of an organisation committed to customer satisfaction through continuous improvement. From this point of view, Kanji (1998) stated that what makes TQM different from other management processes is its concentrated focus on continuous improvement. This is probably why a cultural transformation from a set of bureaucratic postulates towards a TQM culture must be carried out in the long term, clearly formulated and implemented, in such a way that the change is achieved within an evolutionary process, not within a revolutionary one. This is because management has to deal with individual and organisational behaviours, with all the opposition that a change of this nature tends to generate (Claver et al., 2001).

In order to achieve effective implementation of TQM and organisational culture change, organisations need to change the way in which employees behave at work. There are different behavioural and attitudinal processes that are important to achieve effective implementation and change: work motivation, work satisfaction and organisational commitment (Cao et al., 2000). Nevertheless, the fact that the employees' behaviour and the aforementioned processes can be affected by the system (system factors⁶), the individuals (personal factors⁷), and the interaction

through time. Kotter and Heskett (1992, p. 34) define culture as the totality of socially transmitted behaviours, patterns, arts, beliefs, institutions and other products of human work and thought characteristic of a community or population. They propose that culture is associated with two aspects. One aspect is the invisible, deeper and harder to change aspect associated with the shared values or beliefs that shape group behaviour and persist over time. The second aspect involves group behavioural norms, which are more visible and easier to change. These are the common ways of acting that are found in a group, and they persist because they are taught to new group members, because rewards flow to those that fit in and sanctions to those that do not.

⁶ System factors are factors which affect the work performance either directly or indirectly, through their impact on the employees' behaviour. These factors are divided into factors relating to the

between system/individual, needs to be emphasised (Dobbins et al., 1993; Brown and Mitchell, 1993).

Dobbins et al., (1993) further suggested that a direct relationship exists among these factors and work performance, whereas the mediation of behavioural processes as pointed out by Hackman and Wageman (1995) is therein neglected. Within this perspective, many authors (Spencer, 1994; Dobbins et al., 1993) find a feeling that employees are not totally responsible for their performance, rather it is the organisational system configuration that determines to a great extent their possibilities of action. Therefore, instead of trying to improve employees' performance through incentives, organisations should empower employees and provide them with the necessary tools for enhancing their systems, at the same time involving them where they are able to identify the organisation's goals as their own (Chung, 1999). Therefore, the literature suggested that training, teamwork, increasing of a team vision of their tasks, clarification of the relation of their work with that of their colleagues within the organisation, and the contribution of their individual work to the overall

employees, and factors related to the customer. Factors relating to the employee encompass those aspects linked to the cognitive appraisal of the behaviour of certain individual in the organisation (e.g, the manager) with the employees. These factors are based on the accumulation of experience within the organisation such as support/sincerity; pressure; cohesion; innovation; impartiality; extrinsic and intrinsic recognition (Brown and Mitchell, 1993; Peters and O'Connor, 1980). Factors relating to the customer, comprising those aspects linked to the cognitive appraisal of the behaviour of specific individual in the organisation (e.g, salespeople) with the customers when the service takes place. These factors are related to work information; technological system problems; work materials; training; work environment; empowerment in decision; support by functional departments; and quality focus (Brown and Mitchell, 1983; Peters and O'Connor, 1980).

⁷ Personal factors refer to the existing differences among individuals in terms of knowledge, skills, and capability; the level of efforts directed to the performance of the tasks; and the method and form of organising work, that is, the individual, personal approach to work, related to the general culture and social values (Campbell, 1990). These factors can be affected, restrained or strengthened by organisational system. For example, the employee's level of knowledge can be reinforced depending on the attention paid to training by the system. For this reason the interaction between the individual/system is important to be recognised. Lofquist and Dawis (1969) supported this concept and posited a work adjustment theory based on the concept of correspondence between the individual and the work environment. The correspondence was recognised in terms of the mutual meeting of expectations by

organisational performance are of paramount importance as intrinsic motivators (Clover, 1993; Amsden et al., 1996).

The journey to TQM starts with the awareness of TQM principles and concepts in an organisation (Dale et al., 1997). Quality awareness can be initiated by quality education and training and supported by structural and progressive change of management systems (Shin et al., 1998; Clover, 1993). While an appropriate quality culture keeps the management system operating smoothly and improving consistently, a good management system in turn nurtures the growth of organisational quality culture (Camison, 1998; 1996; Dale et al., 1997).

TQM emphasises the necessity to change the organisation culture, in order to adapt it to the requirements that TQM practices entail (Warwood, 2001; Mellahi and Eyuboglu, 2001; Adebajo and Kehoe, 1999; Ahmed et al., 1999), while Ciampa (1991) suggested that there exists a clear risk at believing that an organisational culture can be altered by one single person, at any rate, by a continuous improvement approaches. Hofstede et al. (1990) found that differences among countries in the values of the same company were larger than among companies within the same country, thus demonstrating that the organisation can not by virtue of a socialising process change their employees' values with regard to the values predominating in their societies.

Organisational culture is neither something created by a single leader, nor something that can be controlled and foreseen by the organisation managers. Rather

both environment and staff. Therefore, the skills requirements of the job and the characteristics of the individual must match, in order to create encouraging conditions at the organisational environment.

organisational culture is tailored up with the contribution of every employee in the organisation, and it is a slow and hard process (Shadur, 1995). Cultural change clearly focuses on changing people's mindset with a shift in the responsibility of producing quality work from a functional department towards the individual employee (Adebanjo and Kehoe, 1999), and calls for the involvement of all employees in the decision making process of the organisation (Wilkinson, 1999). It is clear that organisational culture is associated with the implementation of human resource strategies and the development of the right environment.

The result of organisational incompatible cultures may include value and norms oriented towards short-term production and quick fixes, discrete activities and pursuing departmental goals, and fundamentally the traditional individualism based on organisational culture in Western economies (Waldman, 1994b). If these issues are not addressed properly, fragmentation, and the improvement of one process at the expense of another is a likely outcome (Gardner and DeMello, 1993). Therefore, an appropriate system should be identified to manage change and TQM in organisations.

4.6.2. TQM and organisational learning

The success of TQM and culture change requires people to learn, to absorb, to adapt and to apply conceptual changes and integrate them throughout the organisations (Terziovski et al., 2000). However, the concept of learning can be weakened since learning may not be a shared, common value in the company, or a lack of the necessary tools and skills may exist. Therefore, TQM practices generate ideal environments for learning, minimising the organisational culture fears and providing employees with a number of tools enabling them to develop (Pool, 2000; Ford, 1991).

Moreover, TQM informs employees about the performance level of their work processes, thus encouraging them to deploy scientific methods aimed at analysing and improving work processes. While Garvin (1993) suggested that if TQM is practised as a philosophy (i.e. continuous improvement) as well as a set of techniques (i.e, Plan, Do, Check, Act or PDCA cycle), then it can be a vehicle for organisational learning.

Senge (1992) believes that TQM philosophy has been originated on the learning concept. In fact his learning wave theory suggested that TQM is the first step toward a learning organisation. The first wave focused on frontline workers and managers championed continuous improvement using empowerment of employees, quality training and Deming's (1982) PDCA Cycle, and competitive benchmarking. The second wave focused on how managers foster ways of thinking and interacting conducive to continual learning about the dynamic, complex, and issues that determines system wide performance. The third wave is a synthesis of the first two waves in which learning becomes an inescapable way of life. Barrow (1993) believes further that TQM and organisational learning are intrinsically bounded, where the later being the main reason to carry out the endeavours involved by the former. Therefore, there is a clear relationship between TQM and learning where: TQM itself constitutes a learning process; and TQM affects the way in which organisations learn. While Garvin (1993) suggests that, to become a learning organisation, companies need to be skilled in systematic problem solving; experimentation with new approaches; learning from their experiences and past history; learning from experiences and best practices; and transferring knowledge quickly and efficiently throughout the organisation.

The idea of TQM constitutes a learning process involves the introduction of changes in the way organisations act. Thus these changes in behaviour are nothing but the result of the new ways of making the organisation tasks have sense, once the knowledge acquired during the TQM processes is put into practise. Within this perspective, TQM is considered to be both as a single-loop⁸ and double-loop⁹ learning process (Grant et al., 1994; Hackman and Wageman, 1995).

According to the former consideration, the changes brought about by TQM result from a learning process incompatible with the traditional management practices, in such a way that a change in the premises on which these practices have been developed for the success of TQM. On the contrary, those standing for the TQM as a single-loop learning consider that in TQM, the rhetoric predominates (Zbaracki, 1998), so that the main change in organisations relates to the way in which managing processes are named, whereas the basic premises remain the same.

The idea of TQM affects the staff's knowledge-acquisition or conversion processes, as it is considered that their power comes from their competence to develop new starting points to solve existing problems in organisations (Mukherjee et al., 1998). Therefore it is important to recognise the process of managing knowledge to achieve the desired outcomes with comparison with TQM process. Both of them are based on input-output transformation process.

⁸ Single-loop learning is instrumental in nature. It involves correcting variance in known cause and effect relationships so that a desired outcome is achieved. It tends to involve mainly knowledge accumulation, retention and dissemination (Wang and Ahmed, 2002).

⁹ Double-loop learning occurs when the assumptions and context within which instrumental action takes place are challenged. It is transformative in nature because it alters the socially constructed

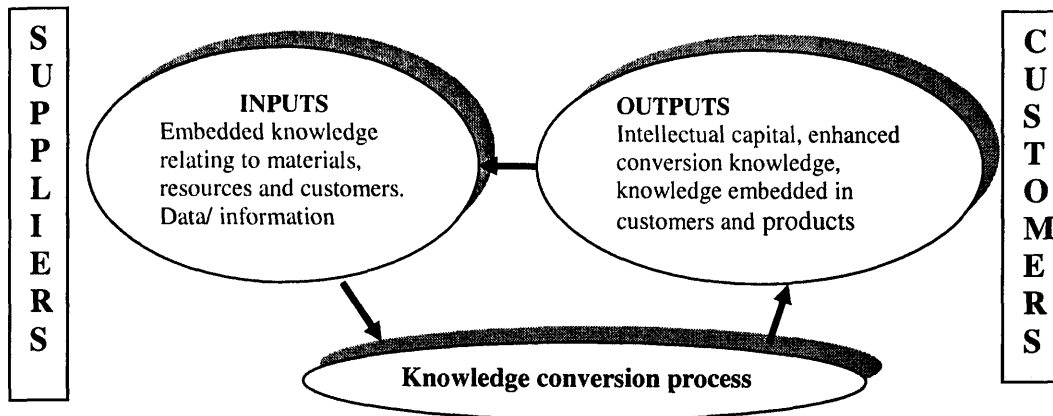
Within knowledge management (KM) perspective (see figure 4.7), at the input end there are a combination of knowledge of customer's needs and expectations, knowledge of raw materials and resources to be used, knowledge of products and services to be delivered as well as data information or knowledge. The knowledge conversion process is recognised as a changing and/or improving process. It consists of preserving, embedding and enhancing knowledge of process, products and services. The knowledge conversion process can also be seen as one of knowledge creation, transferring and sharing, and a process of knowledge access improvement as well. Fostering a knowledge environment that is conducive to knowledge development, use and transfer is vital in the knowledge conversion process. While knowledge embedded in products and services, intellectual capital and an improved knowledge and understanding of customer needs are among the most important outputs of the knowledge conversion process. The process clearly indicates that knowledge management takes information, knowledge and people as its basic inputs, and applied knowledge and intellectual capital as its desired outputs. Knowledge management emphasises knowledge creation, transfer and embedding to serve different organisational purposes. This may include the enrichment of knowledge of customers, the building of knowledge capital or developing enhanced access to knowledge (Armistead, 1999).

Based on the discussion evolved in section 4.1.1, it is clear that TQM is an input-output process of transformation of a set of inputs including plant equipment and raw materials, procedures and methods, information and knowledge, and people and their

meanings people share (Bounds et al., 1994). Therefore, it involves knowledge refinement and knowledge creation through continuous improvement (Wang and Ahmed, 2002).

skills. The outputs of the transformation are products, services, information/paperwork and any results that meet customer needs and expectations.

Figure 4.7: The knowledge management process framework



Source: (Based on Armistead, 1999)

The processes of TQM and KM show that both of them take information, knowledge and people as their basic inputs, and applied knowledge and intellectual capital as their desired outputs. In order to understand both concepts clearly, table 4.8 shows the similarities and differences between KM and TQM in terms of objectives, goals, focuses and strategies (Miltra, 1998). Thus, one of the basic principles of TQM is the continuous improvement, which consists in an explicit attempt to learn out of one's own experience (Miner and Mezias, 1996). This way, organisations focus on the errors made and seek solutions. Therefore, they put into practice one of the knowledge acquisition ways that most decisively contributes to boost business performance.

Table 4.8: Similarities and differences of KM and TQM

SIMILARITIES	
KM	TQM
<ul style="list-style-type: none"> ■ Continuous improvement and learning from others ■ Valuing employees/intellectual capital ■ People/competence development ■ Empowerment/ involvement ■ Teambuilding/ collaboration ■ Acquiring knowledge of competitors, customers, suppliers and partners ■ Facilitating / improving access to knowledge ■ Improving quality and efficiency of decision-making 	<ul style="list-style-type: none"> ■ Continuous improvement and measuring to achieve customer satisfaction ■ Valuing employees/ intellectual capital ■ Employee training/ education/ development ■ Empowerment/ involvement ■ Teambuilding/ collaboration ■ Acquiring customer and market knowledge ■ Selection and use of information and data ■ Improving quality and efficiency of decision-making ■ Opening channel of communication
DIFFERENCES (Focus/ Strategies)	
KM	TQM
<ul style="list-style-type: none"> ■ Embedding knowledge in staff, customer, products, process, services ■ Regarding knowledge as the source of competitive advantage ■ Achieving greater productivity through the use of knowledge ■ Creating/disseminating new knowledge and embedding it in new technologies and products ■ Searching for new source of information ■ Adapting knowledge to market needs 	<ul style="list-style-type: none"> ■ Better use resources, to achieve effectiveness and efficiency ■ Striving for excellence through benchmarking, etc ■ Consistent and precise performance to high standards in all areas of the organisation ■ Effective leadership and team commitment throughout ■ Customer focus ■ Results focus ■ Measurement of quality using data and tools ■ Management by facts and processes ■ Mutual respect, mutual trust and mutual benefit of all stakeholders

Source: (Zhao and Bryar, 2002, P. 393)

The link between TQM and learning or organisational learning has been discussed above to produce a significant improvement to business performance and employee satisfaction. However it is important to identify a conceptual framework to manage the link between them. Much of the literature focuses on learning styles in situational contexts. These include a number of variants on the learning cycle from plan-do-check-act to thinking-deciding-doing-reflecting (Swieringa and Wierdsma, 1992). While Senge (1990; 1992; 1994) developed a series of pyramids dealing with systems

thinking, personal mastery, mental models, building shared vision and team learning. On the other hand, Peppard and Rowland (1995) speak of the organisational pillars of customer-people-process-technology. All these models are important in demonstrating aspects of TQM and organisational learning, but what is lacking is a conceptual model (see below) to manage them effectively in terms of organisation transformation (*as distinct from organisation description*).

4.6.3. Managing TQM, organisational learning and cultural change:

Appropriate framework

Discussion concerning TQM, organisational learning and cultural change (section 4.6.1. and 4.6.2.) reveal that the implementation of TQM in organisations requires large scale changes, both of the management tools used and those concerning the organisational structures, attitudes and behaviour of all organisational employees. TQM transformation suggests that the lasting organisation change in TQM implies a change in the culture of the organisation, which should necessarily be brought in by the management.

Organisational culture change within the context of TQM means providing all the members of an organisation with a shared values system, and implementing policies for keeping this alive by means of continuous practice, centred on top management action and socialisation work, amongst which training and education play an essential role. Therefore, it is important to accomplish and manage the change resulted from implementing TQM. Beer et al. (1990), Kotter (1996) and Juran (1995) recommended different strategies to manage change and they are compiled in table

4.9. By examining table 4.9, it is clear that there are five strategies for managing change (see figure 4.8).

In support of these strategies (table 4.9 and figure 4.8) further, Newall and Dale (1991) reported the results of a study performed at seven industrial organisations and one organisation within the financial service sector. They reported that these organisations had passed through the same basic stages in managing change, although under different names and in somewhat different sequences. While, Oakland (1993) suggests that by integrating TQM into the strategy of the business, organisations will avoid the problems of change approaches by focusing on process alignment recognising that people's roles and responsibilities must be related to the processes in which they work. Moreover, Castka et al. (2003), Sandstrom (2000) and Kotter (1996) suggested that the development of a strong vision in organisations, strong teams, employee empowerment and committed leadership are vital factors for managing change.

In order to manage organisational learning effectively, Burgoyne et al. (1994) suggested the use of the learning company questionnaire model¹⁰. However, McAdam et al. (1998) and Terziovski et al. (2000) argued that the model is not effective enough to manage organisational learning in the context of TQM. They recommended to use a conceptual model which has the ability to manage the interaction between TQM and organisational learning (see Figure 4.9).

Table 4.9: Different strategies for managing change

Six steps by Beer et al. (1990)	Eight steps by Kotter (1996)	Seven steps by Juran (1995)
<ul style="list-style-type: none"> ■ Mobilise commitment to change through joint diagnosis of business problems. ■ Develop a shared vision of how to organise and manage for competitiveness. ■ Foster consensus for the new vision, competence to enact it, and cohesion to move it along. ■ Spread revitalisation to all departments without pushing it from the top. ■ Institutionalise revitalisation through formal policies, systems, and structures. ■ Monitor and adjust strategies in response to problems in the revitalisation process. ■ 	<ul style="list-style-type: none"> ■ Establish a sense of urgency. ■ Creating the guiding coalition by putting together a group with enough power to lead the change. ■ Develop a vision and strategy to help direct the change effort. ■ Communicating the change vision by using every vehicle possible. ■ Empowering broad based actions by getting rid of obstacles and by changing systems or structures. ■ Generating short term wins by planning for visible improvements in performance, or wins. ■ Consolidating gains and producing more change. ■ Anchoring the new approaches in the culture. 	<ul style="list-style-type: none"> ■ Breakthrough in attitude concerning the necessary change. ■ The prospect of carrying out the change analysed. ■ The creation of a steering part and an analysing part in order to obtain new and required knowledge. ■ The creation of sufficient knowledge resulting in a breakthrough in knowledge. ■ Create a social change in beliefs, habits, etc. ■ The previous steps bring a possibility to attain a breakthrough in results. ■ The process is controlled in order to keep the change.

(Source: Beer et al., 1990; Kotter, 1996; Juran, 1995)

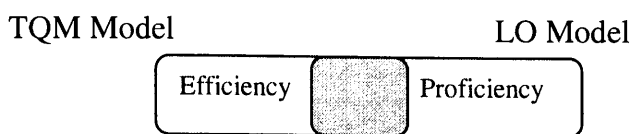
Figure 4.8: Five strategies for managing change

1. Establish a common view that the change is required.
2. Create a shared vision for the change process and an organisational platform to accomplish it.
3. Effective communication of the change vision and the ability to create sufficient knowledge.
4. Facilitate the change process by removing obstacle in structures, policies, beliefs and habits.
5. The results are monitored, evaluated and adjustments are made in order to anchor the new approaches in organisations.

(Source: Beer et al., 1990; Kotter, 1996; Juran, 1995)

¹⁰ The learning company questionnaire model consists of five characteristics (strategy; looking in; structures; looking out; and learning opportunities) of the learning organisation which are subdivided

Figure 4.9: Interaction between TQM and learning organisation



(Source: MacAdam et al., 1998, p. 52)

Figure 4.9 proposed that there is an interaction between TQM and organisational learning and this interaction can be expressed in terms of business efficiency (largely but not exclusively TQM) and business proficiency (largely but not exclusively organisational learning). However, rather than just managing change and organisational learning as a separate issue from TQM, it is important to insert a system of values into the organisation's culture and transform its members' ways of perceiving, thinking and acting, requires a method of implementation. The method, conceived as the set of systems and procedures that keep up the daily practice of the essential values of TQM in the entire organisation, varies broadly, since each organisation has its own version adapted to its culture and competitive advantage.

There are a number of systems that can be implemented to manage TQM, organisational culture, organisational learning and change as a whole, such as the Deming award, MBNQA, and EQA (Castka et al., 2003; Camison, 1998; 1996; Zairi, 1994). As this study focuses on SMEs, some authors have suggested the use of the EQA (the EQA will be dealt with later) as a framework for effective implementation and management of TQM, organisational learning and cultural change (Castka et al., 2003; Camison, 1998; 1996; Karlsson and Wiklund, 1992; Armitage, 2002; 2001; McAdam et al., 1998).

into 11 key aspects. These key aspects are in turn broken down into questions (Burgoyne et al., 1994).

4.7. TQM: TOOLS AND TECHNIQUES

4.7.1. ISO 9000: A technique for TQM

A firm's current customers may be aware of the quality of output of that particular company, however potential customers often require objective documentation of such quality (Withers and Ebrahimpour, 1998). The focus on quality has therefore led to the codification of ISO 9000 (Brookshaw and Terziovski, 1999), and the ISO 9000 standards have attempted to provide evidence of this quality through an internationally acceptable framework (Najmi and Kehoe, 2001). Therefore, ISO 9000 has been recognised as a technique for quality improvement and TQM (Withers and Ebrahimpour, 1998). The ISO 9000 standards owe much of their development to the American military standard MIL-9858, the NATO Allied Quality Assurance Standard, the Canadian Standard CSA-Z2999, and the UK Defence Standard 0521 (Wiele et al., 2000). ISO 9000 is largely based on the British standard BS5750, which was re-launched in 1987 following the adoption of the international standard ISO 9000 (Stein and Hitchcock, 1997).

The ISO 9000 standards were introduced in 1987. They are based on the idea that certain minimum characteristics of a quality management system could be usefully standardised, giving mutual benefit to suppliers and customers, and focusing on process rather than product quality (Withers and Ebrahimpour, 1998). ISO 9000 is a management control procedure (Stein and Hitchcock, 1997), which involves businesses in documenting the processes of design, production and distribution to ensure that the quality of products and/or services meets the needs of customers (Withers and Ebrahimpour, 2001).

Buttle (1996) defines ISO 9000 as a series of quality assurance standards which provide the requirements and recommendations for the design and assessment of management systems (see Table 4.10). The objective of these standards is to provide an effective quality system reflecting a company's practices for producing goods and services that conform to requirements (Tummala and Tang, 1996).

Table 4.10: ISO 9000 and quality assurance standards

Document	Content
ISO 9001	Standard for quality assurance in design development, production, installation and servicing.
ISO 9002	Standard for quality assurance in production, and installation.
ISO 9003	Standard for quality assurance in final inspection and test of product/service.

(Source: Buttle, 1996, p. 41)

ISO 9000 standards are criteria for appraising the quality of production systems, judging processes rather than individual products and/or services. Therefore *ISO 9000 is similar to a contract between a purchaser and supplier-assurance that a product was produced in a quality-controlled production process* (Surkovic and Handfield, 1996, p. 4). ISO 9000 is more to do with achieving conformance to pre-determined standards with instilling the philosophy of excellence associated with customer responsive management (Davis and Manrodt, 1996), or a customer value delivery-orientation organisations (Woodruft, 1997). Najmi and Kehoe (2001), and Wiele et al. (2000) suggested that ISO 9000 presents a sound basis for assuring the customer of the quality of products and/or services, as well as the processes that create them. It has been suggested that ISO 9000 is used as an effective tool for providing controls to ensure quality of production and delivery, and to reduce waste, downtime, and labour inefficiency, thereby increasing productivity (Halis and Oztas, 2001).

One of the main requirements for acquiring the ISO 9000 standard is that a firm's quality system has to be documented (Woodruff, 1997). This is generally at two levels, in a quality manual and in a procedures manual (Nwankwo, 2000). The quality manual sets out what is to be achieved and the procedures manual document the procedures and how they are to be performed for ensuring that the outcomes conform to the required quality.

The registration process for the ISO 9000 standards consists of an audit of the implementation of a company's documented quality system after it has been verified and seen to conform to the requirements of the applicable ISO 9000 standard. An independent party implements the audit. Lamprecht (1999) emphasised that ISO 9001 is the most comprehensive standard and it consist of 20 elements which demonstrates the conformance of product and/or service to specified requirements. Oztas and Ulusoy (2000) argued that the ISO 9001 standard provided a systematic and comprehensive framework for establishing and maintaining a documented quality system that would increase the level of confidence of meeting customer requirements.

To survive in the highest competitive business environment, the quality management system based on the model of ISO 9001, ISO 9002, ISO 9003, which is aimed at achieving customer satisfaction by preventing nonconformity, is not enough. Instead, a more proactive system, that is driven more by customer satisfaction should be introduced (Zuckerman, 2001; Oztas and Ulusoy, 2000). The International Organisation for Standardisation (ISO) published a new series of ISO 9000 standards on 15th December 2000 (ISO, 2000). The new ISO 9000: 2000 will overcome the problem of choosing between the current ISO 9001, 9002 and 9003 (Frate, 2001; Ho,

2001). Technical Committee 176 (1998) investigated the associated problems of ISO 9000 among certified organisations and the study highlighted seven issues which are considered to be vital to the introduction of a new standard. These seven issues are as follows:

- (1) Simplicity, clarity, language, terminology, less paper;
- (2) Integration into one management system;
- (3) Continuous improvement;
- (4) Process model, process orientation;
- (5) Compatibility with other management standards;
- (6) Customer satisfaction and
- (7) Business orientation

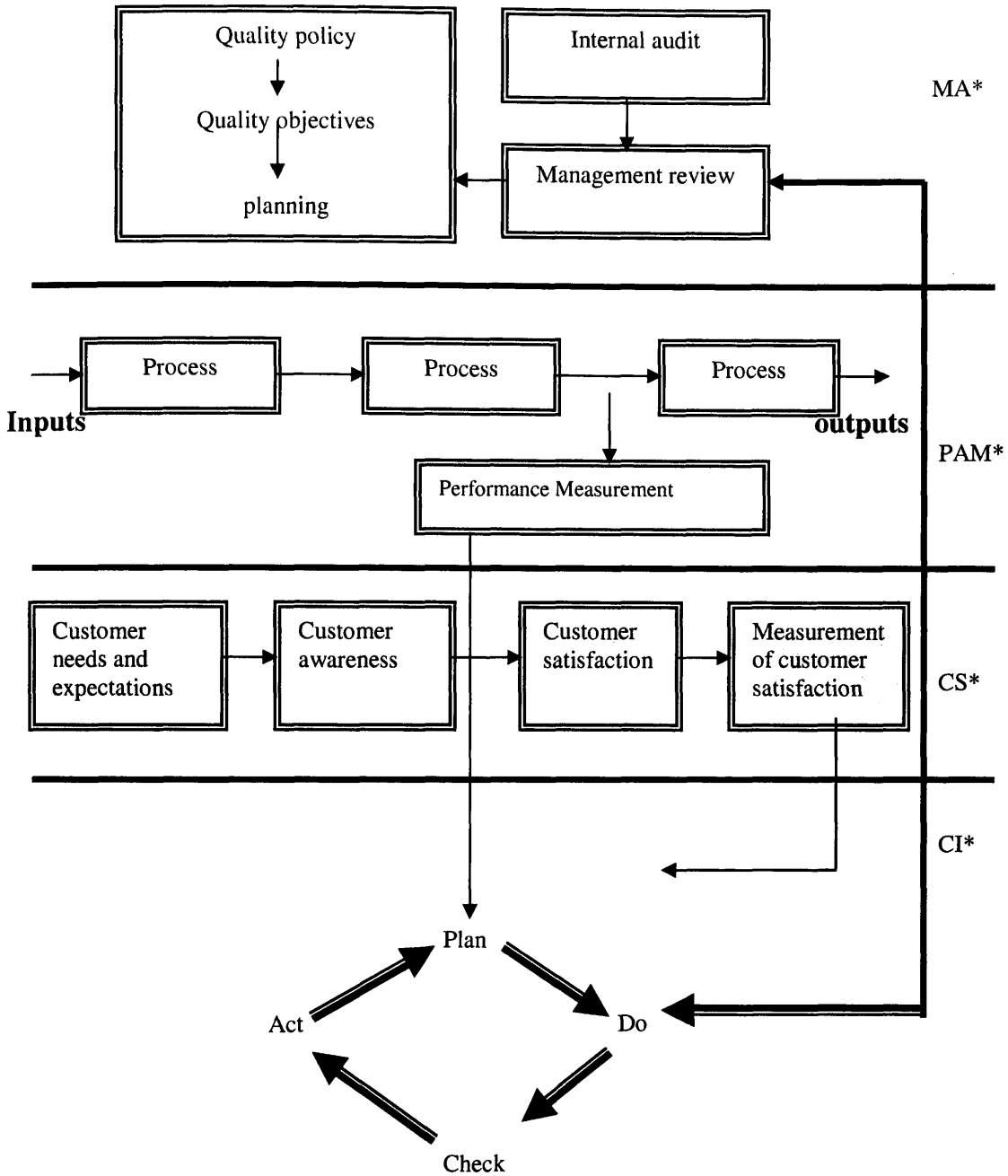
These issues were taken into consideration in developing the new standard. The significant changes in the new standard are related to management activities, process approach management, customer satisfaction and continual improvement that can be demonstrated in Figure 4.10. ISO 9000: 2000 was developed on the basis of a process model where the generic requirements of the quality management system are depicted as linked processes (McAdam and Fulton, 2002; Gano, 2001; Cargill, 2001; West et al., 2000; Zuckerman, 2000).

Tsim et al. (2001, p. 95) summed the concept behind the four key system areas of management activity, customer satisfaction, process approach management and continual improvement and wrote: *For the key system area of management activity, top management has the major responsibility to define the direction of the organisation and the purpose of the business. To do so, the quality policy and quality objectives are specified which must be well communicated throughout the company and applied for all relevant functions of the company. Through the use of the process approach management, the processes and their interaction with the organisation could be visualised. Besides, the performance of each process can be measured*

against the planned and expected results. The information, gathered from the performance measurement of processes and the measurement of customer satisfaction, can be used in determining the areas for continual improvement. All the analytical results can be found as the inputs to management activity for the review of the suitability of quality policy and objectives and the effectiveness of the quality management system. The new four key system areas which have been incorporated into ISO 9000: 2000 need to cover different functions and these functions are outlined in Appendix B Tables B1, B2, B3 and B4.

McAdam and Fulton (2002), Lamprecht (1999), West et al. (2000) and Ho (2001) supported the introduction of the ISO 9000: 2000 to include the four key system areas of management activities, process approach management, customer satisfaction and continual improvement. Gano (2001), Conti (1999) and Zukerman (1999 and 2001) concluded that the new standard is a step forward towards customer satisfaction and does not just achieve product quality assurance. Tsim et al. (2001) supported the introduction of communication and information requirements in the ISO 9000: 2000 which would enable organisations to enter the knowledge age of this century. In addition, Ho (2001) and West et al. (2000) argued that organisations would benefit from the implementation of ISO 9000: 2000. Russell (2000) praises the new standard but states that some of the standard requirements are not easy to audit without specifying certain clauses, which poses a challenge to ISO auditors for example, legal requirements. In addition Lamprecht (1999) argued that the standard included repetitions and could have been shorter.

Figure 4.10: Model of key system areas of ISO 9000:2000



KEY

MA*= Management Activity
CS*= Customer Satisfaction

PAM*= Process Approach Management
CI*= Continual Improvement

(Source: Tsim et al., 2001, p. 95)

4.7.2. Self-assessment: A technique for TQM

During the last ten years, self-assessment has been established as a technique for quality improvement. Self-assessment has been developed and supported by different TQM quality awards. *Self-assessment is a comprehensive and regular review of an*

organisation's activities and results against a systematic model of business excellence. The self-assessment process allows the organisation to discern clearly its strengths and areas in which improvements can be made and culminates in planned improvement actions which are monitored for progress (EFQM, 1997, cited in Wiele et al., 1997, p. 242).

Self-assessment can be described as a regular and systematic review of organisational processes and results, allowing companies to identify their strengths and improvement opportunities as well as identifying the drivers of sustained high performance (Ritchie and Dale, 2000; Porter et al., 1998; EFQM, 1997), and this can be achieved through people involvement in the regular and systematic review of organisational processes and results (Finn and Porter, 1994).

Self-assessment helps organisations to develop and manage their continuous improvement, which is seen as a collection of activities that constitute a process intended to achieve improvement (Samuelsson and Nilsson, 2002; EFQM, 1997). In manufacturing, these activities primarily involve simplification of production processes, mainly through the elimination of waste (Turney and Anderson, 1989). In services industries and the public sector, the focus is on process simplification and improved customer service through greater empowerment of employees (Samuelsson and Nilsson, 2002). Karapetrovic and Willborn (2001), Ritchie and Dale (2000) suggested that self-assessment helps organisations to pinpoint improvement opportunities, encourage training in TQM, and facilitates benchmarking and organisational learning. Finn and Porter (1994) and Wiele and Brown (1999) support

these studies further. Self-assessment helps organisations to further develop and manage their continuous improvement activities in a number of different ways:

- *It provides a definition and description of TQM which gives a better understanding of the concept and improves awareness;*
- *It enables measurement of the progress with TQM to be made, along with benefits and outcomes;*
- *The scoring criteria provide an objective measurement, gain consensus on the strengths and weaknesses of the current approach and help to pinpoint improvement opportunities.*

Other studies identified the types of benefits arising from the implementation of self-assessment in the UK and they included: reduced costs, reduced staffing levels, reduced time taken, reduced waste and re-work, improved employee commitment, improved organisational performance, improved quality processes, quality products/services, improved profitability and improved customer satisfaction (Longbottom, 2000; Wiele and Brown, 1999; Finn and Porter, 1994). Wisner and Eakins (1994) conducted a study to investigate the benefits of self-assessment and they demonstrated significant achievements in the areas of customer service, production costs and product reliability. Moreover, Zairi (1994) suggested that consistency in managing quality systems, focus on positive quality in terms of innovation, creativity and adding value to the end customer were the results of implementing self-assessment. Ritchie and Dale (2000) summarised further the benefits of self-assessment into immediate, long-term and supporting TQM outcomes (see Table 4.11). Clearly there is evidence to suggest a link between the rigour of the self-assessment carried out by organisations and the number of improvement areas identified. As Next Step Report (1998, p. 14) stated that *on average, agencies undertaking self-assessment identified over 150 areas for improvement...those conducting the more rigorous evidence-based assessment methodologies frequently produced up to 250 areas for improvement.*

Table 4.11: Benefits of the self-assessment process

Category	Benefits
Immediate	<ul style="list-style-type: none"> ■ Facilitates benchmarking ■ Drives continuous improvement ■ Encourages employee involvement and ownership ■ Provides visibility in direction ■ Raises understanding and awareness of quality related issues ■ Develops a common approach to improvement across the company ■ Seen as a marketing strategy, raising the profile of the organisation ■ Produces “people friendly” business plans
Long-term	<ul style="list-style-type: none"> ■ Keeps costs down ■ Improves business results ■ Balances long and short-term investments ■ Provides a disciplined approach to business planning ■ Develops an holistic approach to quality ■ Increases the ability to meet and exceed customers expectations ■ Maintains a quality image ■ Provides a link between customers and suppliers
Supporting TQM	<ul style="list-style-type: none"> ■ Helps to refocus employees attention on quality ■ Provides a health-check of processes and operations ■ Encourages a focus on processes and not just the end product ■ Encourages improvements in performance

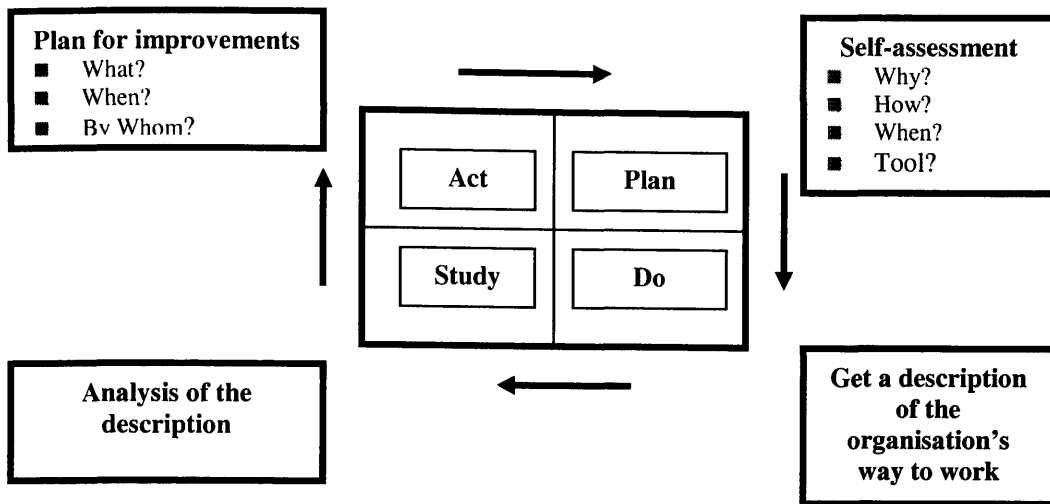
(Source: Ritchie and Dale, 2000, p. 246)

In order to achieve the associated benefits of self-assessment, organisations should follow four stages of self-assessment. These four stages are closely related to the four stages of the improvement cycle ‘Plan-Do-Study-Act’ as illustrated in Figure 4.11.

Figure 4.11 reveals that self-assessment contains the following stages:

- Stage one, it is very important to plan the self-assessment process seriously. Why shall we perform a self-assessment? When shall the work be done? Who shall be involved? Which model shall be used as a basic for the description?;
- Stage two, a description of the organisation shall be obtained, preferably based on the principles from a quality award or another similar tool for business excellence;
- Stage three, an analysis of the description shall be made in order to find strengths and improvement possibilities;
- Stage four, based on the results from the analysis a plan for improvements shall be created. What shall be done? What resources are needed? Who shall perform the work? Who is responsible?.

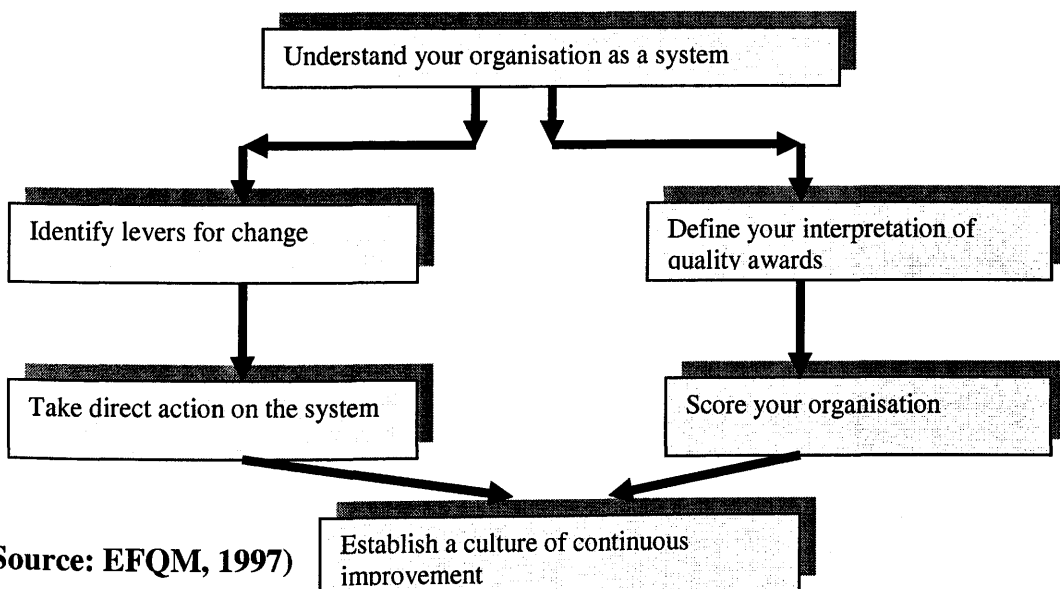
Figure 4.11: The self-assessment procedure



(Source: Svensson and Klefsjo, 2000, p. S801)

To ensure effective implementation of self-assessment, the EFQM (1997) suggested the use of the vanguard approach to self-assessment (see figure 4.12). This approach encourages managers to have an understanding of what and why of current performance and to understand their current organisation as a system, where managers can have the confidence in undertaking the improvements actions. Also it can be used as part of the change process from a normal organisation to a quality focused organisation.

Figure 4.12: The vanguard approach to self-assessment



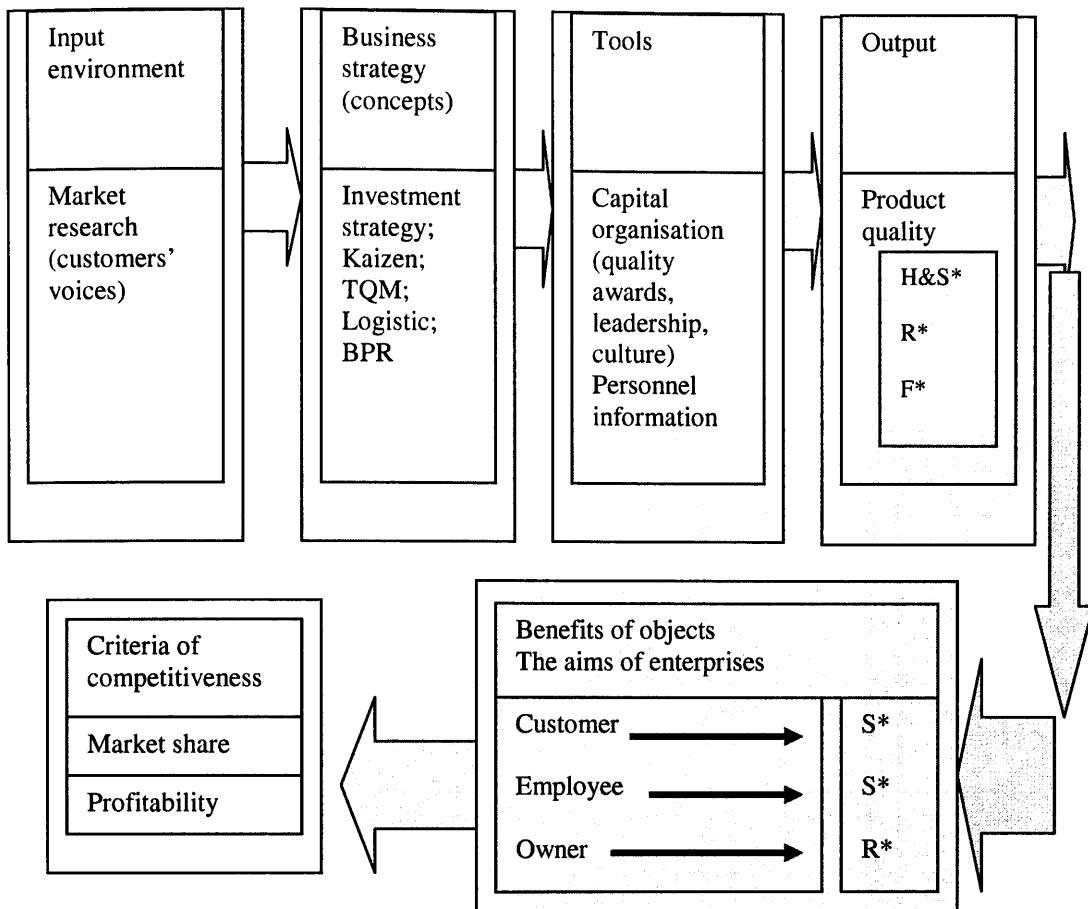
(Source: EFQM, 1997)

4.7.3. Self-assessment tools: Quality awards

There are different tools that have been developed in order to be used for self-assessment. The most well known of these are the different sets of criteria for different quality awards, such as the Malcolm Baldrige National Quality Award (MBNQA) and the European Quality Award (EQA) (Svensson and Klefsjo, 2000). The essence of these awards is that quality improvement has to be seen in its relationship to the total strategy of the business, where quality is an integral part of the company strategy (Lisiecka, 1999). Therefore, strategic planning is seen as a method of management which, enables improvement of effectiveness, flexibility, and competitiveness of company activities (Lisiecka, 1999). As Figure 4.13 reveals that the strategy of management through quality must be inspired by the environment, from which the manufacturer or the producer should listen to consumers' voices and respond to them, and should generate the increase of the company's activities and customer satisfaction through increased efficiency.

These quality awards place a greater stress on the management of the process and they are used to identify which companies have used the best TQM practices (Chittenden et al., 1998) and are commonly adopted as a means of recognising the achievement of TQM (Pun et al., 1999). They can assist and diagnose the state of their improvement process and in providing indicators of how to achieve excellence (Puay et al., 1998). Moreover, these awards are introduced to assist industries in improving their competitive edges (Pun et al., 1999). Jager (1996) indicated further that quality awards can be seen as the starting point for a regular strategic or operational planning process within the company and ensure continuous improvement.

Figure 4.13: Model of business strategy



Key

S* = Satisfaction

S* = Job security

R* = Return on investment

H&S* = Health & Safety

R* = Reliability

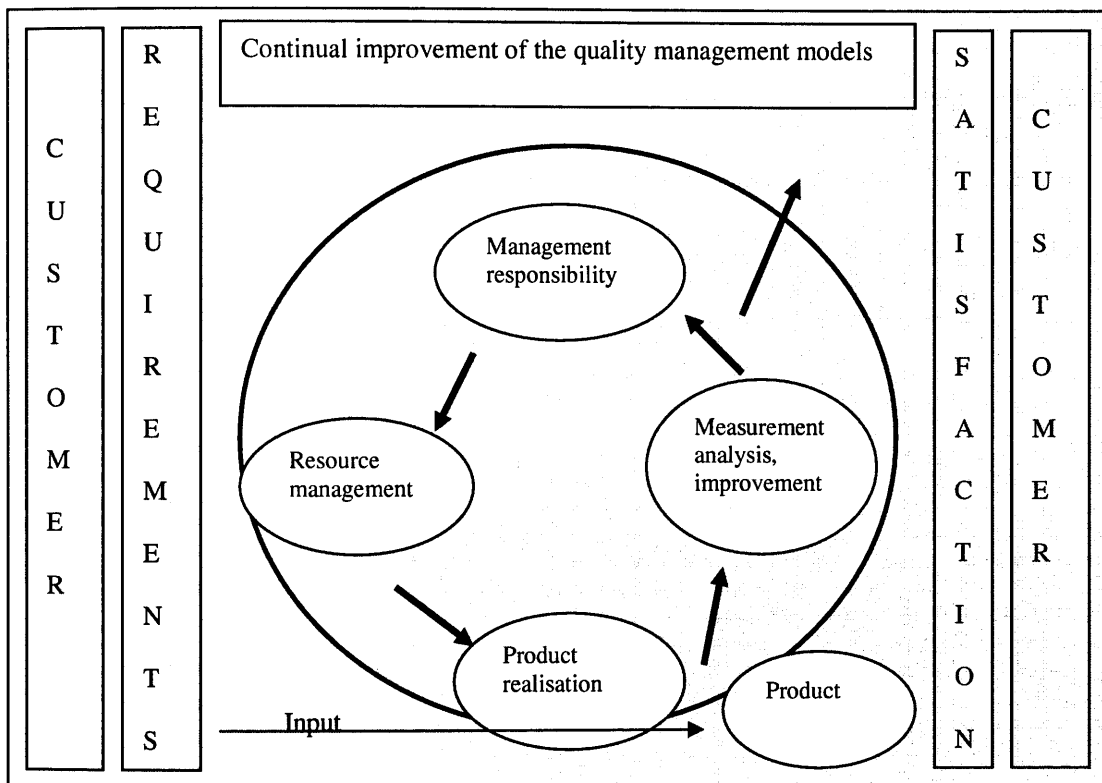
F* = Functionality

(Source: Lisiecka, 1999, p. 43)

Quality awards enable managers to appraise their own progress and performance against a framework of recognised criteria and to help their organisations to remain competitive and achieve business excellence. The implementation of these awards enables organisations to achieve the goals and objectives (Woon, 2000). It also provides consistency and satisfaction in terms of methods, materials, and interacts with all activities of the organisation, beginning with the identification of customer requirements and ending with customer satisfaction (Anderson et al., 1999). As Figure 4.14 reveals that customers play a significant role in defining requirements as

inputs, and it is important to examine customer satisfaction to see whether customer requirements have been met. While, Jager (1996) concluded further that each organisation applying for a national award gains tremendous value in the form of strengths and areas for improvement being assessed and the awards provide a mirror for organisation's commitment to TQM.

Figure 4.14: Importance of customers among quality management models



(Source: Department of Trade and Industry, 2001, p. 3)

4.7.4. The European Quality Award (EQA)

The EQA was developed by the European Foundation for Quality Management (EFQM) in 1992 to accelerate the acceptance of quality as a strategy for global competitive advantage, to assess the development of quality improvement activities and to recognise companies which excel in business excellence (Samuelsson and Nilsson, 2002). The main aim of the development of EQA was to make European

organisations more competitive through the application of TQM (Jackson, 2000), the award having been developed for measuring and improving management standards and corporate performance (Keating and Harrington, 2002).

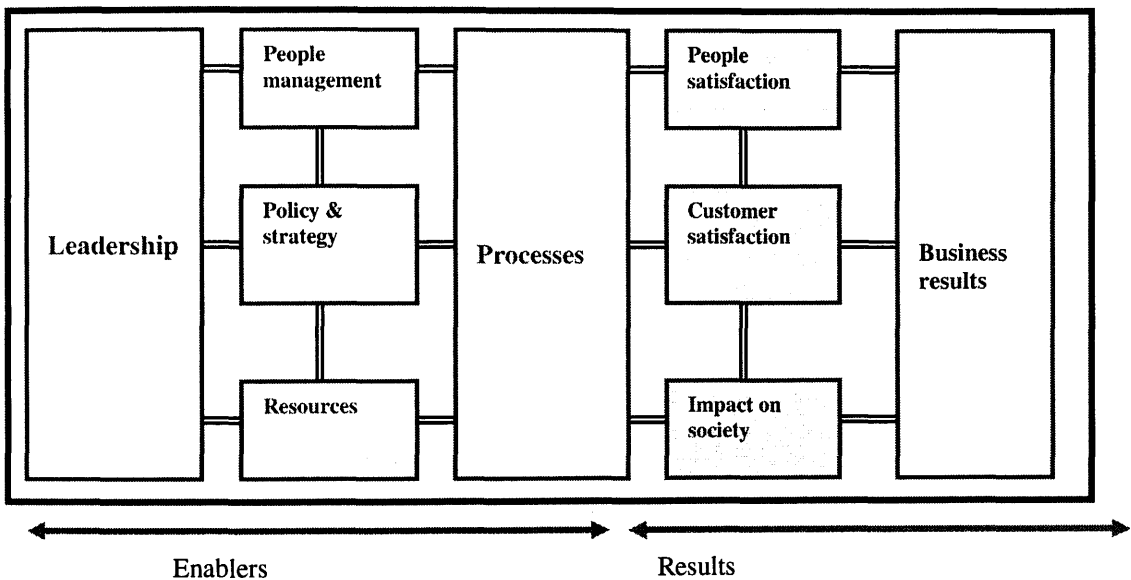
The model provides a framework to enable organisations to assess themselves and to identify any opportunities for improvements (Moeller et al., 2000). The model is based on the concepts of TQM and concentrates on enabling organisations to achieve continuous improvement and customer satisfaction (Miguel, 2001). Bendell and Goodstadt (1998) reported that the award provides an opportunity for integrating TQM into normal business activities due to its strong business orientation. The award is now known as the Business Excellence Model (BEM) (Dahlgaard and Dahlgaard, 1999) and it consists of nine criteria (see Appendix B Table B5 for descriptions) as follows:

- (1) Leadership
- (2) Policy and strategy
- (3) People (employee) management
- (4) Resources
- (5) Processes
- (6) Customer satisfaction
- (7) People (employee) satisfaction
- (8) Impact on society
- (9) Business results

Below these nine headings there is a total of 32 sub-criteria against which organisations should analyse their activities (Moeller et al., 2000). The dynamic relationships among these nine criteria can be seen in Figure 4.15. These nine constructs describe the processes and the people including the leadership, people management, policy and strategy, resources and processes categories as the enablers that will accomplish the results, which include customer satisfaction, people satisfaction, impact on society and business results.

Williams et al. (1999) indicated that The EFQM has renamed some of the EQA constructs to reflect the reengineering of the 32 sub-criteria beneath them. The five enablers are: leadership; policy and strategy; people (formerly people management); partnerships are resources (resources); and processes. The results are: customer results (customer satisfaction); people results (people satisfaction); society results (impact on society); and key performance results (business results).

Figure 4.15: The European Quality Award



(Source: Wiele et al., 1997, p. 237)

Tummala and Tang (1996) indicated that the EQA has a certain number of points for each of the nine criteria as shown in Table 4.12. They indicated further that the maximum total of up to 1000 points is allocated to the nine criteria, each criterion carrying a different number of points in accordance with its relative value within the award.

The EQA is awarded to organisations which demonstrate excellence in the management of quality and the use of TQM as the basic process for realising continuous improvement (Ghobadian and Speller, 1994). The award winners must demonstrate that their total quality programmes have made a significant contribution to enabling them to meet expectations and satisfy customers, employees and others with an interest in the organisation (Ghobadian and Woo, 1996). The examination process consists of three main sections, namely initial assessment, site visits, and final review and decision.

Table 4.12: Criterion values and percentages

Criterion point	Value	Percentage (%)
1.0 Leadership	100	10
2.0 People Management	90	9
3.0 Policy and Strategy	80	8
4.0 Resources	90	9
5.0 Processes	140	14
6.0 People Satisfaction	90	9
7.0 Customer Satisfaction	200	20
8.0 Impact on society	60	6
9.0 Business results	150	15
Total points value	1000	100

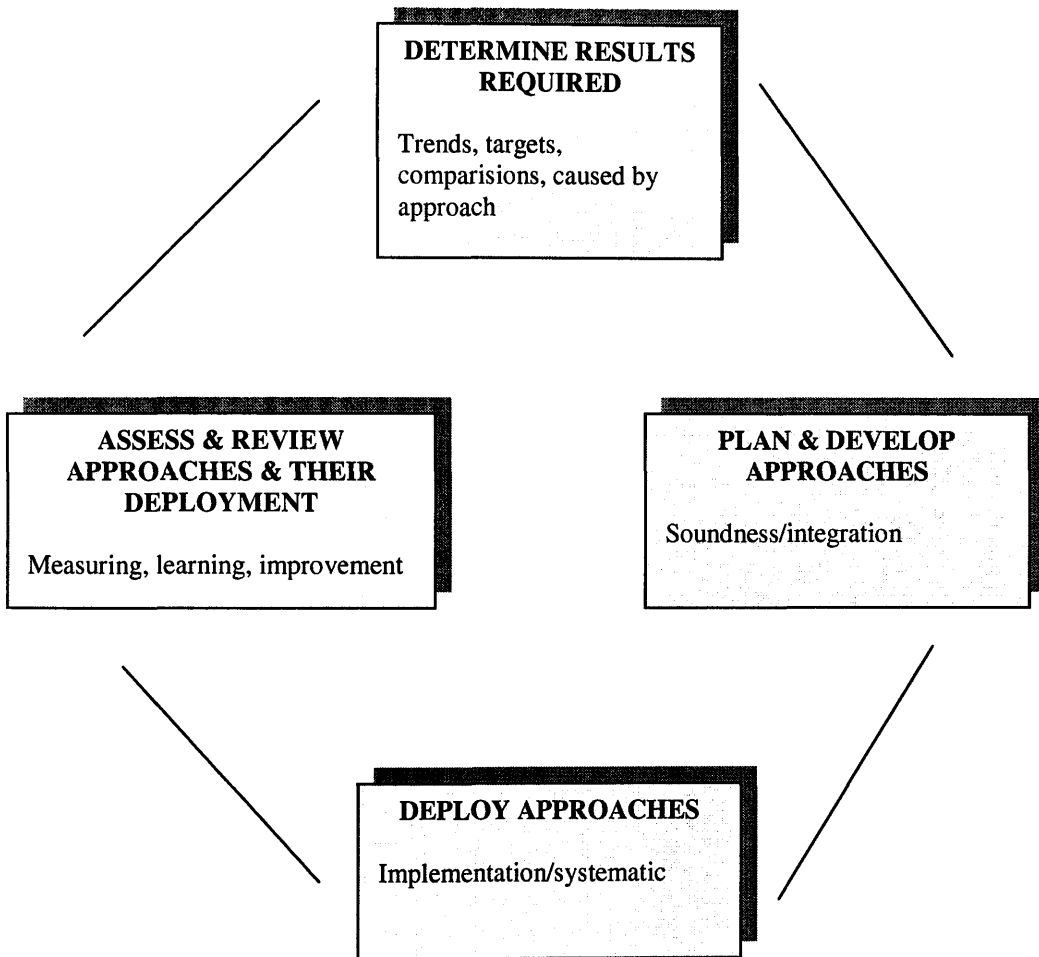
(Source: Tummala and Tang, 1996, p. 23)

At the heart of the EQA is RADAR, which consists of four elements, results, approach, deployment, assessment and review (see Figure 4.16). An organisation's need to:

1. Determine the results it is aiming for as part of its policy and strategy making process. These results cover the performance of the organisation, both financially and operationally, and the perceptions of its stakeholders.
2. Plan and develop a set of approaches to deliver the required results, both new and in the future.
3. Deploy the approaches in a systematic way to ensure full implementation.
4. Assess and review the approaches followed based on monitoring and analysis of the results achieved and on ongoing learning activities.

Based on figure 4.15 and the above four points, it is important to identify, prioritise, plan and implement improvements where needed. The EQA places a high emphasis on organisations measuring relative performance to external organisations and benchmarks as a basis for reviewing and defining targets for continuous improvement of process.

Figure 4.16: The RADAR logic

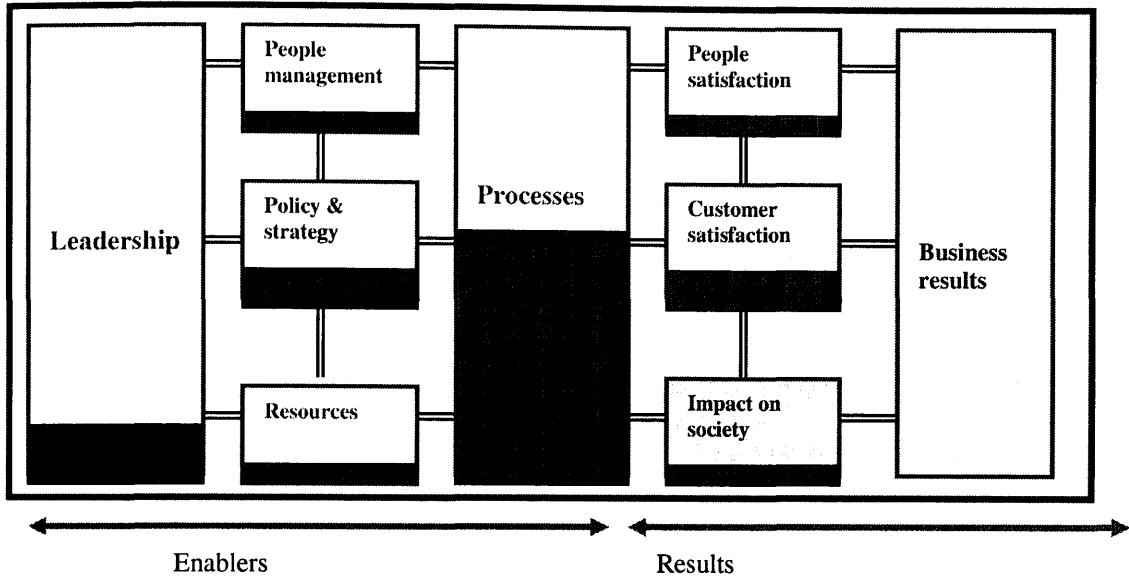


4.7.5. ISO 9000 and The EQA: A critique

Porter and Tanner (1996) highlighted a gap between ISO 9000 and TQM quality award (EQA) through a detailed analysis of the key differences between ISO 9000 and the EQA (see Figure 4.17). Figure 4.17 highlights the differences between ISO 9000 and the EQA, which revealed that the main area addressed by ISO 9000 is in the

processes criterion. ISO 9000 covered about 50% of the actual content of the processes criterion within the EQA (known as a medium impact), and it is demonstrated clearly in Table 4.13.

Figure 4.17: European business excellence model and ISO 9000 comparison



Key

■ Covered by ISO 9000

(Source: Porter and Tanner, 1996, p. 49)

Table 4.13: Matrix showing the impact of ISO 9000 on the parts of the EQA criterion processes

Processes criterion parts		ISO 9000
5a	<i>How processes critical to the success of the organisation are identified.</i>	None
5b	<i>How the organisation systematically manages its processes.</i>	Strong
5c	<i>How process performance measurements, along with relevant feedback, are used to review processes and to set targets for improvements.</i>	Medium
5d	<i>How the organisation stimulates innovation and creativity in process improvement.</i>	Weak
5e	<i>How the organisation implements process changes and evaluates benefits.</i>	Medium
AVERAGE FOR CRITERION		MEDIUM

(Source: March, 1995, p. 15)

Russell (2000) demonstrated that inspection and testing, conformance and documentation are important elements in planning and implementing an effective documented quality system that satisfies ISO 9000. However, these elements are not important in satisfying the EQA and they tend to be replaced by prevention in demonstrating excellence in quality of products and services (Tummala and Tang, 1996).

The EQA places emphasis on delivery of improved value to customers and improvement of the overall operational and financial performance (Wiele et al., 1997). On the other hand, ISO 9000 focuses only on conformance to specified requirements to satisfy the organisation's documented quality system (Tummala and Tang, 1996).

The major objectives of the EQA are to promote quality awareness, understanding of the requirements of excellence in quality and to recognise companies for outstanding quality management and achievement (Tummala and Tang, 1996). While, the purpose of ISO 9000 is to implement an effective quality system to conform to specified product and service requirements (Porter and Tanner, 1996).

Based on the work undertaken by Porter and Tanner, they provided a good summary of the key differences between ISO 9000 and the EQA, and they stated (p. 49) that *comparing the concept of both ISO 9000 and the European business excellence model, it is important to recognise that ISO 9000 only covers the organisation's quality management system while the European business excellence framework addresses the total quality orientation of the whole organisation...The ISO 9000*

standards primarily address limited areas of the enabler side of the European business excellence framework. The standards give very little weight to areas that directly impact on business or organisational effectiveness. In contrast, the European business excellence framework addresses all areas that are generally recognised as important for the overall success and continuous improvement of the organisation.

To conclude, the EQA has been identified as a broader and more far-reaching than the ISO 9000 standard, with ISO 9000 tending to fall short of quality management in terms of focusing on and implementing quality improvement strategies to satisfy consumers and improvement in organisational operational performance (Tummala and Tang, 1996). But this does not mean that ISO 9000 is not desirable, especially as it has a stronger emphasis on addressing process control than the EQA. Therefore, Porter and Tanner (1996) suggested that the EQA criteria and the ISO 9000 requirements tend to complement each other.

4.8. TQM TOOLS AND ORGANISATIONAL PERFORMANCE

4.8.1. General observation

Many organisations are employing quality awards and standards to document and implement quality assurance practices and verify continued compliance (Wiele et al., 1997), in order to measure their improvement progress and potential (Curkovic et al., 2000). The implementation of these quality awards and standards tend to help achieve continuous improvement, competitive advantage and better quality products and/or services (Santos and Escanciano, 2002; Pun et al., 1999). Tari and Molina (2002), and Lee and Quazi (2001) concluded that there is a strong positive relationship between TQM tools and organisational performance. It is for this reason

that the performance of EQA and ISO 9000 will be evaluated in order to identify their applicability.

4.8.2. ISO 9000 and organisational performance: An overview

There are an increasing number of ISO 9000 certified companies across many public and private sectors in the economy (Ho, 1999). The UK accounts for the highest number of organisations out of the total number of ISO 9000 World-wide registrations (Chan and Metcalfe, 2000). Organisations are implementing ISO 9000 standards to achieve improved quality and efficiency, improved communication, achieve competitive advantage, an increase in market share, reduced costs and a higher stock price (Tari and Molina, 2002; Santos and Escanciano, 2002; Najmi and Kehoe, 2001; Curkovic and Handfield, 1996). Gupta (1997) further suggested that shareholders might benefit from the ISO 9000 registration process, which demonstrates management commitment to quality. Withers and Ebrahimpour (2001), and Gotzamani and Tsiotras (2001) also concluded that the increase in perceived quality should result in new customers, increased sales and reduced operating costs.

A number of recent studies have examined the effect of the implementation of ISO 9000 on organisational performance and suggested that the adoption of ISO 9000 has been justified in terms of the many benefits associated with its implementation (Tari and Molina, 2002; Heras et al., 2002; Casadesus et al., 2000; Singels et al., 2001; Zhu and Scheuermann, 1998). Dick et al. (2002) demonstrated that the implementation of ISO 9000 can help companies to enhance quality. While Leung et al. (1999) supported this with providing the different benefits derived from an ISO 9000 system, such as business, operational and staff benefits (see Table 4.14 for more details).

Heras et al. (2002 and 2000), Jones et al. (1997), and Beattie and Sohal (1999) pointed out that organisations with ISO 9000 systems have managed to achieve continuous enhancement and improvement and better-run organisation.

Table 4.14: Benefits of the ISO 9000 system

Benefits to staff	Benefits to operations	Benefits to business
Improved team spirit	Reduced wastage of materials	Increased sales with existing customers
Clearer working procedures	Shorter delivery lead time	Allocated more new local customers
Less staff conflicts	Increased efficiency	Received less complaints
Lower staff turnover rates	Improved quality of product/service	Increased profits
Received more suggestions from staff	Acquired a better control of subcontractors	Attracted more new overseas customers
	Reduced operational costs	Customers exercised less control on your process
	Increased quantity of production	

(Source: Leung et al., 1999, p. 685)

Struebing (1996) also demonstrated an increase in operational efficiency, increased employee motivation and reduced costs, while Zhu and Scheuermann (1998), Augustyn and Pheby (2000) and Zhang (2000) reported that registered firms tended to achieve improvement in employee morale and personal accountability for job performance as a result of employees understanding their role in the total process. Institute of Quality Assurance (IQA, 1991) concluded that 75% of the sample that they investigated had experienced improvements in product and service quality through the implementation of ISO 9000.

Recently, Wayhan et al. (2002), Aarts and Vos (2001), Rao et al. (1997) and Buttle (1996) concluded that the most important benefits sought from ISO 9000 are profit improvements, process improvements and marketing benefits. The London Chamber of Commerce (1994) reported that 74% of service firms and 57% of manufacturing ones believed that ISO 9000 had increased their competitive advantage. Lee et al. (1999) indicated further that most of organisations investigated were happy with the benefits derived from ISO 9000, supporting these studies further. In particular, a high percentage of the companies had agreed with the following benefits having been achieved: clearer work procedures (96%), improved quality of products and services (88%), improved team spirit (77%), a better control of subcontractors (73%), increased efficiency (65%), and fewer customer complaints (62%).

Enhanced customer satisfaction as a result of ISO 9000 implementation will lead to increased orders, competitiveness and ultimately profitability (Tari and Molina, 2002; Escanciano et al., 2001; McAdam and Canning, 2001). Tan and Lim-Teck Sia (2001) investigated the benefits of ISO 9000 among a sample of 100 Malaysian companies and found a number of benefits: improved communication within the organisation (78%), meet customer expectation (75%), greater customer satisfaction (75%), improved product quality (63%), increased process efficiency (53%), improved human resource management (41%), reduction in production costs (31%), increased market share (12%) and improved export potential (12%). Similar results were found in Turkish firms after two years of ISO 9000 implementation (Beskese and Cebeci, 2001). The implementation of ISO 9000 is regarded as a stepping stone towards TQM (Ho, 1999; Zhang, 2000; Rahman, 2001). It is a necessary component for achieving

business excellence (Lee, 2002; Quazi et al., 2002; Gotzamani and Tsiotras, 2002; Terziovski, 1997).

Chittenden et al. (1998) suggested that a quality management system such as ISO 9000 would be appreciated by the service sector. As Bell et al. (1994, p. 38) added, *the quality assurance standards might appear to be solely applicable to manufactured items. However, many of the criteria also relate to service industries.* ISO 9000 adoption by services has lagged considerably behind the manufacturing industry (McAdam and Canning, 2001). In a survey Taylor (1995) found that ISO registration was highest in manufacturing, dropping successively across services, retailing and public sector organisations. Chittenden et al. (1998), three years later, found the same results. Bhuiyan (1998) in Saudi Arabia found that most organisations, regardless of TQM implementation level had been certified and this was particularly so for the manufacturing sector rather than the service sector. Al-Khalifa and Aspinwall (2000) investigated quality practices in one of the Arab countries (Qatar) and found that more manufacturing firms were ISO certified than other companies. Prabhu et al. (2000), and Agus and Abdullah (2000) supported these studies. Therefore, ISO 9000 standards were more appealing to manufacturing firms than businesses operating in services.

ISO 9000 has attracted a considerable amount of criticism for a number of different reasons: first, the emphasis on developing appropriate procedures is not necessarily linked to an understanding of quality in terms of sophistication of products and/or services, working environment or management practices (Boon and Ram, 1998). Yong and Wilkinson (2001) concluded that the importance of the ISO 9000 badge lay

in its use as a marketing device. Second, the emphasis on procedures tends to generate increased bureaucracy, which represents the very antithesis of flexibility and responsiveness, positive concepts embraced by the TQM philosophy (Abraham et al., 2000). Finally, ISO 9000 does not necessarily require more enlightened worker management practices (Terziovski et al., 1995; Abraham et al., 2000). Despite claims that ISO 9000 often creates improvements in training, North et al. (1995) found that few firms were involved in any systematic process of deepening employees' skills.

Reedy (1994) claimed that ISO 9000 was not focused primarily on control of product quality, while Sun (1999) added that the quality assurance rules in ISO 9000 standards have been used in the USA for more than 25 years with little, if any, improvement in quality and safety. Avery (1995) concluded that ISO 9000 has the potential to destroy a competitive position in the international market if it was not properly implemented. The lack of management commitment would contribute to ISO 9000 failure. As Taylor (1995, p. 42) emphasised that: *Factors such as the lack of effective (organisational) commitment on the part of senior executives may be influencing ISO 9000 implementation outcomes and contributing to its criticism.*

ISO 9000 registration ensures that a quality system is in place, but provides no absolute measure of quality results or customer satisfaction (Curkovic and Handfield, 1996). ISO 9000 is not positively related to customer satisfaction (Terziovski et al., 1995), and this view shows that ISO 9000 certification provides a poor explanatory variable of customer satisfaction (Abraham et al., 2000). It has also been suggested that ISO 9000 is more of a qualitative standard than a quantitative one and this can be supported by its limitations in terms of performance measurement and indicators and

the lack of its relationship to business results (Lee et al., 1999). Further, Lee (1997) indicated that measurement is an important means for a company to identify its position in relation to its own past performance and that of its competitors.

Another criticism of the ISO 9000 standards is that they tend to provide indicators that a supplier has complied with process requirements, but they do not guarantee that the supplier produces quality products and/or services that actually meet customer requirements (Singels et al., 2001; Abraham et al., 2000). There have been further, related, criticisms along the lines that many companies become registered simply to gain a marketing edge rather than through any interest in improving quality (Abraham et al., 2000). In recognising this view, The Manchester Business School (1995, P. 8) argued that *those most satisfied with impact of quality systems had sought the standard in order to improve management control and enhance customer service. Those least satisfied with the standard had been motivated much more by pressure to keep existing customers and to use ISO 9000 as a promotional tool.*

Organisations wishing to implement ISO 9000 should be aware of the associated problems and difficulties during the implementation of the standard. Carlsson and Carlsson (1996) identified the difficulties experienced in implementing ISO 9000. They are time and resource-consuming, difficulties in interpreting the standard, cumbersome and bureaucratic documentation, initial difficulties in making the quality system understood and accepted, difficulties in setting relevant quality goals, difficulties in communicating the message, and difficulties in securing employee commitment. Moreover, Curkovic and Handfield (1996) stated that the lack of strong senior management involvement, resistance or bad attitude from the staff, insufficient

quality training to staff, and engineers who are trained to look for quality and are often not convinced that ISO 9000 is the best way to do so, were the difficulties in implementing ISO 9000. Beskese and Cebeci (2001) suggested further that controlling the standard documentation, changing the existing culture and systems, understanding the requirements for standardisation were the most difficulties found in Turkey. These problems were also cited by companies in Hong Kong (Lee et al., 1999).

There has been a widely held view that ISO 9000 is weak on continuous improvement (Pun, 1998) and it has been suggested that reliance solely on ISO 9000 registration is not sufficient to sustain competitive advantage (Pun et al., 1999; Lee et al., 1999). The implementation of ISO 9000 also may discourage creative and critical thinking, because employees are forced to work according to well-described procedures and rules (Lee et al., 1999). Moreover, Imberman (1999) stressed that the implementation and the positive performance of the ISO 9000 standards are associated with increased costs in one or more of the following areas: achievement and maintenance of certification, increased operating costs due to process improvements, and marketing and distribution in new territories requiring new language and logistics skills. However, Leung et al. (1999) concluded that most organisations have reported that overall benefits of certification out-weigh the costs and that the resources required for the certification exercise were low or reasonable.

4.8.3. ISO 9000 and organisational performance: A critique

As it can be seen from the above section that there are many studies reporting expectations of increased market share and improved product quality from ISO

certification (for example, Ebrahimpour et al., 1997), and there are far fewer empirical studies on the business performance benefits actually achieved. The UK research of Mann and Kehoe (1994) noted that quality certification was associated with improved business performance at the operational level, while Buttle's (1996) survey of 1220 certified UK companies found that improving operations as well as marketing gains were claimed by most of the firms following quality certification. However, the large-scale descriptive studies of Lloyed's Register of Quality Assurance Ltd (1993), and Breka (1994), report that the greatest gain from quality certification is widening market opportunities rather than improvements in quality itself.

In contrast to the studies reporting business benefits, Batchelor's (1992) study of over 600 registered UK firms, found that only 15 percent of firms achieved gains from quality certification. These benefits were largely internal, such as reduction in error rates and procedural efficiency, rather than external dimensions such as market share. This is supported by Terziovski et al. (1997) whom found that quality certification had no significant, positive relationship with business performance. They noted that the principal motivation for ISO certification was the ability of the certificate to open customers' doors that were previously closed. Seddon's (1997) case study research in the UK goes further to suggest that if ISO 9000 has any effect on performance, then it is negative. However, it appears that few studies report the full range of benefits as suggested in Table 4.17. Could this be due to organisations reacting to external pressure to be certified?. Some studies have suggested that when firms are reacting to external pressure for certification they may see the certification as the prime objective and adopt a minimalist approach to achieve it (Gore, 1994). These organisations may possess quality certification but they do not value the quality assurance system that

quality certification requires so that they will achieve limited benefits. Support for this proposition is found in the Science and Engineering Policy Studies Unit's (1994) study, which reviewed 28 surveys relating to ISO 9000. It concluded that there appears to be a relationship between managers' motives for adopting certification and gains achieved in business performance. Companies that cited customer pressure as their reason for pursuing certification were less likely to report improvements than those who gave other reasons for adopting quality certification. These studies infer that the motive for seeking certification is an important predictor of performance.

Based on the above discussion, it is clear that the implementation and the impact of ISO 9000 can vary from organisation to organisation and from country to country. This is supported through the fact that ISO has been viewed in different ways: as a means to improve organisational quality (Singels et al., 2001); as a way to achieve competitive advantage (Casadesus et al., 2000); as a way to increase sales through a better quality image (Leung and Chan, 1999); as a step forward towards customer satisfaction (Gano, 2001; Conti, 1999); as a way for organisations to enter the knowledge age of this century (Tsim et al., 2002); and by fulfilling customers' requirements, as necessary response to competitive pressure (Leung and Chan, 1999; Lee et al., 1999). However, organisations have to be aware of the associated problems with the implementation of the certificate, in order to balance between the benefits achieved and the problems and identify whether the certificate is the right route for them.

4.8.4. The European Quality Award (EQA) and performance

The EQA has been identified to be the most popular for self-assessment purposes in Europe (Porter and Tanner, 1996; Jackson, 1999). More than two thirds of European organisations practising self-assessment were recently using the EQA (McAdam and Welsh, 2000; Stone and Banks, 1996).

The EQA is being used by different organisations in a wide range of sectors because of its popularity and to the substantial benefits which can be derived from its implementation (Dwyer and Keating, 2001; George et al., 2001; Jackson, 1999; Moeller and Sonntage, 1998). All the organisations which have adopted the EQA have experienced an improvement in corporate performance, achieved employee satisfaction, customer satisfaction, higher productivity and improved profitability (Ernest Osseo-Asare and Longbottom, 2002; Adebajo, 2001; Stahr, 2001; Harr, 2001). Moreover, Dwyer (2002), and Oakland and Oakland (1998) reported that the implementation of the EQA in organisations tends to achieve effective people management, which leads to employee and customer satisfaction. MacLeod and Baxter (2001) concluded that the EQA model can be used to recover failed initiatives and to help create quality focused organisation, while, Leonard and McAdam (2002), Seghezzi (2001), and O'Brien and O'Hanlon (2000) stressed the importance of the EQA for achieving organisational performance and excellence.

Porter et al. (1998) investigated 215 organisations in 19 countries across Europe, which had implemented the EQA. They showed that the organisations surveyed had achieved sustained high levels of performance in customer and people satisfaction, market share, revenue growth and operating profits. Kristensen et al. (2000), and

Eskildsen et al. (2001) reported that the implementation of the EQA had enabled organisations to achieve quality improvements, which had led to better financial performance. Further, Ittner and Larcker (1995) demonstrated that the EQA model had contributed to increasing customer satisfaction and loyalty. Camison (1996) found that the EQA model has been used in hospitality organisations in Spain and it contributed in achieving customer satisfaction and organisational performance.

The implementation of the EQA has proved to be effective and this can be seen from the following examples: Mason (1997) reported that United Utilities had implemented the EQA at the beginning of 1993 and that it had managed to achieve better employee satisfaction and an increase of 85% customer satisfaction level which led to better financial performance. Moreover, Maisey and Pupius (1997) reported on the Royal Mail's journey to excellence through the implementation of the EQA. They revealed that the Royal Mail quality of service for first class mail had risen from 75% to 93% in 1994. A study by Azhashemi and Ho (1999) reported that Mortgage Express which was formed in 1986 as a subsidiary of the TSB Bank, had implemented and won the award. The company (Mortgage Express) had managed to achieve high quality customer service, continuous service improvement, highly motivated staff, strong lines of internal communication, a better understanding of consumer needs and a clearer identification of the needs of potential customers. The Director of the company considered this more in terms of survival than success.

The EQA is being used by a substantial number of organisations throughout Europe, such as many in the public and health care sectors (Ernest Osseo-Asare and Longbottom, 2002; Stahr, 2001; Jackson, 1999). The EQA was recognised by the

Conservative Government and it was announced that the model would be used in the Civil Service Executive agencies (Heseltine, 1996). The implementation of the EQA in the public sector has proved to be effective, with the following benefits resulting: service improved by better-qualified and motivated staff; improved communication and supplier performance (Erridge et al., 1998). Therefore, the model is seen to be popular in public services and is used as a means of focusing improvement activities in line with the organisations needs.

The implementation of the EQA in health care has proved to be an ideal mechanism for supporting the delivery of clinical governance, especially when the aim is for quality to become the driving force behind decision-making at every level of the service (EFQM, 1999). Jackson (2000) reported that the implementation of the EQA in the Health Service Circular (HSC) had managed to identify 68 areas for improvement and 205 results areas with the potential for stifling enthusiasm. In particular, Jackson (2000) highlighted that the management team in the Health Service Circular had started to recognise that they had been working without a clear vision, targets or a sound performance measurement system and that their behaviour had begun to change for the better. The model has proved to be an adaptable model which has supported the development of a tailor-made clinical governance assessment tool for achieving quality service (Holland and Fennell, 2000). Naylor (1999) highlighted the importance of the EQA within Bolton Hospitals NHS Trust in the UK. The EQA model was recognised as accelerating and enhancing public service in health care.

4.9. TQM and organisation size

4.9.1. General observation

The above sections clearly suggested that TQM had been advocated as being universally applicable to organisations. The introduction of the EQA and ISO 9000 had reinforced the universal profile of TQM practices. However, this view has been tempered by numerous reports in the literature of problems in implementing TQM (e.g, Sousa, 2003). The proponents of the universal view of TQM would argue that these implementation difficulties are part of moving an organisation towards quality, but an alternative explanation is that those difficulties result from too great a mismatch between the proposed form of TQM and the organisational context, e.g., organisational size. Rigorous academic studies have started to question the universal validity¹¹ of TQM by addressing the influence of the organisational context (Sousa and Voss, 2002; Struebing and Klaus, 1997). Of those, only a few studies directly and rigorously addressed this issue within an explicit use of contingency theory¹², all of them suggesting that the effectiveness of TQM practices is contingent on the organisational context. Relevant contextual variables include managerial knowledge, corporate support for quality, external quality requirements and product complexity (Benson et al., 1991), international competition (Das et al., 2000), firm size, capital intensity, degree of diversification, timing of TQM implementation and maturity of TQM program (Hendricks and Singhal, 2001; Kelly, 1992; Starbuck, 1985). Therefore, it is important to adopt contingency theory¹² to investigate the applicability

¹¹ This means that all companies, irrespective of size, market structure, strategic positioning and products, may use the same TQM tools in their quality work.

¹² Contingency theory represents a departure from the classical and human relations schools of management and teaches that the structure and behaviour of any organisation is based on certain situational factors (contingency variables) (Neergaard, 2002).

of TQM in SMEs, as companies operate under different contextual conditions, and the TQM system must therefore be adapted accordingly.

The contingency approach is pragmatic rather than dogmatic, rather than searching for universally valid principles, the approach suggests it is more appropriate to identify what works best in a particular situation, for example in SMEs. Contingency theory developed the idea of a spectrum of organisational structures ranging from mechanistic to organic. Mechanistic organisation was appropriate for carrying out routine tasks in a stable market but that organic structure was more capable of absorbing change.

4.9.2. TQM in SMEs

Small and medium sized firms have embarked on TQM for a variety of reasons. Shea and Gobeli (1995) cited some of the motives reported by a group of small companies, which they investigated. Those motives were as follow:

- Promotion of growth, it is easier to convince the company's bankers to invest in them if there is evidence that the organisation is well run;
- Management belief in the principle of customer satisfaction and employee empowerment which reflects the management style supporting TQM;
- Changing customer expectations even for organisations seen to be doing well (competitive issue);
- Making work more enjoyable; and
- To improve poor company performance if the company is not doing well (survival issue)

The above reasons seem to point in the same direction to business improvement. Increasing profits is an important issue especially for SMEs. SMEs must understand and realise that improvements in their business and in other aspects such as the working environment are vital for survival. Brown (1993) reported on a case study in

a small company whose reason for adopting TQM was to develop a new culture as well as management's desire to return the company to profitability. However, Ghobadian & Gallear (1996) reported that one of the companies investigated cited trying to overcome internal problems such as poor delivery performance, quality related problems caused by a narrow functional approach and poor financial returns as the prime reasons for adopting TQM. They reported further that the introduction of TQM in SMEs had helped to sharpen SMEs market focus, to become more efficient, to harness their human resources better, and to improve their competitiveness.

Most of the literature on quality awards is based on the experiences of large organisations (Rahman, 2001; Sturkenboom et al., 2001; Boon and Ram, 1998; Nwankwo, 2000). Many of the insights into SMEs have been based on anecdotal evidence (Meyer, 1998), with the implication that the lessons derived will be equally applicable and useful to SMEs (Holliday, 1995). In other words, TQM principles are assumed to be applicable to all organisations (Wilkinson and Wilmott, 1995). This runs the risk of neglecting the importance of SMEs, and the working lives of increasing numbers of people (Storey, 1994). It also ignores the potentially distinctive management processes that are thought to prevail in SMEs, such as informality, employee relations and learning (Hendry et al., 1995). There has evidently been a little appreciation of the role of quality in the strategic growth of SMEs over the 1980s (Small Business Research Trust, 1994), and a low adoption of TQM (Kuratko et al., 2001; Armitage, 2001).

The UK's SMEs have been slow to adopt formal quality assurance procedures and TQM (Armitage, 2002; Armitage, 2001; Ghobadian and Gallear, 1997). A Lloyds

Bank and SBRT survey showed that most SMEs in the UK lacked the use of quality approaches (Lloyds Bank and SBRT, 1994). An earlier survey by NatWest and SBRT showed that only a very few micro and small firms were actively considering the introduction of ISO 9000 (NatWest and SBRT, 1992). A survey of 115 manufacturing organisations showed that, by comparison, large organisations were three times more likely to implement TQM than SMEs (Armitage, 2002). However, the economic recession of the early part of the 1990s provided a sort of rude awakening and helped to focus attention on the imperatives of quality management in the SMEs business sector (Nwankwo, 2000).

SMEs have been coming under pressure to improve the quality of their products and/or services (Sturkenboom et al., 2001). Buttle (1996) has suggested that quality awards have grown in popularity, as they are perceived as a credible route to a quality orientation. Quality awards are widely considered as the important cause of successful differentiation and positioning, as well as a key ingredient in successful organisational transformation (Nwankwo and Richardson, 1996). The focus on SMEs is undoubtedly due to its importance to the economy and the attendant implications for the continued growth of entrepreneurship and national competitiveness (Nwankwo and Obidigbo, 1999). There is however a debate as to whether these awards have facilitated truly quality- responsive organisational systems, one which remains unsettled as many studies have continued to produce mixed results (Buttle, 1996; MacDonald, 1998; Seddon, 1998). Further, the issue of whether quality methods can be used effectively by SMEs remains uncertain (MacDonald, 1998), and relates to the characteristics of SMEs (Husband and Mandal, 1999).

4.9.3. Characteristics of small and medium-sized firms

TQM principles tend to be more appropriate to the needs of large organisations than to SMEs (Ghobadian and Speller, 1994). Price and Chen (1993) argued that the quality management systems implemented in large companies are not well suited to SMEs unless certain changes are made. This is because there are significant differences between SMEs and large organisations, which will have effects on the planning and implementation of quality management concepts (Rehman, 2001; Ghobadian and Gallear, 1997).

SMEs do not behave in the same way as large organisations. The latter are more complex in their structure and the level of departmentalisation and specialisation (Ghobadian and Gallear, 1997). SMEs are simple in terms of decision-making, structure, systems and procedures (McAdam and Kelly, 2002; Culkin and Smith, 2000; Wiklund and Wiklund, 1999). Large organisations are bureaucratic, rely on more formalisation to achieve co-ordination, (Vossen, 2001; Wiklund and Wiklund, 1999). SMEs are more likely to have organic structures, which involves less standardisation and looser and more informal working relationships (Ghobadian and Gallear, 1997; Yusof and Aspinwall, 2000). Burns and Stalker (1961) found that bureaucratic structures worked better for organisations operating in stable environments but not so well in changing environments where the key to survival lay in the ability to innovate and to adapt rapidly.

SMEs can normally operate with one manager, while there are different layers of management in large organisations (Vossen, 2001). This indicates that higher-level managers tend to be removed from points of delivery. They may lack deep

understanding of operational issues, customer needs and quality difficulties, unless they make a point of observing and experiencing the situation at points of delivery (Ghobadian and Gallear, 1997). They tend to lack visibility and to face difficulties in organising communications and providing leadership (Vossen, 2001).

Culkin and Smith (2000) suggested that SMEs tend to have simple structures with faster communication. They also tend to have flat structures with few layers of management, and top management tends to be visible and close to the points of delivery (Yusof and Aspinwall, 2000). Furthermore, the flat structures of SMEs involve fewer departmental interfaces normally resulting in flexible work environments. Therefore communication is likely to be simple to organise and manage (Ghobadian and Gallear, 1997).

Hague (1993) claimed that in any particular organisation there are different individuals involved in purchasing decisions. These individuals can range from key influencers to information gate-keepers, to purchasing specialists (Culkin and Smith, 2000). Decision-making in SMEs evolves around the owner-manager and as firms grow, typically the first step will be for other directors of business to become involved in decision-making. Specialist managers come into play as the business evolves through a sufficient level of size and complexity, as there are few individuals involved in decision-making. Centralisation of decision-making in SMEs show that the owner-manager is often the main individual to apply any changes (Vossen, 2001). However, large organisations tend to have more complex decision-making units with diverse staff involved, with decision-making conducted in a structured, hierarchical way around defined roles for those involved (Culkin and Smith, 2000).

Due to the influence of factors such as the span of activities, geographical dispersion, background and range of employees, staff turnover, the age of the organisation and the existing precedence, which lead to different cultures in SMEs and large organisations. The existence of culture gives rise to specific decisions, policies and activities. Culture is known to be highly informal and perceptual, but usually dictates what activities or behaviours are important to become successful in a particular organisation. Ghobadian and Gallear (1997) suggested the following to influence the culture of an organisation:

- Education and training;
- Employee participation programmes
- Enhanced communication programmes
- Revision of procedures and policies
- Modification of evaluation & reward system; and
- Behaviour of top managers

The introduction of TQM involves cultural change at all levels of an organisation (Bowen, 1996). Once top management recognises the need for change, then it is easier to attain cultural change in SMEs than in large ones (Ghobadian and Gallear, 1997). However, It's more difficult for SMEs' management to recognise the need for change. This is due to the limited resources and external contacts, pressures on top management's time and management style (Moreno-Luzon, 1993). Moreover, effective introduction of TQM involves significant change. The resistance to change is likely to be greater and more significant in larger organisations than in SMEs (Goh and Ridgway, 1994). Ghobadian & Gallear (1997) identified seven key factors that contribute to this phenomenon:

1. The existence of a large of different interest groups in large organisations;
2. The prevalence of a strong departmental & functional mind-set;
3. The presence of a significant degree of cultural diversity & inertia;
4. The existence of a high degree of standardisation and formalisation;
5. The sheer number of employees involved;
6. Communication difficulties;
7. Potentially a high degree of unionisation.

This is not to say that there will be no resistance in SMEs. The need to react faster in SMEs militates against the establishment of clear processes and procedures. Many of the activities in SMEs form a part of the process are executed by one person. These individuals often tend to resist documenting their understanding for two reasons: first, documentation is a waste of time; and, second, documentation of process and procedures makes the individual less indispensable. Rapid changes in SMEs cause procedures to become obsolete quickly.

Because of the characteristics of SMEs, it has been suggested that quality models, such as quality systems and certification, have been adopted by some SMEs and yet the rate of implementation in SMEs has been low in comparison to large firms (Ramsey, 1998; Terziovski et al., 1997). This was because quality methods did not appear to be easily understood or interpreted by SMEs. This may have been a significant contributor to low levels of implementation (Husband and Mandal, 1999). In brief, the issue of whether quality methods can be applied to SMEs needs to be explored more thoroughly because of the different characteristics associated with them. This can be achieved through a review of ISO 9000 and EQA in SMEs.

4.9.4. ISO 9000 in SMEs: applicable or not

ISO 9000 provides a solution to the problems of quality management and it also provides a badge of quality for consumers who are either unable or unwilling to judge for themselves the quality consistency of their suppliers to satisfy consumer needs (Chittenden et al., 1998). There has been increasing interest in the relationship of SMEs with the fast growing quality field since the introduction of ISO 9000 (Holt and Henson, 2000). ISO 9000 awareness among SMEs came about through government

exhortation and large organisations' buying practices (Boon and Ram, 1998). Government encouragement has been a significant conduct for the dissemination of ISO 9000 (DTI, 1999). For example, North et al. (1995) found that half of their sample had become aware of ISO 9000 through DTI publications. Large organisations have helped further in stimulating interest in ISO 9000 by making its possession a contractual requirement for trading purposes (Withers and Ebrahimipour, 1998).

SMEs have been motivated to undertake ISO 9000 for several reasons (Brown et al., 1998; Nwankwo et al., 1998), and these reasons may differ from those applicable to large organisations (O'Brien, 1995). Rayner and Porter (1991) found that customer pressure had been identified as one of the main reasons for seeking ISO 9000 by SMEs. Chittenden et al. (1998) showed that SMEs were pursuing the implementation of ISO 9000 to obtain procedural benefits relating to their internal system such as improving staff training and a desire to gain improved market share. Implementation of ISO 9000 tends to produce an effective quality system, which helps in eliminating errors and therefore saves money on rework and scrap (Gustafsson et al., 2001; Holt and Henson, 2000; Zhu and Scheuermann, 1998). By building quality at every stage, customer satisfaction should be improved (Holt and Henson, 2000). ISO 9000 claimed to provide marketing benefits, as it provides and represents an internationally recognised level of quality (Cottman, 1995). Moreover, Williams (1997), Conway (1994) and Burgess (1993) showed that improved efficiency is seen as a major benefit among SMEs.

Augustyn and Pheby (2000) investigated the effect of ISO 9000 in small tourism enterprises. They concluded that ISO 9000 had significantly contributed to their improved performance, in terms of marketing, financial and operational benefits. McAdam and Canning (2001) emphasised that ISO 9000 enhances the chances of SMEs gaining extra work and increasing staff performance, while Dick et al. (2001) reported positive links between ISO 9000 and business performance. Therefore, SMEs tend to achieve the same benefits from the implementation of ISO 9000 as large ones, regardless of their characteristics.

In spite of these benefits achieved from ISO 9000 implementation in SMEs, they are reluctant to implement the ISO 9000 standard (Bryde and Slocock, 1998). ISO 9000 does not appeal to SMEs and this is reflected in the relatively low adoption rate of the standard by such firms (Curran et al., 1999). A follow-up telephone survey found that the great majority of SMEs remain unimpressed with ISO 9000, and the proportion of such firms registering for ISO 9000 remains below 5% (Chittenden et al., 1998), confirming the view that ISO 9000 may not be suitable for SMEs (Gome, 1995).

Ho (1995) reported that SMEs had difficulties in introducing the ISO 9000 standard. Bell (1994) argued that ISO 9000 was inapplicable to SMEs. This may be because of the high costs associated with the implementation of the ISO 9000 standard (Mo and Chan, 1997; Gome, 1995), the costs of obtaining and maintaining the standard including registration, auditing and consultancy fees (Kennedy, 1995). Registration and consulting fees can easily reach \$40,000 (Nicholas, 1993). The costs of ISO 9000 tend to vary depending on the suitability and efficiency of existing systems and the competence of the staff (Mo and Chan, 1997). Despite this, the costs to smaller

firms of achieving ISO 9000 will tend to be higher per employee than for larger organisations because of fixed costs element (McAdam and McKeown, 1999).

Meyer (1998) found that ISO 9000 might not be worthwhile for SMEs as the benefits derived from it may not cover the total costs spent on the certification. Moreover, Meyer (1998) and Mo and Chan (1997) reported that ISO 9000 was too expensive, time-consuming, and too formal. McTeer and Dale (1994) have further supported this. They concluded that the cost of ISO 9000 is a major weakness against the standard. Meyer (1998) argued that the cost of implementing and maintaining ISO 9000 was a barrier to SMEs wishing to register.

SMEs believed that ISO 9000 would not improve the quality of products and/or services (Mo and Chan, 1997). SMEs tend to complain that ISO 9000 cannot provide them with advantages such as increase in productivity, reduction in rework and scrap, but results in tremendous increase in paperwork (Sanders, 1994). This view has also been supported through the work of Rock (1992). Rock (1992) conducted a survey of SMEs, highlighting typical complaints against ISO 9000 as the lack of benefits such as increase in sales and the validity of the assumption that ISO 9000 assures the quality of the final product and/or service, which it does not.

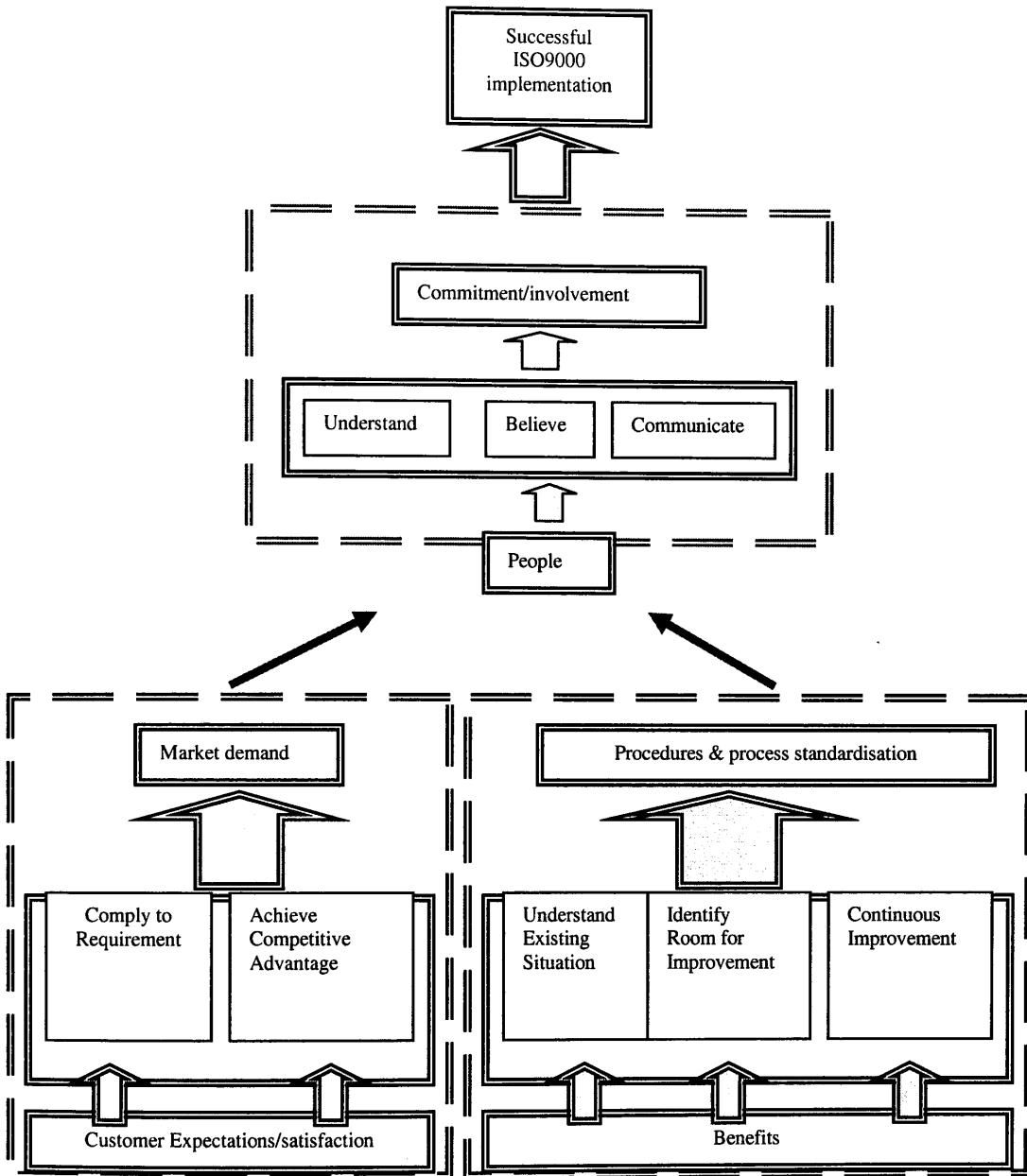
ISO 9000 has been described as being too bureaucratic (Yong and Wilkinson, 2000) with complex procedures thought to be inappropriate to the needs of SMEs (Hudson, 1994). The formality of ISO 9000 tends to clash with the informal nature of the management style typical of many SMEs (Chittenden et al., 1998). Moreover, this formality tends to result in high financial and time costs (Chittenden et al., 1998).

The SBRT Quarterly Survey (1992) indicated that only a very small number of firms registering for ISO 9000 were indeed small-sized firms. Researchers began to focus on the problems associated with the implementation of ISO 9000 among SMEs. North et al. (1993) and Curran et al. (1993) argued that ISO 9000 was irrelevant to SMEs. It was too costly and bureaucratic, and incompatible with management styles. Further, the criticism directed at ISO 9000 for failing to meet the needs of SMEs is reflected when Gourlay (1995, p. 16) wrote: *Small and medium businesses have found ISO 9000 to be too expensive, too time consuming, irrelevant and overly bureaucratic.*

Mo and Chan (1997) designed a model overcoming some of the ISO 9000 obstacles (see Figure 4.18), such as high implementation costs, inadequate resources and insufficient external help, which require further investigation to establish the applicability and the validity of the model to SMEs. Chelsom (1997) found that the major reason for poor performance of some ISO 9000-registered companies is the inappropriate motivation for such accreditation.

Many businesses aimed at obtaining ISO 9000 certification because their major clients required them to do so (Augustyn and Pheby, 2000). As Curran and Blackburn (1994, p. 91) argued that *small firm registration is often something they feel compelled to do in order to stay on preferred supplier lists.* With such an attitude, such companies are less likely to understand the standard and commit to continuous improvement. Getting a certificate quickly becomes an ultimate goal, which results in poor implementation and performance (Mo and Chan, 1997).

Figure 4.18: The ISO 9000 implementation strategy



(Source: Mo and Chan, 1997, p. 144)

Some managers are unhappy with their performance achieved from the implementation of ISO 9000, because of the expected outcomes reflected in the literature (Chittenden et al., 1998). Such high expectations may result from careless statements about ISO 9000. For example, about 40% of all ISO 9000 registered

companies in 1997 were based in the UK, only 2% of them were rated world-class (Chelsom, 1997).

4.9.4.1. ISO 9000 in SMEs: Summary

Based on the above discussion concerning ISO 9000 in SMEs, it is clear that ISO 9000 certification has provided mixed experiences for SMEs. For many, it is a necessary evil, forced on them largely by clients and suppliers, particularly larger organisations and government departments. Any competitive advantages to a single enterprise may be short-lived as it is usually only a matter of time before many companies in the same industry achieve certification. It is then seen by many as just another cost of doing business without any corresponding improvements in market share, and does not help SMEs to attain world class status, but it could be considered a good business practice that helps companies to survive. SMEs considered ISO 9000 certification to be not worthwhile as the benefits derived from it may not cover the total costs spent on certification, and they do not believe that it can improve the quality of products and services and other benefits as cited by Woo and Zhang (1994). In spite of the benefits achieved from ISO 9000 implementation in SMEs, they are reluctant to implement the ISO 9000 standard. ISO 9000 does not appeal to SMEs and this is reflected in the relatively low adoption rate of the standard by such firms.

It is clear that SMEs are no less concerned with quality than large companies, but they are less comfortable with formal approaches that are often advocated as part of ISO 9000 and TQM. Therefore, the EQA model would be suitable to the needs of SMEs and should suit to their characteristics. As the next section discusses the applicability of the model to SMEs and whether the model has been implemented in SMEs.

4.9.5. The European Quality Award in SMEs: applicable or not

The existing TQM models of large firms are not enough to guarantee quality in SMEs (Wiele and Brown, 1998). Rooney (1991) concluded quality awards and standards were based on a manufacturing model and consist of quality and manufacturing-oriented terminology. Moreover, existing TQM models are not sufficient enough because SMEs do not operate in the same way as large organisations (Storey, 1994).

SMEs need to adopt TQM to ensure that the performance of their products and/or services satisfies customers' and employees' requirements. The characteristics of SMEs emphasise the need for integrative TQM models in managing the functional area to achieve quality excellence (Stuart and Tax, 1994).

Karlsson and Wiklund (1997) argued that the EQA is an appropriate model, which includes all the functional areas for managing quality in SMEs. SMEs are less comfortable with the formal approaches of quality management (McTeer and Dale, 1994), while Kaye and Dyason (1999), Terziovski et al.(1997) and Ramsey (1998) concluded that there is comparatively little use of self-assessment models and awards within SMEs. The BQF (1996) reported that only 3% of UK companies used self-assessment models.

A great deal of research has been carried out into the development of the EQA (Hakes,, 1998; Lascelles and Peacocks, 1996; Tummala and Tang, 1990; Nakhas and Neves, 1994), and also into its use as a tool for self-assessment (Finn and Porter, 1994; Hakes, 1998). Little research has however been carried out into the applicability of the model to the needs of SMEs (Armitage, 2002; 2001; Kuratko et al., 2001; Wiele et al., 1996). Wilkes and Dale (1998) intended to develop a quality

model to suit SMEs based on the EQA model. The major differences in the new produced model were in the number of sub-criteria and the language of the sub-criteria was simplified. The proposed model was found to be non-user friendly, daunting and it was concluded to be unsuitable to the needs of SMEs. Furthermore little empirical research has been conducted into the applicability of the model and problems encountered in SMEs. Much of the academic work has concentrated on the models and on comparisons of their criteria, and the relationship between award winners and business results (Wiele et al., 2000). Therefore, it is evident that very little work has been undertaken into the practice, applicability and problems occurred in implementing this award in SMEs and some work has been based on the experiences of large organisations only (Taylor, 1995).

4.9.6. Key limitations of the existing literature on TQM and SMEs: Summary

Well known authors in the field of TQM (Saraph et al., 1989; Flynn et al., 1994; Powell, 1995; Black and Porter, 1996; Ahire et al., 1996) have examined and empirically validated the principles of TQM. However based on their studies, the identified critical factors of TQM differ from one author to another, and therefore, there is no unanimous view of the key factors of TQM. Also these studies seem to focus on large organizations within the manufacturing and service sector, and not on SMEs. Based on the well known studies performed by Saraph et al. (1989); Flynn et al. (1994); Powell, (1995); Black and Porter, (1996); Ahire et al. (1996), 10 critical factors of TQM were recommended by today's leading and respected researchers and practitioners. These principles are used to compile different quality awards such as the EQA.

A key characteristic of TQM has been the positive effect on organizational improvement in times of change in both markets and organizations. However, what is not clear is what types of TQM-based improvement initiatives will develop in the future to meet the anticipated organizational and market changes? Will the TQM of the future be unrecognizable from the current form or will there be a clear line of continual development?.

Issues discussed with regard to TQM, organizational learning, and cultural change revealed that the implementation of TQM in organizations requires large scale changes, both of the management tools used and those concerning the organizational structures, attitudes and behavior of all organizational employees. To help achieve this, well known authors have suggested the use of the EQA as a framework for effective implementation and management of TQM, organizational learning and cultural change. However, this recommendation is based on the author's opinion without the support of any research related to SMEs.

The implementation of TQM focuses on TQM content, or the extent to which different TQM practices should be used. Although researchers have traditionally advocated that TQM practices are universally applicable to organizations, some studies have revealed that not all TQM practices are effective in all organizations (Benson et al., 1991; Sousa and Voss, 2002). However, the existing literature on TQM contingencies is very sparse. Hence, more research is needed to identify important contingency variables and to provide guidelines as to which practices should be emphasized under different sets of contextual variables. There is a need to identify the relevant contextual factors that affect the implementation approaches.

Sousa and Voss (2002) further point out that the majority of TQM studies have been conducted in large organizations that belong mainly to the manufacturing sector.

The implementation difficulties of TQM result from too great a mismatch between the proposed form of TQM and the organizational context, e.g., organizational size. This suggests that the existing TQM models of large firms are not sufficient to guarantee quality in small firms due to their characteristics. Rigorous academic studies have started to question the universal validity of TQM by addressing the influence of the organizational context. Only a few studies directly and rigorously addressed this issue with an explicit use of contingency theory.

Most of the tools, models and concepts applied in the field of TQM are almost all based on case studies and the prescriptions of quality gurus. Many of the insights into SMEs have been based on anecdotal evidence, with the implication that the lessons derived will be equally applicable and useful to SMEs. In addition, SMEs are less comfortable with formal approaches of TQM, for example ISO 9000 where it is perceived as an expensive way of doing business. Therefore, small firms need to adopt a system of TQM that better ensures that the performance of their products/services satisfies and continues to satisfy customer and employee requirements in order to achieve competitive advantage. To achieve this, the implementation of the EQA is recommended, but research carried out into the applicability of the EQA model to the needs of small firms has been non-existent, as most of the literature on quality awards is based on the experience of large organizations. For example, a number of research studies have investigated the correlation between the adoption of the holistic quality award model (EQA) and

improved organizational results. The majority of such studies show a positive linkage. The EQA has effected good performance in many European companies and the CEOs of the participating companies claimed that the EQA brought great success in their business. However, most of the studies are based on case studies or are focused on large organizations.

The EQA informs companies only about what should be done, but not how to do it. In other words, the assessment model measures TQM status but does not address the implementation of TQM. Therefore, there is a lack of academic and practical research on the need for an implementation model of TQM, accompanied by detailed, rich, local case studies of successful companies. The TQM implementation model may be country- and culture-specific.

The EQA was based on a manufacturing model and consists of quality and manufacturing oriented terminology, which might be not applicable to the needs of SMEs..

4.9.7. The EFQM and SMEs

4.9.7.1. Guidance documents

Truly excellent organizations are measured by their ability to achieve and sustain outstanding results for their stakeholders. To achieve outstanding results is hard enough to sustain them in a world of increasing global competition, rapid technological innovation, ever changing working processes and frequent movement in the economic, social and customer environments is even harder. Recognizing this challenge, the European Foundation for Quality Management (EFQM) was created to

promote an approach to management for all organizations operating in Europe that would lead to sustainable excellence. This approach is underpinned by the fundamental concepts behind the development of the EQA. The EFQM has produced a substantial number of guidance documents for various organizations, including small and medium-sized enterprises (see below).

Introducing Excellence

- This brochure gives a description of the EFQM Excellence Model and how organizations can use the Model to improve performance

Fundamental Concepts of Excellence

- Results Orientation, Customer Focus, Leadership & Constancy of Purpose, Management by Processes & Facts, People Development & Involvement, Continuous Learning, Improvements & Innovations, Partnership Development, Corporate Social Responsibility

EFQM Excellence Model

- EFQM Excellence Model provides Model content and structure, the 9 criteria, criterion parts and red threads (topics that run through the Model)

Assessing for Excellence

- A practical guide for successfully developing, executing and reviewing a Self-Assessment strategy for your organizations

Pack of 2 brochures 2003 EFQM Excellence Model together with Assessing for Excellence

- EFQM Excellence Model large companies + Assessing for Excellence
- EFQM Excellence Model Public Sector + Assessing for Excellence
- EFQM Excellence Model SME + Assessing for Excellence

Determining Excellence – A Questionnaire Approach

- A questionnaire with 50 questions based on the 9 criteria of the EFQM Excellence Model. A simple guide to an organization's first Self-Assessment

Submission Writers Handbook

- This handbook has been created to help organizations produce the best submission document they are capable of for the European Quality Award.

EFQM Excellence Model in Action – 10 Advice Booklets

- Booklet 0 provides general advice on the implementation of Excellence in an organization using the EFQM Excellence Model. Booklets 1 - 9 are based on 1 of the 9 Criteria of the EFQM Excellence Model and provides advice and ideas for developing Good Practice approaches across all 9 Criteria.

Starter Kit

- Contains: EFQM Excellence Model, Determining Excellence and EFQM Excellence Model in Action (set of 10 Advice booklets printed in 1 book)
- Starters Kit Large Companies version
- Starters Kit Public Sector version
- Starters Kit Small & Medium Sized Enterprises version
- Case Studies private and public sectors: provide a complete description of an organization, its operations and results written in the structure of the EFQM Excellence Model.

Assessor Scorebook (blank)

- Contains a complete set of blank pro-formas that can be used to score case studies, Self-Assessments or Award applications.

Looking closely at the EQA list of publications, it is clear that there are various publications targeted at different organizations such as large commercial organizations, SMEs and public sector organizations. However reading the documents targeted at large commercial organizations and SMEs, the researcher identified that the model is identical in both documents. The only variation is the application fees, for example, within the SME sector the application fees are 4000 Euros for EFQM members and 5000 Euros for non EFQM members, while the application fees for large organizations are 11000 Euros for EFQM members and 13750 Euros for non EFQM members. Both documents introduce the model, benefits, eligibility, criteria for judging results, application & assessment procedures, application fees and success stories and how excellence was achieved. It can be illustrated that these documents are utilized as various sources of marketing activities and revenue making. Therefore, it is clear that the EFQM does not focus on SMEs as different from other organizations. Most of the documents are targeted at all organizations in general format. In support of this further, it has been claimed that the model is essentially the same across all sectors, in order to allow organizations to make comparisons against role models in whatever sector they apply the model (EQA, 2004).

4.9.7.2. The EFQM: Support services for SMEs

By examining the EFQM web site, it was clear that there are not specific support services for quality management in SMEs. On the other hand the EFQM has provided different workshops covering a range of improvement and performance management

issues relevant to today's organizations. Featuring internationally recognized content experts and leading practitioners from a range of industries, the workshops are organised by the EFQM Training and Good Practice Department. Examples of workshops are: *Practical Benchmarking the EFQM way; Successful Implementation of Six Sigma; Mapping Strategy using the Balanced Scorecard; Effective Risk Management for Business; Corporate Social Responsibility; Executing the Strategy; Delivering Brand Alignment; Knowledge Management ; and Process Survey Tools*

Also the EFQM Training and Good Practice Department provides organizations with a self-assessment training course which cover issues such as: *The Fundamental Concepts of Excellence, An introduction to the EFQM Excellence Model, The 8-step process for effectively managing a Self-Assessment project, How to conduct four different approaches to Self-Assessment, and How to identify and make effective improvements based on the Self-Assessment outcomes.*

4.9.7.3. EQA applications in SMEs: Case studies

CASE ONE: A MEDIUM-SIZED COMPANY

Objectives:

Company ABC was searching to establish a key strategic partnership with a supplier to help it achieve some of its own objectives. More specifically, Company ABC wished to outsource some of its services provision to another company with similar focus and environment. There was an existing supplier procurement process in place but the directors felt that this did not go far enough in ensuring the selection of the best appropriate candidates.

The approach

Getting started:

- A tender document was created by ABC and their legal advisers, setting out a process for the selection of a strategic partner. It included details of the contract, the respective roles of ABC and the preferred partner, and a timetable for the selection process etc.
- One part of the process involved the provision of evidence based on the EQA.
- Organizations were invited to register an interest in the arrangement and a member of the director team was assigned as a relationship contact.

Preparation of evidence

- Each bidding company was invited to give a presentation on their ideas.
- The next stage was for the bidding companies to produce a portfolio of evidence about themselves, including their activities and results based on the criteria of the EQA.
- To ensure fairness, all bidders were provided a training session on the use of the EQA.

Assessment

- Excellence model assessment teams were set up to assess the evidence from each bidding company and to identify the strengths areas for improvement and indicative scores and produce a report.
- Each report was used to develop a site visit plan so that all of the issues raised from the assessed evidence could be clarified and verified on the bidder's premises.

- A structured site visit was undertaken by the EQA assessment team for each bidder, which included interviews with key leaders, focus groups with a range of people, etc.
- The additional information gathered from the site visits was used to finalize a feedback report for each bidding company. These were presented to the director and copies were sent to the bidding companies.
- Decisions were made based on a range of evidence of which the EQA assessment was the basis.

Outcomes/benefits

- The assessment team gained a very valuable insight into what the companies were really like on the inside and helped to form a better all round view of the selection.
- ABC gained robust pictures of those organizations wanting to run services for them. These pictures covered the whole range of activities including leadership, strategies and culture, business results as illustrated in the EQA.
- The whole experience provided an invaluable development opportunity for all those involved including those companies bidding for the contract. Some of those who were not successful found the process so useful that they have started to use the EQA.
- The selected partner and ABC undertake an annual assessment of the partnership using the EQA to identify further improvement areas and to focus joint improvement activity.

CASE TWO: A SMALL FINANCIAL SERVICES COMPANY (employs 30 people)

Objectives:

The MD wanted an up to date comprehensive assessment of the business and its culture without too much intrusion to normal operations and with the minimum of up front resource, therefore a decision was made to use the EQA.

The approach:

- An assessment team was formed to establish a rapport with everyone on site and quickly allay any fears, so that what the team is seen as far removed from an 'audit' as possible.
- A range of information about the business - business results, structure, products and services, customers, partners, and so on were obtained.
- Site visit plan included meetings with key people, focus groups with staff and time enough to 'take in the feel' of the business. This culminated in a day on-site working to the assigned plan
- A Feedback Report which included key themes, strengths and areas for improvement identified both from the site visit and the organizational information reviewed in advance, then presented it back to the management team and helped with prioritization of improvement actions

Outcomes/benefits:

- The Feedback Report was presented to the whole Management Team and acknowledged as an invaluable input to their plans for the business. It helped

to show how well the organization's activities were aligned to its objectives, as well as giving evidence of the culture

- Team members took ownership of improvement projects which came out from the assessment
- The staff fed back that the process itself was 'fun' and useful as team-building, so much so that rather than just work on the 3 or 4 key improvements, people took ownership of about a dozen activities.
- The utilization of the EQA helped to establish a culture whereby new ideas could be introduced and people could become involved

4.10. Theoretical framework

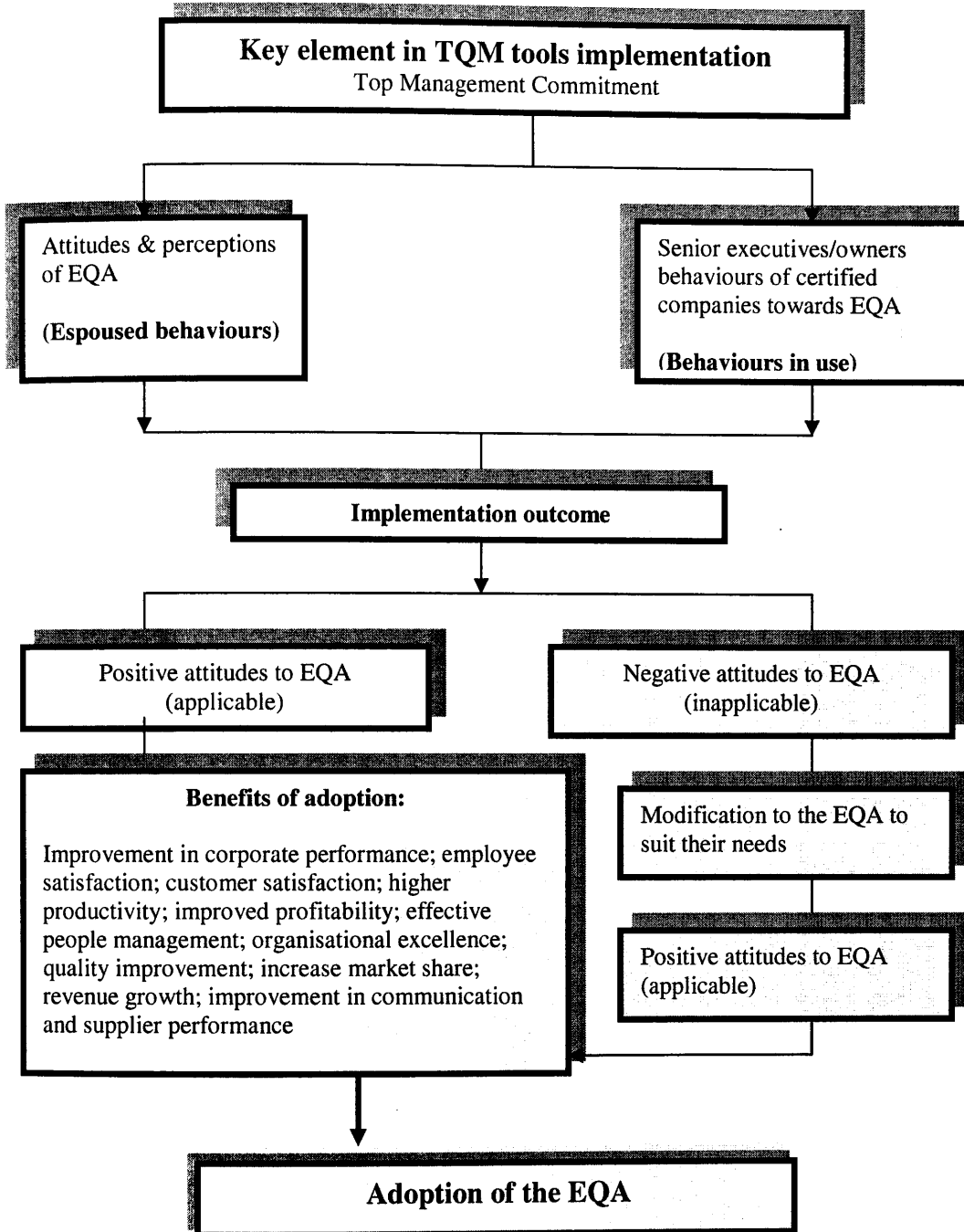
The literature suggests that TQM tools have been advocated as being universally applicable to organisations. The introduction of the EQA and ISO 9000 had reinforced the universal profile of TQM practices. Moreover, rigorous academic studies have started to question the universal validity of TQM by addressing the influence of the organisational context. Of those, only a few studies directly and rigorously addressed this issue within an explicit use of contingency theory, all of them suggesting that the effectiveness of TQM is contingent on the organisational context. However, a little research has been carried out into the applicability of the EQA to the needs of SMEs. Therefore, the purpose of this study was to gather empirical data to investigate the idea that the implementation differences of TQM tool (EQA) may be due to the size of the organisation. The approach was used on trying to establish the applicability of the EQA to the needs of SMEs so that a better understanding of the underpinning influences can be illustrated.

Due to the importance of the influence and commitment of top management and those who have responsibility for giving leadership to initiatives such as TQM/EQA. It is vital to clarify the commitment by defining it as a complex function of the interactions between attitudes and behaviours, as management practices and attitudes are the key element in the implementation of TQM tools.

It is recognised that consensus does not exist on this issue. Some claim that behaviours are a function of social context while others contend that behaviours are preceded by associated attitudes. The former suggests that modifying the context will change behaviour while the latter suggests that behaviour will be determined by the prevailing attitudes. While accepting that there are valid arguments for both viewpoints, it is the latter one, which largely forms the theoretical framework of this study.

The study builds on the notion of attitudes influencing behaviour by combining it with the ideas of Argyris (1990) who contends that managers often think they believe one set of things (behaviours), yet their actual behaviours in practice are contradictory (see figure 4.19). More specifically, this study explores the possibility that although managers in certified companies may offer many of the right answers when confronted by attitudinal surveys. Therefore, exploration of aspects of TQM practice related to EQA in their organisations may be a truer reflection of their perceptions and attitudes towards the EQA. This will subsequently be compared with implementation behaviours such as the mechanisms used for each practice of TQM (EQA).

Figure 4.19: Theoretical framework



4.11. Summary

This chapter has covered a number of aspects of TQM with regard to different organizations to identify a gap in the literature with the main focus on SMEs. The literature identified that SMEs are less comfortable with formal approaches of TQM, for example ISO 9000 where it is perceived as an expensive way of doing business, and therefore tends to constrain SMEs from implementing formal quality approaches.

Many of the insights into SMEs have been based on anecdotal evidence, with the implication that the lessons derived will be equally applicable and useful to SMEs, and lacking the use of contingency theory with any empirical studies. In addition, most of the tools, models and concepts applied in the field of TQM in SMEs are almost all based on case studies and the prescriptions of quality gurus. For example, a number of research studies have investigated the correlation between the adoption of the holistic quality award model (EQA) and improved organizational results. The majority of such studies show a positive linkage. The EQA effected good performance in many European companies and the CEOs of the participating companies claimed that the EQA brought great success in their business. However, most of the studies are based on case studies or are focused on large organizations. As the EQA proved to be successful with large organizations and given the vital role of SMEs in the economy, it is important for small firms to adopt a system of TQM that better ensures that the performance of their products/services satisfies and continues to satisfy customer and employee requirements in order to achieve competitive advantage. To achieve this, the implementation of the EQA is recommended, but research carried out into the applicability of the EQA model to the needs of small firms has been non-existent. Moreover, it has been noted that the EQA was based on a manufacturing model and consists of quality and manufacturing oriented terminology, which might be not applicable to the needs of SMEs. Therefore, it is important to identify the applicability of the EQA model to small firms based on a substantial amount of data, to help small firms to achieve quality improvement, financial gains and achieve competitive advantage. This is quite important given the contribution of small firms to the economic growth of a country.

Chapter Five: Research Methods

5. Introduction

The objective of the study is to explore the applicability and relevance of the EQA to SMEs in Scotland, by examining the experiences and perceptions of quality practitioners in such firms. A combination of quantitative and qualitative methods has been used for the following reasons: a richer picture can be developed through the use of complementary data achieved from two kinds of data collection method (Carson and Coviello, 1995). It allows for triangulation of the data from the two data collection methods, which improves reliability and validity of data (O'Donnell and Cumming, 1999). This chapter discusses quantitative and qualitative methods and the instruments (questionnaires and interviews) used.

5.1. Research design and philosophical positions

The previous chapter (chapter four) suggests that there is a lack of rigorous research into the applicability of the EQA to SMEs. Clearly, there is a knowledge gap concerning the relationship between the applicability of the model to SMEs and management perceptions of implementing the model. This research problem is viewed as a value neutral expression (Hussey and Hussey, 1997). Research is concerned with solving problems, investigating any relationships that exist in the world around us, which would lead to building or establishing a body of knowledge that some might refer to as a science (Veal, 1997). Whilst many people would not regard the body of management knowledge as science, the actual investigation of managerial issues can take on a scientific aura depending on the chosen methods of research (Kumar, 2000). Hussey and Hussey (1997) suggested that the most

important way in which research differs from other ways of answering questions is that it is systematic.

To be able to exploit a research project fully, suitable research methods have to be applied (Yin, 1994). The research methods chosen depend on a number of factors, such as the nature of the research question, the degree of control possible and whether the events are contemporary. Mark (1998) argued that studies have to be organised and planned to gain the most valid results, and Denscombe (1999) emphasised the importance and significance of research design in guiding the researcher in collecting, analysing and interpreting research data. However, in operational terms, appropriate research design is suggested by the selection of suitable data collection methods (Black, 1999). Denscombe (1999) described research design as about organising research activity, including the collection of data, in a way that is most likely to achieve the research objectives.

The research design undertaken by the researcher should take account of the relative strengths and weaknesses of the philosophical positioning of positivistic (quantitative) and phenomenological (qualitative) as groupings of concepts and of which research methods will be constructed (Smith, 1988).

The positivistic paradigm views the world as existing externally, therefore the researcher will be independent of that reality and able to examine it by using objective methods (Mark, 1998). Positivism can be described as a value-free scientific approach to research relying on the notion of methodological monism where, no matter the diversity of the subjects being studied, there is unity in the scientific

method employed (Mark, 1998). According to the positivistic view research will tend to focus on objective facts, and to search for causality and fundamental laws (Mark, 1998). From this perspective, it could be argued that the task of the researcher is to formulate hypotheses and then test them using large samples. Positivism is therefore associated with large-scale studies and in particular the use of quantitative methods (Cresswell, 1994).

Quantitative methods are used to collect data based on predetermined structured questions to produce hard data and output (Bryman, 1988). The main emphasis of quantitative methods is based on covering a wide range of situations, and when statistics are aggregated from large samples, they may be of considerable relevance to policy-makers (Stroh, 2000). They do not, however, necessarily allow the respondents to convey to the researcher information about underlying events (Saunders et al., 1997). For example, Stroh (2000, p. 97) states that: *The depth of research would have been limited as a result of its inherently standardised approach.*

The philosophical paradigm of phenomenology has arisen as a reaction to the belief that the world can be considered as external and analysed objectively (Mark, 1998). From the phenomenological perspective the world is given meaning by people. Consequently, research involving people and their interaction with the world *should not be to gather facts and measure how often certain patterns occur, but to appreciate the different constructions and meanings that people place upon their experience. One should therefore try to understand and explain why people have different experiences, rather than search for external causes and fundamental laws to explain their behaviour* (Easterby-Smith et al., 1991, p. 24).

The phenomenological approach criticises positivism for proposing that the only worthwhile knowledge is that which is acquired through objective measures of external reality (Marshall and Rossman, 1995; Gilmore and Carson, 1996). The phenomenological approach therefore rejects positivist claims to scientism dependent upon value-free objective analysis using quantitative research methods. This is because values do condition interests which not only affect the ways that human beings think and work but also the way in which the world is examined and how people construct their knowledge of it (Mark, 1998). The phenomenological approach has disputed the methodological preoccupations of the positivist approach with its emphasis on quantitative methods and had proposed that qualitative methods are necessary to investigate any arising issues or themes as meaning in a socially constructed world (Cresswell, 1994).

The use of qualitative research methods to gather, analyse and interpret data is only useful within the phenomenology approach. This is because that methodology searches to uncover and understand what lies behind any phenomenon about which little is as yet known and to gain a fresh look on things about which quite a bit is already known (Skinner et al., 2000). Qualitative methods using the phenomenological approach tend to be unstructured and the specific procedures followed are often designed during the research rather than specified in advance (Black, 1999).

Qualitative methods are usually associated with the depth and richness of the information they provide (Skinner et al., 2000). They play a substantial role in generating discussions with decision makers in the organisation under study (Gill and

Johnson, 1997). Qualitative methods take account of what is learned throughout the research process as well as research outcomes and results (Gilmore and Carson, 1996). Further, qualitative data are useful when there is a need to supplement, validate, explain, illuminate or reinterpret quantitative data gathered from the same sample (Miles and Huberman, 1994). However, qualitative data can come under heavy criticism for being anecdotal and difficult to analyse and generalise the findings with respect to the sample (Gill and Johnson, 1997; Mark, 1998).

To overcome the limitations and to make use of the benefits of quantitative and qualitative methods rather than to argue which method is superior to others, Saunders et al. (1997) suggested that social scientists were likely to exhibit greater confidence in their findings when these findings are derived from more than one method of investigation. Quantitative and qualitative methods are therefore viewed to be complementary to each other (Silverman, 2000). This view has led to the adoption of a strategy, known as “data triangulation” (Silverman, 2000).

Denzin (1989) described data triangulation as combining methods to study a specific phenomenon and it can be either between method, providing cross-validation of outcomes, or within method, using a variety of techniques in a stated method to gather information about an aspect of the research that will confirm the outcome. In a similar vein, Cohen and Manion (1989, p. 269) defined data triangulation as *the use of two or more methods of data collection in the study of some aspect of human behaviour*. Therefore the integration of research methods, quantitative and qualitative, can eliminate many of the deficiencies of a single research method and obtain a variety of information on the same issue (Morgan, 1998; Carson and

Coviello, 1995). This methodological integration can be also used to achieve confidence in the generalisation of a study's conclusion and to achieve a higher degree of validity and reliability (O'Donnell and Cumming, 1999; Mark, 1998). Further, this methodological integration enables the researcher to develop and extend theory and to test its application (Mark, 1998).

With respect to this study, it is important to consider the nature of SME research and the implications this has for the best suited research methods to them (Shaw, 1999). Since 1980s, SMEs have been identified as a new field of research and have become an area of academic interest (Bygrave, 1989; Sexton, 1986). Churchill and Lewis (1986) and Bygrave (1989) contended that the emerging nature of SME research demanded that a qualitative approach that encourages the development of practical and theoretical understanding and the generation of new and alternative theories and concepts is appropriate. However, O'Donnell and Cumming (1999) suggested the use of quantitative methods in SMEs, which enable the researcher to collect rich data for statistical analysis. Therefore, qualitative and quantitative methods have both been recommended for use in SMEs (Shaw, 1999).

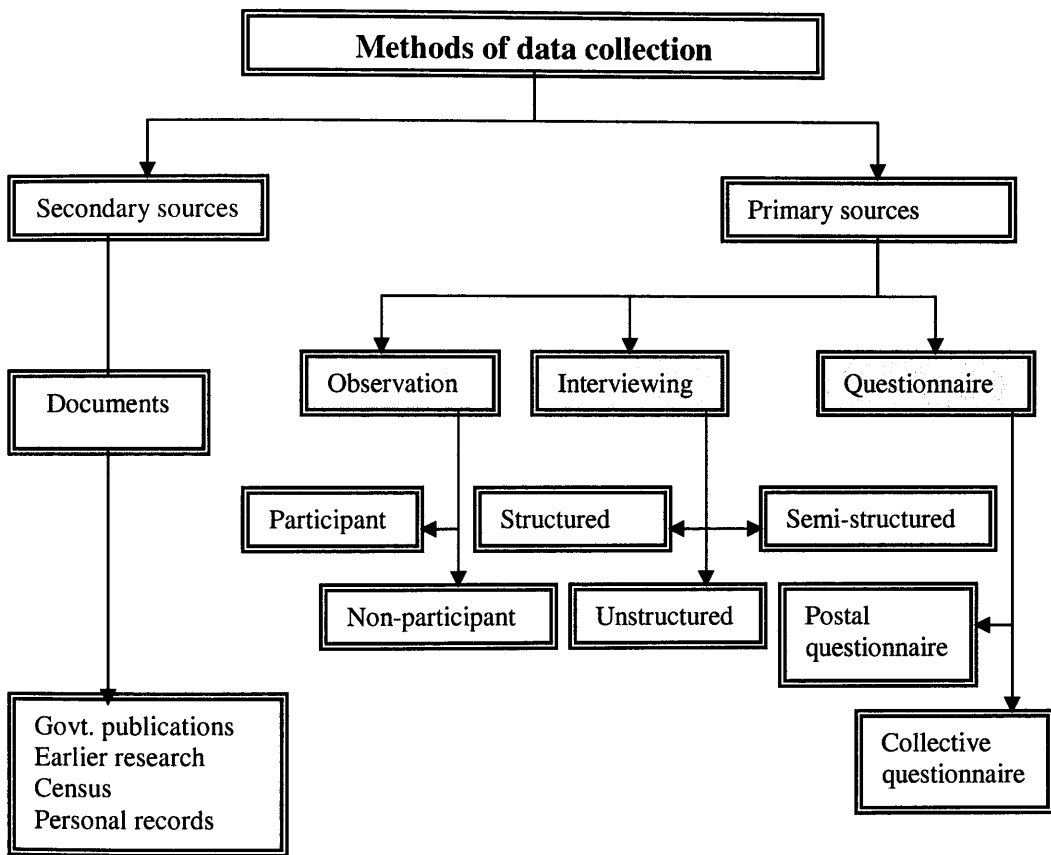
The use of qualitative and quantitative methods allow the researcher to view SMEs in their entirety and permit the researcher to get close to small and medium-sized firms' decision-makers (Smith, 1988). Based on the issues identified in the research design stage and methodological approaches stage, it was decided that it would be beneficial to use a range of methods, in effect methodological triangulation (Easterby-Smith et al., 1991).

5.2. Sources of data

There are two approaches available for collecting data for a research project and the data required can be categorised as secondary and primary data (Denscombe, 1999).

Figure 5.1 shows various methods of collecting secondary and primary data.

Figure 5.1: Methods of data collection



(Source: Kumar, 2000, p. 104)

Secondary data are usually obtained from books, periodicals, governmental and official publications, dissertations and other similar sources (Black, 1999). Kumar (2000) reported that secondary sources comprise data that are collected by other parties and not by the researcher directly. Saunders et al. (1997) argue that secondary data are usually used in the case study and survey types of study, but they could also

be used in experiments. Ghauri et al. (1995) stress the need to start with secondary data in the research process, demanding that only when the secondary data are diminishing, could the researcher proceed to the primary data. Primary sources are data that are directly collected and for the first time by the researcher (Black, 1999). Ghauri et al. (1995) argued that when secondary data are not sufficient to answer the research questions, the researcher should collect primary data. Methods of primary data collection include surveys, observations and interviews (Kumar, 2000).

The success of a study depends on choosing appropriate research methods, whereby valid and reliable data can be obtained (Denscombe, 1999). The following sections deal with the collection of secondary data through the literature review and the use of surveys (questionnaires) and interviews (semi-structured) for collecting primary data for this study.

5.3. Literature review stage

The literature review was used in this study to obtain secondary data. Fink (1998) suggests that the literature review should contain an evaluation and analysis of the existing body of recorded work produced by researchers on the investigated topic. Obtaining secondary data tends to enable researchers to compare different research methods to help them to identify the most suitable ones for use in their own primary data collection (Ghauri et al., 1995; Gill and Johnson, 1997), as present in this study.

A literature review was completed to investigate the importance of implementing quality management models in organisations and how useful are these models of SMEs. At this stage, the literature review allowed the development of ideas that

required testing through research methods in the study. The literature also influenced the thesis chapters. The research ideas about the EQA and SMEs were identified through the literature review and the researcher's previous experience and studies. It has been suggested that there has been little research carried out into the applicability of the model to the needs of SMEs (Wiele et al., 1996).

5.4. The postal questionnaire and design stage

To identify the most suitable research methods, the research question was broken down into different parts (see chapter 1). Thus a decision had to be taken as to the best way in which to conduct research into the first part of the research question. It was decided that a good way to gain data about management perceptions of and attitudes towards the EQA would be to use a postal questionnaire. The postal questionnaire is the most common data collection method in carrying out a survey.

Questionnaires were chosen for this study, partly because of the popularity of this method in quality management research (Bavagnoli and Perona, 2000; Liker et al., 1998). Questionnaires have been used to study quality management techniques in different countries or regions, as in the case of Taiwan (Chang and Lu, 1995). Further, quality management questionnaires can also focus on a specific company's size, as in the work of Goh and Ridgway (1994) and Luzon (1993), which focused on SMEs.

Questionnaires are a stable, consistent and uniform statistical measure, provide less opportunity for bias or error than interviews, provide greater assurance of anonymity and can be completed at the participants' convenience (Kumar, 2000). Denscombe

(1999) indicated that the postal questionnaire is the best-known research method, involving sending self-completion questionnaires through the post. This generally implies that postal questionnaires can cover wider geographical areas than interviews (Riley et al., 2000), and enable researchers to obtain a large amount of data inexpensively (Sarantakos, 1998).

Saunders et al. (1997) analysed some of the criticisms of the use of postal questionnaires, such as low response rates. De Vaus (1996) emphasised that surveys are a valid methodological tool, but only if their limitations are recognised. In this study, the use of a postal questionnaire was regarded as an important part of the research method because of its low cost and geographical flexibility (Baruch, 1999). However, it has been noted that there is no single determinant or winning formula for increasing response rates (Kumar, 2000). The only way to achieve a good response rate is through careful survey design and effective administration of the questionnaire, by identifying each aspect of the survey process that may affect the nature of response and managing each in order to achieve the best possible response (Baruch, 1999).

5.4.1. Response rate strategies

A range of response-inducing strategies was identified from an extensive literature search and they were used in the present study to achieve the best response rate possible. The response inducing strategies can be divided into monetary and non-monetary incentives (Kalafatis and Madden, 1995; Kalafatis and Blankson, 1996).

The effects of many non-monetary incentives such as interest in the topic (Martin, 1994), stamped return envelopes, cover letters, reminder letters, class of mail and

acquiescence, have achieved high response rates (Turley, 1999). The response-inducing methods used in this study (see sections 5.4.2, 5.7.2, and 5.8.1) will be briefly explained and the associated benefits with them.

The use of small prepaid cash incentives (monetary-incentive strategy) increases the response rate for a postal questionnaire (Warriner et al., 1996; Tse et al., 1994). For example, Church (1993) estimated that the average increase in response rates for using monetary incentives was 19.1%, representing a 65% mean increase in response. Therefore, monetary incentives encourage respondents to respond to postal questionnaires (Baumgartner and Rathbun, 1997). They encourage participants to respond more quickly (Martin, 1994), and incentives tend to reduce outward postage, stationary and printing costs because there are fewer non-respondents to re-contact in subsequent mailing (Gendall et al., 1995).

Tse et al. (1994) concluded that postal questionnaires attached with self-addressed stamped envelopes achieved higher response rates than ordinary mail questionnaires. Moreover, Turley (1999) suggested that the use of a first class stamp on the outgoing mail and on the self-addressed stamped envelopes will enable the researcher to achieve an adequate response rate.

Notification of the sample was found to be an important method of respondent contact (Tse et al., 1994). There are two types of sample notification: by telephone and by letter (Turley, 1999). The use of a notification letter¹ in postal questionnaires is cost effective, boosting response rate and response speed (Taylor and Lynn, 1998). The

¹ The notification letter is designed to inform the sample member that the survey is about to take place and to ask for the sample member's co-operation with the forthcoming survey (Dillman et al., 1995).

timing of the notification letter is important (Fox et al., 1988), especially as Taylor and Lynn (1998) suggested that a letter sent out a week or so before questionnaires can improve the response rate by 4% to 6%.

A covering letter is vital in increasing response rates in postal questionnaires (Kumar, 2000). There are different ways to design an effective covering letter that can achieve a high response rate. For example personalisation of correspondence, requesting for help, confidentiality statement, formality of the letter (Turley, 1999). Covering letters which ask people for help rather than simply offering them the opportunity to express their views were able to attract five percent more participants (Turley, 1999). The tone and complexity of the covering letter are also important. Friendly covering letters are more effective than impersonal ones (Gendall et al., 1995). A simple and readable covering letter should be more effective than a complex letter (Gendall et al., 1995; Turley, 1999). It is important to give assurances of confidentiality (Kumar, 2000). Covering letters with University sponsorship of surveys were found to have the greatest positive effect than ordinary ones (Fox et al., 1988), and this is linked to the trust and credibility necessary for social exchange to take place (Tse et al., 1994).

Response rates to postal questionnaires also depend on effective questionnaire design and they include topic interest, length of the questionnaire, the colour of the paper used, types of question, layout, identification numbers and pre-testing. The interest of sample members in topics being investigated can have dramatic effects on response rates (Martin, 1994). Sample members are almost twice as likely to participate if the topic is of interest to them (Martin, 1994). The effect of questionnaire colour on mail survey response rate was non-existent (Buttle and Thomas, 1997; La Garce and Kuhn,

1995). However, Buttle and Thomas (1997) recommended the use of white paper. Questionnaire length does affect response rates. Saunders et al. (1997) recommended keeping the length of questionnaires to a maximum of 4 to 6 pages. Few studies have dealt with the effectiveness of questionnaire identification numbers, but Kalafatis and Blankson (1996), and McKee (1992) concluded questionnaire identification numbers to be associated with significantly higher response rates when compared with non-coded questionnaires. Therefore, it has been suggested that an identification number should be recorded on each questionnaire and the purpose of the number should be explained in the covering letter.

Questionnaire pre-testing has been identified as the last stage in the development of the questionnaire (Burton, 2000). It has proved to be effective, whereby mistakes and minor but significant weaknesses can be identified before the final survey is implemented (Denscombe, 1999; Diamantopoulos et al., 1994). Burton (2000) suggested that questionnaire pre-testing has been stressed in the marketing literature for a number of reasons. First, the designer of a questionnaire can become too familiar with it to be able to identify serious problems. Second, no amount of intellectual exercise can substitute for actually testing an instrument. Questionnaire pre-testing enables researchers to identify errors which may not be apparent to them (Saunders et al., 1997). Errors that slip through cannot be remedied at the main survey stage, with obvious implications for data quality (Diamantopoulos et al., 1994). Moreover, questionnaire pre-testing can be used within a survey to overcome response bias, eliminate confusing or misleading questions, assuring clarity of the questions with regard to the design and wording (Kumar, 2000), identifying poor question sequences

and assessing the perceived length and attractiveness of the instrument (Gilmore and Carson, 1996).

Two issues are associated with the implementation of questionnaire pre-testing: pre-testing methods and pre-testing sample size. Some authors recommend that pre-testing can be achieved by using interviews (Saunders et al., 1997), due to the ability of the interviewer to observe respondents as questionnaires are being completed (Easterby-Smith et al., 1991). Gilmore and Carson (1996) argued that the medium of the final study should be used for the pre-test. Moreover, Easterby-Smith et al. (1991) suggested that both techniques can be used in the survey and that it is up to the researcher to choose the best techniques. The marketing literature suggests that friends not involved directly with the questionnaire design should review it before the pre-test, as they are more likely to spot technical faults (Gilmore and Carson, 1996). It also suggests that the pre-test sample should be as similar as possible to the target population (Silverman, 2000). Furthermore, the literature suggests that the pre-test sample size should generally be small (1-50) (Saunders et al., 1997).

5.4.2. The design of the study postal questionnaire

The questionnaire was kept as short as possible, five to six pages, to encourage as high a rate of participation as possible from the targeted SMEs owner-managers in Scotland. It was felt that a long questionnaire might elicit a poor response rate. While designing the questionnaire, the researcher considered some issues recommended by Alreck and Settle (1995) which included the following: the questionnaire should be focused on the research topic, and questions should be short, simple and clear. A considerable care was therefore taken in constructing the questions to ensure that the participants would have little trouble in answering them.

This is important in questionnaire design because there are no interviewers on site who can help with problems, unlike in the face to face or telephone interview situation. The basic design of the questionnaire relied on closed questions and scales.

Closed questions were chosen to provide the researcher with standardised data and can be presented in a appropriate format that lends itself to being quantified and compared (Riley et al., 2000). They are designed to provide pre-coded data, which can be analysed easily and is easier to construct (Saunders et al., 1997; Oppenheim, 1992), and the data obtained from them tend to be reliable and valid (Kumar, 2000).

There are disadvantages in using this type of question. Kumar (2000) argued that they could result in a loss of spontaneity and expressiveness. By offering respondents alternatives where they have to choose one alternative, as in the questionnaire used in this project, the participants might get frustrated by not being allowed to express their views and this might lead to incomplete responses (Denscombe, 1999). By adopting this style of question the researcher clearly does run the risk of introducing bias by restricting the choice of response. However, this was offset to some extent by the respondents being able to make additional comments at the end of some closed questions. It was considered that a certain level of bias was unavoidable to some extent. Nonetheless, it was anticipated that once the questionnaire had been analysed, this would facilitate the development of the interview guide to allow probing in interviews where respondents would not have their responses limited in this manner.

Scale questions were chosen for the postal questionnaire to collect management attitudes. The most common method is the Likert style rating scale. This scale tends to ask respondents how strongly they agree or disagree with a series of statements on

a four or five point scale (Black, 1999; Saunders et al., 1997). The assumption behind the Likert scale is that each statement or item on the scale has equal attitudinal value, importance or weight in terms of reflecting an attitude towards the issue in question (Kumar, 2000; Riley et al., 2000; Gill and Johnson, 1997). The researcher chose a five point-Likert type scale, where number 5 represents the strongest agreement and number 1 represents the weakest agreement. The researcher chose a Likert scale for the following reasons: these scales have been found to communicate interval properties to respondents, and therefore to produce data that can be assumed to be related to an interval scale (Kumar, 2000; Saunders et al., 2000). The data obtained from use of the Likert scales can be evaluated easily through standard techniques of item, factor and reliability analysis (Saunders et al., 2000).

Closed ended and scale questions were used in the questionnaire to obtain different types of information. This information can be classified into factual information, achieved through classification questions 1-7 to gain information on ownership, type of sector, and company size; respondents' thoughts and attitudes, achieved through attitudinal questions 8-17 to gain information on the extent of agreement/disagreement of participants regarding EQA constructs; and grouping participants into sub groups with specific criteria, achieved through behavioural questions 18 and 19 to gain information on organisational performance and maturity (Hague, 1993).

The construction of questionnaire wording should be familiar, simple and easily understood. Ambiguous words were not used nor were emotive words because they may induce participants to be defensive. Jargon was not used and easier questions were located at the beginning of the questionnaire, then progressing to more

complicated questions (Bourque and Fielder, 1995). This enables participants to feel that they wish to carry on answering the questions, bearing in mind that half-answered questions will usually produce ineffective analysis.

The development of the survey questionnaire was based on the EQA which serves to provide a conceptualisation of the TQM approach as a whole (Shergold and Reed, 1996). The EQA framework is structured with nine constructs: leadership; policy and strategy; people management; resources; processes; people satisfaction; customer satisfaction; impact on society and business results. Under each criterion there exists one or more sub-constructs, which describe aspects of the criterion in more detail. Using sub-criteria as a guide, a questionnaire with 49 items was developed for this section to create a self-assessment measure of the applicability of the EQA.

Additional questions were included to collect data on company background information, knowledge and understanding of TQM and finally performance and organisational maturity with regard to product and/or service performance. While developing the survey instrument, the researcher provided respondents with the option to indicate if the item was not applicable to their company. A similar approach was used by Kaldenberg and Gobeli (1995), Quazi and Padibjo (1997) and Rahman (2001) in their studies of SMEs.

5.5. The interview stage

Obtaining qualitative data on quality management can be achieved through the study of records, observation and interviewing (Mark, 1998). The study of organizational records and databases is fraught with difficulty. As Barnard (1966, p. 193, cited in

Saunders et al., 1997) stated that *most executives' decisions produce no direct evidence of themselves and knowledge of them can only be derived from the cumulating of indirect evidence*. Observation, especially through the eyes of a trained ethnographer, can be a powerful and reliable method, and more specifically, participant observation is seen to provide insight into interpersonal behaviour and motives of SMEs. However, this method was not considered within the present study as it is considered to be time consuming; which SMEs' managers are willing to provide; focuses on a limited number of cases, which represents depth of information, rather than breadth, and therefore limits generalization; events may proceed differently because it is being observed; quite expensive; the existence of bias due to investigator's manipulation of events; difficult to interpret seen behaviours; and complex to categorize observations. Interviews were found to be the most appropriate method for the present study. Interviews do suffer from problems of bias, poor recall and poor and/or inaccurate articulation (Kumar, 2000).

An extensive search of the literature was used to identify the most appropriate interviewing method for this study. Further guidance was sought from supervisors with extensive interviewing experience, which might not be apparent in the literature. Consideration of these issues dictated that the most appropriate method would be semi-structured interviewing. Consequently, a list of questions was developed and it was left to the dynamic of the particular interview to see if other questions would arise from the experience of the interviewees. The interview stage of the survey design develops the qualitative analysis for this study. The first section of this research methods chapter outlined the philosophical background, which informs methodological approaches. With respect to this information, the interview stage of

this project is more closely associated with the phenomenological tradition and its promotion of the qualitative approach to research. This is justifiable in as far as interviews were designed and chosen to collect detailed information. It is important to consider the different approaches to interviewing and their implications before an explanation is given of the method chosen.

Interviews have been identified as widespread and widely accepted in social science (Stroh, 2000). Moreover, they are used to supplement other methods in research projects and to achieve rich qualitative data (Valentine, 1997). Saunders et al. (1997) and Ghauri et al. (1995) argue that the semi-structured interview is the most fundamental of the qualitative research methods. Thus, it could be argued that the interview could be the most appropriate method for deriving information, which can be analysed in detail (Easterby-Smith et al., 1991). However, there are different ways in which an interview can be conducted and it is important to address these to explain relative strengths and weaknesses, which should also indicate the reasons for considering the semi-structured interview as the most suitable method for this research. So what are the forms of interview which can be used?. Denscombe (1999) categorise interviews into highly structured interviews, unstructured interviews (the informal conversational interview) and semi-structured interviews.

5.5.1. Unstructured interviews

Unstructured interviews draw on a set of questions to be answered prior to the interview, since the questions which would emerge in the interview itself would depend on the particular social interaction (Black, 1999). The interviewee is given the opportunity to talk freely about events, behaviour and beliefs in relation to the

topic (Saunders et al., 1997). This method would be useful for the researcher who wants to engage the respondent in social interaction with respect to their topic (Mark, 1998). In this method, the interviewer is bound to allow the interview to develop in an informal manner and should therefore refrain from seeking to influence the direction of the interview.

There are difficulties with this form of interview as a research method. Indeed it was an awareness of these difficulties which meant that unstructured interviews could not be used as part of this study. Perhaps one major weakness of unstructured interviews is the amount of time which may be needed to assess the similar sets of questions to be asked (Kumar, 2000). It is also very doubtful whether the extended access, which this approach assumes could have been achieved in this study. Further, it could also be argued that the non-directive stance adopted by the interviewer could result in a lack of detail since the interviewer is unable to direct probing questions to the interviewees (Healey and Rawlinson, 1994; Ghauri et al., 1995). Indeed, it may have been highly ambitious to expect a relatively inexperienced researcher to *formulate questions quickly and smoothly, and to guard against asking questions that impose interpretations on the situation by the structure of the questions* (Patton, 1987, p. 111). Consequently, the unstructured interview was rejected as a qualitative method that could be used in this study for this reason and the other disadvantages associated with it.

5.5.2. Structured interviews

Questions in structured interviews are based on predetermined and standardised sets of questions (Saunders et al., 1997). The assumption is that the interviews will go

through the logical progression of first question to last with no deviation from this position so that all the interviewees will be asked the same questions in the same order. The interviewer tends to read out each question and then records the response on a standardised schedule, usually with pre-coded answers (Easterby-Smith et al., 1991).

Structured interviews reduce the chance of the interviewer introducing bias into the interview and enable the researcher to promote an overall systematic approach to data collection (Denscombe, 1999). This approach can be beneficial where the time available for the interview is short and access is restricted. The use of structured interviews can lead to inflexibility in the interview (Mark, 1998). This would prevent the researcher gaining detail in the interview by probing the interviewee on issues that seem appropriate as the interview unfolds (Kumar, 2000). Further, structured interviews are more appropriate for obtaining quantitative data and insights (Black, 1999). This would simply indicate that a large number of these are straightforward interviews and would have to be undertaken to draw statistical inferences from them (Denscombe, 1999). It was clear by this stage that the number of managers and owners who could be interviewed for this research would not have made this approach viable.

5.5.3. Semi-structured interviews

Semi-structured interviews may be used to explore and explain themes which have emerged from the use of a questionnaire (Wass and Wells, 1994; Saunders et al., 1997). Moreover, semi-structured interviews can be used as a means to validate findings from the use of questionnaires and to explore different issues (Sampson,

1996). Semi-structured interviews were used in this study to validate the findings identified from the use of the postal questionnaires and to explore other issues in more detail, so that theoretical concepts could be developed. A list of questions and issues (see Appendix C6) to be explored in the interviews was prepared before the interviews were conducted.

Access to research participants was taken into consideration to identify the appropriate strategies for gaining access to them. Hines (2000) argues that access will be obtained if the researcher plans well and is orderly in approach. However, access in today's business environment is not that easy as *members of organisations block access to information, constrain time allowed for interviews, lose questionnaires, go on holiday and join other organisations in the middle of your study* (Buchanan et al., 1988, p. 96). Access was achieved through personal contacts, pre-notification letters, faxes and e-mails. It was therefore important to keep the research live through regular contact with the participants until it was completed.

5.6. Sampling stage

Unit of analysis: The focus of this research is on TQM involving the self-assessment model (EQA), its applicability to the needs of SMEs and the identification of any problems associated with the implementation of the model. This was achieved through an evaluation of the literature to provide theoretical concepts and TQM issues to be examined, an evaluation using a postal questionnaire and owners and managers of SMEs were interviewed to identify the extent of applicability and any problems associated with the model.

Level of analysis: Analysis was undertaken at the manager-owner level. This was because the owner-manager of a small and medium firm is generally responsible for running the organisation, making strategic and operational decisions and is aware of every aspect of the business (tight control). Moreover, if there is any model to be introduced to the organisation, it will have to come from the owner-manager. Further, it was important to identify the opinions and perceptions of the owner-manager, and their needs with regard to the EQA model.

Sample design: Sampling has been identified to be the process of selecting a few from a bigger group, the sampling population, for estimating or predicting the outcome with regard to the bigger group (Nachmias and Nachmias, 1997). Sampling is an important issue in any research, as Becker (1998, p. 67) stated: *Sampling is a major problem for any kind of research. We can't study every case of whatever we are interested in, nor should we want to. Every scientific enterprise tries to find out something that will apply to everything of a certain kind by studying a few examples, the results of the study being, 'generalizable' to all members of that class of stuff. We need the sample to persuade people that we know something about the whole class.* Sampling allows the researcher to feel confident about the representativeness of his/her sample (Silverman, 2000), and the representativeness of the sample allows the researcher to make broader inferences (Black, 1999). Furthermore, Saunders et al. (1997) argued that using sampling achieves a higher overall accuracy than does a census. The smaller numbers of cases for which the researcher needs to collect data means that more time can be spent designing and piloting the means of collecting this data, where detailed information can be gathered (Denscombe, 1999).

A fundamental question about the research methods had to be considered at this stage. What should be considered important with respect to the principle of sampling design?. To answer this, it is important to consider exactly what type of sampling method to employ to achieve the most effective outcome of the survey. Sampling techniques can be divided into probability or representative sampling and non-probability or judgmental sampling (Riley et al., 2000). Probability sampling is where each element in a population is randomly selected when constituting a sample and has a known, non-zero chance of being selected (Riley et al., 2000). Non-probability sampling is where the chance of selection for each element in a population is unknown, and for some elements, is zero (Silverman, 2000). There are simple differences between them and it is that you can specify the probability that the unit will be included in the sample in probability sampling. In the non-probability sampling there is no way of specifying the probability of each unit's inclusion in the sample, and there is no guarantee that every unit has some chance of being included in the sample (Silverman, 2000).

Probability sampling is used in this study to enable the researcher to select the required sample. Probability sampling has been identified as the most effective method whereby detailed study of a sample can lead to justifiable generalisations about the population from which the sample is chosen (Riley et al., 2000; Lynn, 1996). Moreover, probability sampling is commonly associated with survey research where the researcher needs to make inferences from the sample about the population to answer the research objectives (Denscombe, 1999). Furthermore, probability sampling enables the avoidance of selection biases and it permits the precision of estimators to be assessed, using only information that is collected from the selected

sample (Reich, 1997). Probability sampling also enables the researcher to calculate the likelihood that any given population element will be included, because the final elements are selected objectively by specific techniques and not according to the whims of the researcher (Reich, 1997).

5.6.1. Sampling for the postal questionnaire

The researcher used probability sampling and to achieve this fully and correctly, there was a process to be followed, which can be divided into identification of a suitable sampling frame, selection of a suitable sample size and selection of the most suitable sampling technique.

Sampling frame: A sampling frame should ideally contain a complete, up-to-date list of all those comprising the population for research, and then the researcher can use a suitable sampling technique to select the appropriate respondents (Black, 1999). However, it is often the case that the sampling frame does not meet the needs of the researcher (Denscombe, 1999). Therefore, in this instance, the researcher has to construct a sampling frame. It is important to ensure that the sampling frame is unbiased, current and accurate (Saunders et al., 1997). To create the sampling frame, different sources of lists were created using a directory of UK organisations, lists of SMEs obtained from Scottish Enterprise and the use of the FAME database (FAME database consists of company information in the UK). FAME contains up-to-date and searchable information on 270,000 British companies taken from Companies House. These sources were used to make sure every SME had the chance to be selected as part of the sampling process.

Sample size: A sample must not only be representative of the population, it also needs to include enough participants (Denscombe, 1999). Kumar (2000) and Black (1999) indicated that the bigger the samples, the better, and this is based on the principle that the more instances that are covered, the less likely it is that the findings will be biased. There is a definitive answer about how large a sample should be for any given study (Reich, 1997). Fowler (1991), however, pointed to three misconceptions about this issue. First, the appropriate sample size depends heavily on the fraction of the population included in the sample. Second, a researcher makes a decision on how much margin of error can be tolerated and how much precision is required of estimates. And third, the researcher can follow a 'typical' or 'appropriate' sample size that was used in similar studies.

The survey methods will play an important role in the sample size, therefore, it is possible to choose a larger sample where the instrument of the survey is a postal questionnaire rather than with interviews (Riley et al., 2000). Further, Reich (1997) pointed out that the time and money available to the researcher will impose heavy limitations on the sample that can be used. However, attention should be given to the sample size; if the sample is too small, this may affect the generalisability of the research (Silverman, 2000). However, Saunders et al. (1997) suggested that deciding what sample size to use is almost always a matter more of judgement than of calculation.

It was decided that the questionnaire would be sent to a target of 300 SMEs in Scotland and this chosen sample of 300 would be justified because most research in quality management tends to use 100-250 as an appropriate sample size. Further,

because of the time and cost constraints involved in the research, the researcher felt that 300 was an appropriate sample size, compared well with relevant past studies, and enough statistical information can be gained from it. The sample of 300 organisations was also selected to support the principle that more is better (Kumar, 2000), and it compares favourably with relevant past studies (see Table 5.1).

Table 5.1: Overview of similar research studies on quality management

Author (s)	Number of sectors	Number of organisations	Size of sample (%)	
Quazi and Padibjo (1997)	1	200	41	(21)
Dickenson and Campbell (1999)	1	125	56	(45)
Millen et al. (1998)	1	220	58	(26)
Gulbro et al. (2000)	1	200	70	(35)
Wiele and Williams (1996)	Diverse	250	117	(47)
Wiele and Brown (1999)	Diverse	200	102	(51)
Beaumont and Sohal (1999)	1	252	59	(23)
Moeller et al. (2000)	1	134	56	(42)

Sampling techniques: Once the researcher had chosen the suitable sampling frame and the sample size, it was necessary to select the most appropriate sampling technique to obtain a representative sample (Saunders et al., 1997). Stratified random sampling was chosen as the most suitable sampling technique. Stratified random sampling enables the researcher to divide the population into a series of relevant strata and this leads to the production of a representative sample with each of the strata represented proportionally in the sample (Riely et al., 2000). Proportional stratified sampling is an important component of stratified sampling, and it refers to the number of elements sampled in each subgroup as a proportion of its representation in the population (Kumar, 2000; Nachmias and Nachmias, 1997). The finer the stratification, the more precision compared to un-stratified simple random sampling. That is, confidence

intervals will be narrower for stratified sampling than for simple random sampling of the same population. Therefore, the researcher is using employee numbers band categories as a stratification variable (1-49; 50-99; 100-149; 150-199; and 200-249). Clearly, the researcher is using employee size as a relevant strata variable.

The researcher chose proportional stratified random sampling because it enables the researcher to be sure that specific groups are represented in proportion to their appearance in the population (Riely et al., 2000; Denscombe, 1999). It also avoids the possibility of selecting from a combined population in the hope that the appropriate proportions will appear in a single population sample (Mark, 1998; Black, 1999). The researcher can generalise the findings to the population as a whole (Saunders et al., 1997; Nachmias and Nachmias, 1997) To implement proportional stratified random sampling correctly, the researcher followed these steps: identification of stratification variable, division of the sampling frame into the discrete strata, numbering each of the cases within each stratum with a unique number and selection of the sample using simple random techniques.

The postal questionnaire was sent to target sample of 300 organisations in Scotland. These companies consisted of different types of organisations, had histories of quality management practice, and reflected different company sizes (stratification variable) in the sample to illustrate the widely different characteristics of SMEs.

5.6.2. The interview sampling

The researcher used similar procedures in the interview sampling to those used for the postal questionnaire. Semi-structured interviews were used to complement the postal questionnaire method to collect rich qualitative data.

Sampling frame: It was important to ensure that the sampling frame was unbiased, current and accurate (Saunders et al., 1997). Therefore, ISO 9000 respondents from the postal questionnaire were used as a sample frame from whom the interviewees could be selected.

Sample size: A small sample is recommended where the survey instrument consists of semi-structured interviews (Riley et al., 2000). It was decided to conduct semi-structured interviews among 30% of the ISO 9000 certified organisations from the postal questionnaire. The selection of this sample size was justified by the time and cost constraints involved in this study and the selection of this sample frame is supported by Saunders et al. (1997).

Sampling techniques: Proportional stratified random sampling was chosen as a technique to enable the researcher to identify the sample required for conducting the semi-structured interviews. The researcher intended to interview 30% of the postal questionnaire ISO 9000-certified organisations using employee numbers band categories as a stratification variable, whereby the number of interviews would be equally distributed among SMEs with the different employee number bands.

5.7. Procedures for data collection

5.7.1. Pilot studies

Pilot studies were undertaken among the selected sample to test the overall research design, methods and research instrument. A selection of twenty-five organisations was made to test the postal questionnaire method, while another five organisations were chosen to test the semi-structured interview method. Saunders et al. (1997) support these sample numbers. A stratification variable (employee number) was

employed to ensure that views across the spectrum of SMEs were canvassed. No specific sampling method was employed, the decision being solely based on the view that those who had been helpful in discussing issues about quality would be more inclined to comment on the pilot questionnaire and interview. There was no intention to draw any substantive conclusions from the actual content of the pilot responses. The goal was merely to tackle any issues arising from the participants' views on questionnaire and interview contents.

5.7.2. Pilot study of postal questionnaire

A pre-notification letter (see Appendix C1) was mailed about a week before the posting of the questionnaire and included a personal, hand-written salutation using title and surname. The tone of the pre-notification letter was friendly and was written for the benefit of generating an element of expectation among the participants. A draft copy of the questionnaire and a covering letter (see Appendices C2 and C3) were mailed on 30 January 2001, and this covering letter emphasised the non-commercial nature of the research. The covering letter was personalised through the hand-written title and surname and printed on university headed paper to establish trust and credibility. The tone of the letter was the same as for the pre-notification letter. Confidentiality and anonymity were assured. A pre-paid envelope was provided whereby participants could return the questionnaire. All participants were asked to give feedback with regard to the following, suggested by Saunders et al. (1997):

- How long the questionnaire took to complete;
- The clarity of the instruments;
- Which, if any, questions were unclear or ambiguous;
- Which, if any, questions the respondents felt uneasy about answering;
- Whether the layout was clear and attractive;
- Any other comments

Sixteen (64%) of the pilot group responded (see Table 5.2 for clarification). Because of this high response rate achieved, a follow up strategy was not used. Thirteen participants (52%) completed the questionnaire without comment, apparently satisfied with its form and content. Two participants (8%) made comments about some confusion over different parts of question 16. Two respondents indicated that the recommended completion time (15 to 20 minutes) was optimistic, and that it took them 30 minutes to complete the questionnaire. In the light of these comments, a minor wording change was made.

Table 5.2: Results of pilot studies

Results	No. of cases	% of cases
Pilot study of questionnaire		
Questionnaires distributed	25	100%
Questionnaires received	16	64%
Questionnaires filled out correctly	16	64%
Non-returned questionnaires	9	36%
Pilot study of semi-structured interviews		
Owners-managers contacted	5	100%
Owners-managers who agreed to undertake interviews	4	80%
Owners-managers who rejected to undertake interviews for non specified reason.	1	20%

After the pilot study the researcher also felt that the not applicable (NA) option in the questionnaire was an unsuitable option because none of the respondents selected this option while answering the questionnaire and was therefore removed to achieve greater reliability and validity.

5.7.3. Pilot study of semi-structured interviews

Telephone calls were made to five SME owner-managers to undertake semi-structured interviews. The researcher explained the nature of the study, the importance of their contribution to it and confidentiality and anonymity were assured. Four (80 %) SME owner-managers agreed to be interviewed (see table 5.2 for clarification). Each went through a 90-minute interview and they were asked to give feedback on its content. The feedback was that participants recommended a short presentation on the EQA model to establish a basic understanding before any questions were asked and 90 minutes was found to be too short to answer all questions; the questions were tested and found to be satisfactory.

5.8. Administration of research methods

5.8.1. Administration of the postal questionnaire

The self-administered questionnaire (see Appendix C4) was sent to 300 SMEs in Scotland from a variety of sectors. All potential participants had received a pre-notification letter (see Appendix C1), which introduced the study, the value of the respondent's contribution and a request for help. The questionnaire was mailed to the target sample on 26 February with a pre-paid self-addressed envelope. A covering letter (see Appendix C2) was attached to the questionnaire. It emphasised the non-commercial nature of the research and the respondents were assured of confidentiality and anonymity. The letter explained the identification number presented on the return envelopes provided and the questionnaire, so that associations with individuals could be easily discarded by the researcher and no reminder letters would be sent to those participants who had answered the questionnaires. The covering letter outlined the

incentive offered by the researcher (a gift voucher worth of £5 for the first ten participants responding within 14 days).

Two weeks after the initial mailing of the questionnaire, the researcher had received 120 questionnaires, representing a response rate of 40%. A reminder (see Appendix C5) with a second questionnaire and stamped reply envelope, was sent to participants who had not replied. The non-respondents could be determined from the identification numbers written on the pre-paid envelopes and questionnaires. After the reminder letter, a further 75 questionnaires were received, representing a response rate of 25% of the 300 questionnaires originally sent. A total of 195 questionnaires were returned, which represented a response rate of 65%. The usable sample was 180 questionnaires, 15 returned questionnaires being incomplete. 180 questionnaires represented a response rate of 60%. The statistics are detailed in Table 5.3.

Table 5.3: Questionnaire response rate statistics

Questionnaire statistics	Number of cases	% of cases
Questionnaires posted	300	100
Questionnaires returned before the reminder letter	120	40
Questionnaires returned after receiving the reminder letter	75	25
Total questionnaires received	195	65
Questionnaires filled out correctly *	180*	60*
*Useable questionnaires (180 = 60%)		

The final number of questionnaire participants (n= 180) was identified as adequately representative of the population because the number of responses compared very well with similar studies (see Table 5.1) and this response rate is supported by Saunders et al. (1997) and Kumar (2000). A breakdown of the responding organisations by number of employees and average turnover is given in Table 5.4. Further, the

questionnaire data were aggregated at different levels: namely SMEs with regard to employee number and sector. A cross-tabulation was performed to assess what combination of organisation size by number of employees and turnover would be the most pertinent for the data analysis (see Table 5.5). A breakdown of the respondent organisations by sector is given in Table 5.6. The overall distribution reflects an emphasis on the growth of SMEs in services.

Table 5.4: Respondents by number of employees and turnover (n=180)

Number of employees	Number of cases	% of cases	Annual sales (£m)	Number of cases	% of cases
1-49	66	36.7	0-1	60	33.3
50-99	36	20	1-5	43	23.9
100-149	31	17.2	5-10	44	24.4
150-199	27	15	10-20	26	14.4
200-249	20	11.1	>20	7	3.9
TOTAL	180	100	TOTAL	180	100

Table 5.5: Respondents by organisation size (n=180)

Size of organisation	Number of cases	% of cases
Small	66	36.7
Medium	114	63.3
TOTAL	180	100

Table 5.6: Responding organisations by industry sector (n=180)

Sectors	Number of cases	% of cases
Agriculture	5	2.8
Manufacturing	52	28.9
Construction	16	8.9
Services	104	57.8
Others	3	1.6
TOTAL	180	100

5.8.2. Administration of the semi-structured interviews

Interviews were conducted with the participants in their workplace at a time convenient to them. Trust has been identified as an important and difficult issue in interviews where the people involved have not met before (Easterby-Smith et al., 1991; Denscombe, 1999). The researcher decided to meet with the respondents first where a brief introduction could be achieved to discuss the aim of the interview and to explain the EQA model in more detail. This approach was used to develop trust and build the credibility of the researcher for the interviewees (Fowler, 1991; Black, 1999).

The researcher asked the respondents to feel free in answering questions and to use their own dialects, to ensure that respondents felt relaxed and confident while expressing their opinions about issues that were considered to be important for the study. Moreover, the respondents were asked to provide truthful answers. Further, the researcher assured the respondents of confidentiality of information gathered, which would be only used in this study and not passed on, to encourage them to answer freely and truthfully (Mark, 1998).

The interviewees: Telephone calls were made to the selected sample (25) of SME owner-managers to identify participants who were willing to participate in this study. Twenty-five organisations were contacted and the researcher explained the research and suggested that if the client organisation was willing to participate in the research, a meeting could be arranged between representatives of their organisation and the researcher to discuss the matter further. Based on these telephone calls made, eighteen organisations contacted the researcher requesting a meeting. The researcher

visited each of them and discussions about the study took place. Following these discussions, fifteen organisations were willing to contribute to the research.

Fifteen SMEs owner-managers took part representing a response rate of 60%. The fifteen participants were representative of different sizes of SME by employee numbers. The participant statistics are shown in Table 5.7. Most interviews lasted about 90 minutes. All interviews were tape-recorded. The tape recorder was used because, as the interviewer was searching for depth in the responses from the interviewees, it was decided that simply to take notes could have resulted in a loss of material. However, there was awareness that the intention to tape interviews could have resulted in participants holding back in their explanation. Consequently, before the interviews, care was taken to receive permission for the taping of the interviews. To maintain confidentiality, none of the participant's names have been mentioned or quoted in the thesis.

Table 5.7: Interview respondents by organisation size and sector (N=15)

Size of organisation	Total number of cases		Service organisations		Manufacturing organisations	
	Number of cases	% of cases	No. of cases	% of cases	No. of cases	% of cases
Small	8	60	6	40	3	20
Medium	7	40	3	20	3	20
Total	15	100	9	60	6	40

5.9. Analysis of the research data

5.9.1. Analysis of the questionnaire data

The SPSS software package is typically used in social science to tease out statistical inferences within an acceptable error range (Black, 1999). Consequently,

questionnaires tend to be closely linked with a scientific positivistic research methodology. Therefore, the SPSS package was used to analyse the questionnaire data. To check for scale construct validity, factor analysis was performed using the principal components method and varimax orthogonal rotation (Kumar, 2000). The number of factors retained for rotation was developed on the number of sub-scales. The scale items were considered to load on a factor if their factor weights were greater or equal to 0.5 (Fielding and Gilbert, 2000). Correlation analysis was employed for testing criterion validity of the scale. Accordingly, bivariate correlation (Pearson) was specifically employed to study the interrelationships between the independent and dependent variables. The assessment of reliability (internal consistency) was determined using Cronbach's (1951) alpha. The Pearson Product Moment correlation was used to identify the stability of the scale over time.

5.9.2. Analysis of the interview data

Once the interviews had been completed, a strategy then had to be devised about how this qualitative material would be used. The first step was to transcribe the interviews. The interviews were transcribed verbatim to avoid missing something which could perhaps appear inconsequential initially but, as the analysis developed could take on a more important meaning. Further, transcribing the data in this manner allowed the researcher to become more familiar with it. Once this process had been completed, there was a great deal of material and a need to assess the ways in which meaning could be drawn from the transcripts.

The approach used for addressing this mass of material was based upon the "grounded theory" philosophy initially developed by Glaser and Strauss (1967). This allows a

systematic approach to research data to try and develop themes and issues from the research data (Glaser and Strauss, 1967). Grounded theory was considered an important tool for this research because there was a need to relate the empirical data to the theoretical imperatives derived from the theoretical literature (Strauss and Corbin, 1999). Easterby-Smith et al. (1991) categorised the grounded theory in a seven-stage method for analysing qualitative data: familiarisation; reflection; conceptualisation; cataloguing concepts; re-coding; linking and re-evaluation.

The first step in the analysis of the qualitative data is therefore to become familiar with the transcripts. This process involved the careful reading of the data (Denscombe, 2000). This process was repeated till the researcher felt confident of being familiar with the individual transcripts. The process of familiarisation was important because the analysis of this qualitative data depends upon a certain level of intuition (King, 1995). Consequently, through the repeated reading of the transcripts, thoughts about the meaning of the data began to emerge. Essentially this was a trawl for meaning out of what had been said in interviews.

After developing familiarisation with the transcripts, there is a need for a process of reflection. It was clear that the gathered data could not be considered as complete. Through becoming familiar with the transcripts it was clear that in certain interviews certain issues might not have been probed as deeply as the researcher would have wished. However, there was a need to be reflective and not panic about such gaps because it could be argued that, by simply using an interview guide, such gaps would occur but that nonetheless the interview provides a rich source of data (Patton, 1990). Within this reflective mode there begins a process of thinking about the responses of

the participants with respect to other studies. Are there similar or different issues arising from this present study?. This means that generative questions began to emerge based on SMEs evaluations of the EQA model criteria and business performance from the theoretical perspective.

At this stage the analysis was still in its infancy and depending to a large extent on intuition. Therefore, it was important to undertake the conceptualisation process. It was necessary to start recognising formally what patterns of concepts and issues were emerging from the qualitative data. To do this, it was decided to design a coding system for the transcripts. This process of coding was considered important, given the semi-structured approach to the interviews, in order to highlight and isolate concepts wherever they actually occurred in the individual transcripts. A system using different colours and symbols was used to mark where certain concepts and issues were arising in the transcripts. However, after the completion of this process of coding, it was felt that the transcripts should be read again using the key to the code in order to verify that no misinterpretations had occurred in the initial coding exercise. This allowed for reflection and, in some cases, a symbol was added or removed. It was also important to note that, in some of their comments, respondents could cover a number of issues and in such instances multiple coding occurred.

The next task was to catalogue the concepts and issues from the data. Since all the issues were coded, it was decided that for each issue separate sheets of paper be used to catalogue the page numbers of each response for each concept or issue made by each individual interviewee according to the code. It was possible to use this as a quick reference guide and it also indicated the frequency with which particular

concepts and issues were arising in the empirical work. However, although this was a systematic way of addressing such data, there was a danger that such mechanisms might somehow take over and start to represent a positivistic approach where the emphasis should be on more superficially intuitive processes (Easterby-Smith et al., 1991). This criticism was taken into consideration and there was an attempt to keep a 'thinking' approach where there is always a collection of generative questions arising from the qualitative data.

Re-coding was used to make sure that cataloguing of concepts did not overtake intuitive analysis. Thus, a number of questions had to be considered. Is the coding system appropriate, did the participants mean the same things when talking about certain issues or concepts, can there be multiple meanings within the boundaries of this research and has the researcher understood the responses made by the interviewees? probably. This process could therefore be considered as an initial re-evaluation of the empirical material by the researcher. Consequently, this results in a detailed examination of the coding system and the way that interviewees' responses were considered within this system. Once the researcher was happy with the coding system by re-evaluating it, there was a need to begin linking issues of the qualitative data to the theory. In support of this, Easterby-Smith et al. (1991, p. 111) stated: *The analytical framework and explanations should be becoming clearer, with patterns emerging and concepts spotted that could fit together. There should be a clearer hypothesis based on the evidence which has been gathered and organised. One can now begin to link all the variables which have been identified as important into a more holistic theory. This involves linking empirical data with more general models and it takes the form of tacking backwards and forwards between the literature and*

the evidence collected in practice. At this stage there was a need to start writing up findings and linking them with the theory in order that comment could be made with respect to applicability of the EQA model in SMEs.

The qualitative data collected was aggregated based on the number of citations with regard to the different constructs of the EQA. As the interview guide was based on the nine constructs of the EQA, the researcher would look for their practices within their own organizations based on the management opinions of each construct and obtain their own views. The more positive the citations, this revealed positive attitudes towards the separate constructs of the EQA. In order to aggregate the emergent themes, the researcher collected all the information with regard to the question which stated *what other issues you would consider important in managing, achieving and sustaining quality.* Based on the information collected, the researcher started looking for repetition of similar concepts and the perceived values of the concepts mentioned in the transcripts. The researcher also collected the number of citations with regard to these concepts and the level of their importance. Two emergent concepts were selected on the basis that they had the highest number of citations with regard to how valued the SME owners/managers perceived them to be and how relevant to the needs of SMEs.

Consideration was given to analyzing the qualitative data obtained using software programs, such as NUD*IST 4 (Non-Numerical Unstructured Data Indexing, Searching and Theorizing). The use of NUD*IST 4 would have allowed the researcher to not only aggregate the data but to go a step further and provide beginning displays for the theory production that the researcher planned to perform in

the study. However the number of interviews performed was not sufficient enough to use NUD*IST 4 or any other software for qualitative data analysis. Therefore, the idea of using NUD*IST 4 or other software was rejected.

5.10. Empirical assessment of the research instruments

In this study, the instrument used was based on the EQA, which consists of nine scales (49 items). These scales had to be empirically tested and validated for several reasons. First, the scale provides confidence that the empirical findings accurately reflect the proposed constructs (Rahman, 2001). Second, an empirically validated scale can be used directly in other studies in the field of quality management for different populations and for longitudinal studies (Flynn et al., 1994). As discussed earlier many methods were available for empirically assessing the reliability and validity of a measurement scale. This section details how the reliability and validity of these scales were evaluated.

5.10.1. Assessment of reliability analysis

In the case of reliability analysis, Cronbach's Alpha model, which measures internal consistency, was employed. Its value refers to the degree to which items in a set are homogeneous (Cronbach, 1990). The use of Cronbach's alpha in this study would enable the researcher to determine whether or not the questionnaire is measuring small and medium-sized firm owner-managers' attitudes and perceptions of the EQA. Additionally it would enable the researcher to determine the extent to which an item within the study is not applicable and should be excluded from the scale to improve reliability.

Assessment of reliability during the pilot study was undertaken using Cronbach's alpha (see Table 5.8), which is a widely used estimator of reliability for a set of questions (Cramer, 1998). For exploratory research, for example, pilot testing. Nunnally (1994) and Black and Porter (1996) suggest that a reliability coefficient of 0.5 to 0.6 is sufficient for achieving reliability, and the higher the value, the higher the reliability.

Table 5.8: Results of Cronbach's alpha for EQA constructs during pilot testing (n=16)

EQA constructs	Number of cases	Number of items	Pilot alpha
Leadership	16	6	0.71
Policy and strategy	16	7	0.73
People management	16	7	0.72
Resources	16	4	0.74
Process	16	6	0.94
People satisfaction	16	4	0.74
Customer satisfaction	16	8	0.79
Impact on society	16	2	0.98
Results	16	5	0.93
EQA model	16	49	0.87

The alpha scores are all in the range of 0.71 to 0.98. The overall alpha score for the EQA model is 0.87. Thus it was concluded from the alpha results that this exploratory research instrument was very reliable.

Construct reliability

The EQA constructs used in this study were again tested for reliability using Cronbach's alpha. The value of alpha should be different in this section due to the nature of the research and the number of participants (n=180). Therefore, there is some degree of interpretation as to which values of alpha constitute acceptable

internal reliability. Nunnally (1967) recommends a value of greater than 0.8 for basic research, while Peterson (1994, cited in Black, 1999) provided a more reasonable value of 0.7 for measures of perception and attitudes. Table 5.9 shows the resulting alpha statistics for the EQA model.

Table 5.9: Results of Cronbach's alpha for EQA constructs during the research (n= 180)

EQA Constructs	No of cases	No of items	Deleted number of items	Cronbach's alpha
Leadership	180	6	None	0.84
Policy and strategy	180	7	None	0.81
People management	180	7	None	0.82
Resources	180	4	None	0.86
Process	180	6	None	0.76
People satisfaction	180	4	None	0.88
Customer satisfaction	180	8	1	0.87 (0.71)*
Impact on society	180	2	None	0.89
Results	180	5	None	0.83
EQA model	180	49	1	0.84
* Cronbach's alpha before a deleted item.				

Table 5.9 shows the reliability coefficients, which ranged from 0.76 to 0.89, indicating that some measuring constructs were more reliable than others. The EQA constructs developed for measuring quality management were thus considered to be reliable.

The researcher decided to use Nunnally's (1967) method of item analysis to evaluate the assignment of the items to scales. Nunnally's method considers the correlation of each item with each scale. Specifically, the item-score to scale-score correlations are used to determine whether an item belongs to the scale as assigned, belongs to some other scales, or if it should be deleted. If an item does not correlate highly with any of

the scales, it is eliminated. Saraph et al. (1989) and Quazi et al. (1998) used this method to evaluate the assignment of items to scale for developing their instrument. For this study, it was decided that item analysis should be performed to understand whether items had been assigned appropriately. Table 5.10 shows the correlation matrix for the EQA constructs and their measurement items.

Table 5.10: Item to scale correlation matrix (Pearson correlation)

Scales	Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8
Leadership (6)*	0.780	0.808	0.701	0.702	0.850	0.630	-	-
Policy and strategy (7)*	0.740	0.780	0.809	0.691	0.680	0.749	0.750	-
People management (7)*	0.765	0.750	0.801	0.691	0.739	0.774	0.641	-
Resources (4)*	0.725	0.661	0.752	0.711	-	-	-	-
Process (6)*	0.725	0.667	0.751	0.710	0.801	0.754	-	-
People satisfaction (4)*	0.750	0.712	0.801	0.766	-	-	-	-
Customer satisfaction (8)*	0.812	0.732	0.818	0.849	0.649	0.812	0.802	0.461
Impact on society (2)*	0.741	0.787	-	-	-	-	-	-
Results (5)*	0.740	0.732	0.768	0.703	0.656	-	-	-
*Number of items: item number in this table is the same as the item number in the instrument. (-) indicates item number is not available.								

The correlation matrix revealed that the items correlated highly with the scale they intended to measure. Kemp (1999) recommended a value greater than 0.5 to share enough variance with items in each scale, and any item with a value lower than 0.5 should be deleted from the scale. All of the values in Table 5.8 were greater than 0.5, except item 8 in scale 7 (customer satisfaction). Therefore, it was concluded that all items had been appropriately assigned to scales apart from item 8 in scale 7. Therefore, the item was deleted.

Reliability is concerned with the stability of the instrument over time (Black, 1999), in other words, whether or not the instrument provides much the same score on two different occasions. Therefore, a test-retest method was employed to identify the stability of the instrument, which follows a simple procedure of administering the

instrument to the same group on two occasions (Hair et al., 1998). One participant filled out the questionnaire on two occasions separated by a period of three weeks. The second response is not included in the main sample (n=180). The researcher employed the Pearson Product Moment correlation to identify the stability of the instrument. Table 5.11 shows the results of the test-retest method. The results of the Pearson correlation indicate a very good stability of the EQA model constructs.

Table 5.11: Test–retest statistics for the EQA constructs

Scale number	Construct and scales	Degree of Freedom	No of constructs	Pearson correlation
1	Leadership	5	6	0.96
2	Policy and strategy	4	7	0.99
3	People management	4	7	0.86
4	Resources	3	4	0.96
5	Process	5	6	0.99
6	People satisfaction	5	4	0.83
7	Customer satisfaction	7	8	0.98
8	Impact on society	1	2	0.99
9	Results	4	5	0.86
	EQA model	48	49	0.94

5.10.2. Assessment of validity analysis

The researcher decided to employ different methods of validity analysis to assess the validity of the research instrument and their use is discussed next.

Content validity

Content validity depends on how well the researcher has created the measurement items to cover the content domain of the variable being measured (Rao et al., 1999). Therefore, the evaluation of content validity involves an organised review of the survey's contents to ensure that it includes everything it should and does not include anything it should not (Zhang et al., 2000). Content validity is not a scientific

measure of a survey instrument's accuracy. This is because it is not numerically determined but based on judgement (Black, 1999; Cronbach, 1990).

In the case of this instrument, an extensive review was made of the literature regarding quality management and SMEs, which resulted in different factors and these were presented in the EQA model. So the measurement instrument was developed based on the nine measures of the EQA model, which is widely used by European companies to measure and to benchmark performance. Based on this, the research instrument was considered to have content validity. Further, the survey was piloted with quality experts and practitioners who verified its content. The researcher believes strongly that the survey instrument has content validity, as it was well received by the pilot respondents.

Construct validity

A measure has construct validity if it measures the theoretical construct or trait that it was designed to measure (Kumar, 2000; Flynn et al., 1994). The most popular method of evaluating construct validity is factor analysis. Factor analysis addresses the problem of analysing the interrelationships among a large number of variables and then explains these variables in terms of their common underlying dimensions (Litwin, 1995). The general purpose of factor analysis is to find a way of condensing or summarising information into a smaller set of new composite dimensions with a minimum loss of information (Hair et al., 1998).

The items assigned to each of the EQA constructs were submitted to the principal components method and varimax orthogonal rotation was performed (Sarantakos,

1998). For satisfactory factor analysis, Black (1999) recommends, as a general rule, a minimum of about 300 cases. When the factor loadings on several of the variables are relatively high, they suggest that about 150 cases should be sufficient. Thus, and at least in their terms, the research sample achieved in this study (n=180) should be adequate to produce satisfactory factor analysis.

Principal component analysis was performed and each scale was factor analysed separately. The detailed results are listed in Table 5.12. Table 5.12 shows that all of the items had factor loadings greater than 0.5 on factor 1. Hair et al. (1998) suggested that factor loadings greater than 0.3 are considered significant; loadings of 0.4 are considered more important; if the loadings are 0.5 or greater, they are considered very significant. In this study, a factor loading of 0.5 was considered to be very significant.

Table 5.12: Results of factor analysis for the nine scales

S C A L E S	F A C T O R S	Factor loadings/ item number								Eigen- values	% of variance
		1	2	3	4	5	6	7	8		
1 (6)	1	0.784	0.802	0.725	0.677	0.839	0.644	-	-	4.620	57.750
2 (7)	1	0.748	0.808	0.817	0.696	0.665	0.737	0.630	-	3.394	55.820
3(7)	2	0.737*	0.679*	0.731*	0.751*	0.701*	0.671*	0.797*	-	5.106	51.062
		0.223	0.170	0.269	0.020	-0.094	-0.379	-0.294	-	1.009	10.095
4 (4)	1	0.754	0.740	0.806	0.705	-	-	-	-	3.878	77.561
5 (6)	1	0.761	0.699	0.759	0.776	0.747	0.810	-	-	3.514	58.572
6 (4)	1	0.795	0.904	0.902	0.940	-	-	-	-	4.443	55.539
7 (8)	2	0.727*	0.677*	0.765*	0.725*	0.714*	0.751*	0.777*	0.793*	55.060	55.060
		0.313	0.492	0.395	0.138	-0.469	-0.408	-0.333	-0.080	12.734	12.734
8 (2)	1	0.757	0.795	-	-	-	-	-	-	3.878	80.121
9 (5)	1	0.819	0.748	0.825	0.842	0.657	-	-	-	3.710	61.883

*Numbers in brackets indicate the total number of items in each scale.
 Figures in bold and star next to them indicate factor loadings on two factors.*

The factor analyses suggested that the items in seven of the nine scales formed a single factor, except for scale three (people management) and scale seven (customer

satisfaction). Within these two scales, two factors emerged according to the criterion of eigenvalues greater than 1. Therefore, due to those two scales being loaded on more than one factor, the rotated solution was examined critically in Tables 5.13 and 5.14.

Table 5.13: Factor matrix for scale three (people management)

Scale 3	Unrotated factor 1	Unrotated factor 2	Rotated (varimax) factor 1	Rotated (varimax) factor 2
Item 1	0.737	0.223	0.701	0.317
Item 2	0.679	0.170	0.657	0.351
Item 3	0.731	0.269	0.739	0.289
Item 4	0.751	0.020	0.542	0.441
Item 5	0.701	-0.094	0.441	0.509
Item 6	0.671	-0.379	0.342	0.809
Item 7	0.797	-0.294	0.391	0.729

Table 5.14: Factor matrix for scale eight (customer satisfaction)

Scale 8	Unrotated factor 1	Unrotated factor 2	Rotated (varimax) factor 1	Rotated (varimax) factor 2	Rotated (quartimax) factor 1	Rotated (quartimax) factor 2
Item 1	0.727	0.313	0.285	0.731	0.750	0.241
Item 2	0.677	0.492	0.130	0.826	0.832	0.071
Item 3	0.765	0.395	0.261	0.821	0.832	0.207
Item 4	0.725	0.138	0.415	0.608	0.636	0.372
Item 5	0.714	-0.469	0.837	0.170	0.228	0.821
Item 6	0.751	-0.408	0.820	0.239	0.291	0.801
Item 7	0.777	-0.333	0.786	0.309	0.361	0.761
Item 8	0.793	-0.080	0.619	0.503	0.544	0.581

Table 5.13 shows the unrotated factor and rotated factor matrix for scale three (people management). It was very clear that items 1, 2, 3 and 4 belonged to factor 1 and items 5, 6 and 7 belonged to another factor. Moreover, table 5.14 reveals an unrotated factor and rotated (varimax and quartimax) factor matrix for scale seven (customer satisfaction). After a careful analysis of the negative items, it was difficult to identify

whether item eight belonged to factor 1 or factor 2. Item eight was loaded very significantly on both factors 1 and 2. It was decided that item eight should be deleted. Scale 7 consisted of seven items and scale three consisted of seven items of measures. Finally, it was concluded that the EQA constructs had good construct validity.

Criterion-related validity

Criterion-related validity is concerned with the extent to which a measuring instrument is related to an independent measure of the relevant criterion (Black, 1999). For example, the nine measures of quality management (EQA) in a business have criterion-related validity if the measures are highly and positively correlated with the quality performance of the business.

In the present study, criterion-related validity was employed to measure how well the scales representing the various quality management criteria based on the EQA constructs are related to measures of business and product or service performance. Product or service quality performance (the criteria) was measured by asking participants to rate (on a five point scale, 1= worst in the industry; 2= below average; 3= average; 4= above average; 5= best in the industry). Six measures were utilised, which included performance, conformity rates, reliability, durability, defect rates and internal failure costs.

Correlation analysis was employed for testing criterion validity. Accordingly, bivariate correlation (Pearson) was specifically employed to study the interrelationships between the independent and dependent variables: the EQA constructs (the predictor set) and the product or service quality performance measures

(the criterion set). The correlations can be seen in Tables 5.15, 5.16, and 5.17. These tables demonstrate a strong and positive correlation between the predictor set (EQA constructs) and the criterion set (the six measures of product and/or service quality performance). The correlation was significant at the 0.01 level, therefore it can be concluded that this set of scales had good criterion-related validity.

Table 5.15: Bivariate correlation matrix (EQA scales)

EQA scales	M	SD	1	2	3	4	5	6	7	8	9
1 Leadership	4.48	0.56	1.000								
2 Policy and strategy	3.95	0.91	0.749	1.000							
3 People management	3.97	0.87	0.823	0.802	1.000						
4 Resources	4.52	0.59	0.757	0.788	0.853	1.000					
5 Process	4.35	0.67	0.717	0.749	0.789	0.822	1.000				
6 People satisfaction	4.26	0.74	0.716	0.644	0.765	0.764	0.775	1.000			
7 Customer satisfaction	4.57	0.50	0.655	0.703	0.781	0.719	0.745	0.660	1.000		
8 Impact on society	4.30	0.75	0.749	0.722	0.809	0.813	0.806	0.753	0.717	1.000	
9 Results	4.52	0.46	0.752	0.710	0.789	0.755	0.744	0.694	0.710	0.803	1.000

M = mean SD= standard deviation

Table 5.16: Bivariate correlation matrix (product and service quality measures)

Quality measures	M	SD	1	2	3	4	5	6
1 Performance	3.40	0.88	1.000					
2 Conformity rates	3.09	0.96	0.838	1.000				
3 Reliability	3.08	0.94	0.796	0.850	1.000			
4 Durability	2.89	1.01	0.760	0.793	0.856	1.000		
5 Defect rates	2.89	0.97	0.474	0.575	0.510	0.513	1.000	
6 Internal failure costs	2.98	1.04	0.548	0.603	0.595	0.520	0.791	1.000

M = mean SD = standard deviation

Table 5.17: Bivariate correlation matrix (EQA scale, product and/or service quality measures)

	EQA scales	Product/service quality measures						Average
		1	2	3	4	5	6	
1	Leadership	0.631	0.611	0.587	0.547	0.390	0.409	0.529
2	Policy & strategy	0.524	0.561	0.574	0.506	0.346	0.419	0.488
3	People management	0.617	0.645	0.634	0.563	0.364	0.460	0.547
4	Resources	0.608	0.628	0.612	0.565	0.371	0.432	0.536
5	Process	0.623	0.646	0.630	0.553	0.422	0.523	0.566
6	People satisfaction	0.536	0.576	0.535	0.500	0.371	0.441	0.493
7	Customer satisfaction	0.547	0.605	0.568	0.531	0.351	0.434	0.506
8	Impact on society	0.544	0.569	0.544	0.508	0.301	0.341	0.467
9	Results	0.572	0.601	0.581	0.509	0.384	0.465	0.518

Pearson correlation is significant at 0.01 (two-tailed)

5.11. An assessment of the interviews

5.11.1. Assessment of the interview data validity

Validity criteria used with quantitative methods are awkward, confounding and inappropriate for qualitative research (Emden and Sandelowski, 1998). This is because qualitative research is based on entirely different epistemological and ontological assumptions to quantitative research (Whittemore et al., 2001). Therefore validity in qualitative research is regarded to be more challenging because of the need to incorporate both rigour and subjectivity as well as creativity into the scientific process (Whittemore et al., 2001).

The interview schedule was designed to complement the data obtained from the questionnaires to indicate the applicability of the EQA model to the needs of the organisations under study, and therefore improve the validity and reliability of the data to help develop a richer picture of the EQA. The interview was also designed to identify potential problems of EQA implementation in SMEs. The contents of the

interview schedule were based on the nine measures of the EQA model and their criteria weighting. Therefore, this instrument is believed to have content validity.

To ensure data validity, the researcher made use of the direct contact at the point of the interview where the collected data would be checked for accuracy and relevance, as it was collected. The researcher tended to summarise explanations provided by the interviewee. This allowed the researcher to evaluate the adequacy of the interpretation and to correct where needed. Easton et al. (2000) and Ghauri et al. (1995) support this approach by arguing that a carefully conducted qualitative interview will result in a high level of data validity. This can be made clearer through the fact that *the main reason for the potential superiority of qualitative approaches for obtaining information is that the flexible and responsive interaction which is possible between interviewer and respondents allows meaning to be probed, topics to be covered from a variety of angles and questions made clear to respondents* (Sykes, 1991, p. 8).

Qualitative research using semi-structured interviews will not be used to make generalisations about the entire population (Jankowicz, 1995). Therefore, to ensure validity in generalisability of the findings, the researcher will establish a relationship with the existing theory to demonstrate the broader significance of semi-structured interview findings. This relationship allows the research to examine the applicability of the EQA to the needs of SMEs, and it will also allow theoretical propositions to be advanced, which can be tested in another context. Easton et al. (2000) and Wass and Wells (1994) have supported this strategy.

5.11.2. Assessment of the reliability of the interview data

Reliability ensures that research instruments are neutral in their effects, and would elicit the same results when used on other occasions (Kumar, 2000). However, in qualitative research, the researcher's self is an integral part of the research instrument, for example, the researcher is part of the research instrument in this study, 'the interview'. Therefore, the issue of reliability is transformed into this important question: If another researcher did the research would he/she have reached the same results and conclusions. There is no way of answering this question. The researcher employed three strategies in dealing with reliability in the qualitative research and they were: providing an explicit account of how the specified research was undertaken, providing account details of the reasoning behind key decisions made in the research methods chapter and providing a full explanation of the aims of the research.

The researcher believes that, by providing a detailed account of such information, it is possible to reach conclusions about how far another researcher would have achieved the same findings (Hall and Callery, 2001). The process of keeping a fairly detailed record of the researcher's decisions is termed an audit trail (Lincoln and Guba, 1999).

Denscombe (1999) stated that: *An audit trail should be constructed and mapped out for the reader – allowing him or her to follow the path and key decisions taken by the researcher from conception of the research through to the findings and conclusions derived from the research* (Denscombe, 2000, p. 213).

People are interviewed because they are in a position to know about the things that interest the researcher and have the ability to provide reliable and credible data

(Whittemore et al., 2001). Participants are selected because they are specialists, experts, highly experienced and their testimony carries a high degree of credibility and reliability. The researcher focused on organisations, which had obtained ISO 9000 and on interviewing managing directors or quality managers who would have knowledge of SMEs needs in the context of quality management models. Their testimonies would be based on knowledge and experience about quality among their organisations. Therefore, the data should be reliable and credible.

The contents of the interview schedule were based on the nine measures of the EQA model and their criteria weighting. Therefore, this instrument is believed to be valid. Lincoln and Guba (1999) concluded that, if the research instrument proved valid, it would lead to a reliable instrument and data.

5.11.3. Some inter-related issues concerning interview data validity and reliability

The concern about reliability and validity in these semi-structured interviews is also related to interviewer and interviewee or response bias. Interviewer bias is demonstrated where the comments, tone or non-verbal behaviour of the interviewer create bias in the way that interviewees answer questions. Interviewers may try to impose their beliefs through the questions being asked, or by the way in which they are asked, and by the language used. Bias can also exist in the ways that the researcher interprets responses (Easter-Smith et al., 1991), where the researcher (interviewer) is unable to develop the trust of the interviewee, or where your credibility is lacking, or where the value of the data gathered is limited (Holstein and Gubrium, 1997).

Interviewee and response bias can be caused by perceptions of interviewers. The interviewee may be sensitive to providing details of exploration of certain issues, which the researcher wishes to explore. The outcome of this may be that interviewees provide a partial picture of the situation (Bowler, 1997). Further there may be a lack of willingness to continue with the interview, which lead to a reduction in the time requirement of the interview (Gubrium and Holstein, 1997).

To overcome these forms of bias, the researcher followed different strategies and they include the following: organisational knowledge; relevant information; appearance; opening comments; listening skills; the researcher's behaviour and approach to questioning.

Organisational knowledge: the researcher decided to look at company reports, financial data and other available publications relating to the organisations investigated. This knowledge could be used in the interview to enable the researcher to demonstrate credibility and thereby encourage the interviewee to offer a more detailed account of the topic under investigation and provide the researcher with the ability to assess the accuracy of the information provided. This view has been emphasised by Healey and Rawlinson (1994, p. 136) who stated that: *A well-informed interviewer has a basis for assessing the accuracy of some of the information offered.*

Relevant information: the researcher provided respondents with a list of the interview themes before the interview. This strategy was implemented to promote validity and reliability by enabling interviewees to consider the information being requested and prepare themselves for the discussion. Saunders et al. (1997) support this strategy.

Appearance: the researcher's appearance at the interview can affect the interviewee's perception of the researcher. This may lead to a failure to gain a participant's confidence and the resulting bias may affect the reliability of the information provided (Emory and Cooper, 1991). Therefore, the researcher decided to be smartly dressed in order to adopt a similar style of dress to those to be interviewed.

Opening comments: the first few minutes of conversation may have a significant effect on the outcome of the interview. During the first few minutes of the interview the researcher followed eight points in order to achieve credibility and interviewee's confidence. These points are as follows:

- (1) The respondent was thanked for agreeing to be interviewed;
- (2) The aims of the interview were briefly discussed;
- (3) Confidentiality and anonymity were assured;
- (4) The respondent was told about the nature of the outputs to which the research was intended to lead;
- (5) Permission to tape the interview was sought;
- (6) Respondents were asked to feel free in answering questions and to use their own dialects;
- (7) Respondents were advised that there are no correct answers;
- (8) Before the substantive discussion got under way, the final point was to indicate the way in which the interviewer would like the interview to be conducted and the themes to be covered.

Confidentiality and anonymity issues were stressed in the interview. This strategy was used to ensure that interviewees were more relaxed and open in the information that they were willing to discuss. Also it increased the level of interviewees' confidence and reduced interviewee or response bias (Healey and Rawlinson, 1994).

Listening skills: the researcher understood the importance of listening skills needed for semi-structured interviews, where the researcher is observing for signals and is willing to take time to listen and to help build understanding, to provide interviewees

with reasonable time to develop their responses, and to avoid projecting his own views. Ghauri et al. (1995) suggested that careful listening should allow the researcher to identify comments, which are significant to the research topic, and which can usefully be explored.

The researcher's behaviour during the interview: Denscombe (1999) suggested that appropriate behaviour by the researcher should reduce bias during the interview, while comments or non-verbal behaviour should be avoided. At the interview, the researcher sat slightly inclined towards the interviewee and adopted an open posture, avoiding folding arms. This strategy provided the researcher with a signal of attentiveness. Appropriate tone of voice was projected to show enthusiasm and avoiding any impression of anxiety, astonishment or any other negative signals, which might have had a negative effect on responses.

Approach to questioning: the researcher decided to avoid asking questions with too many theoretical concepts or jargon. This is because the researcher's understanding of these theoretical concepts or specific terminology may be different from that of the interviewees (Gubrium and Holstein, 1997). However, in the interview where specific terminology was used, the researcher ensured that the interviewee understood the intended meaning by explaining that specific terminology to them. The researcher's questions were clearly phrased, so that the interviewees could understand them. The questions were asked in a neutral tone of voice to avoid bias. Open-ended questions were used first and then followed up by the use of appropriately worded probing questions, which helped the researcher to explore the topic and produce a detailed account. Therefore, the approach to questioning employed by the researcher

helped to reduce scope for bias during the interview and hence increased the reliability and validity of the data obtained (Sykes, 1991; Bowler, 1997).

5.12. SUMMARY

This chapter has discussed the research methods used in this study. The chapter has covered research design and philosophical positions underlying methodological approaches, research sampling and the administration of the postal questionnaires and interviews. The chapter has also examined the collection of secondary and primary data through the survey research. Further, this chapter has addressed the reliability and validity of the EQA scales used in the study questionnaires. The next chapter begins with analysing and discussing the quantitative data gathered through the use of descriptive statistics.

Chapter Six: Quantitative Data analysis and Discussion

6. Introduction

This chapter analyses the data gathered from the sample and presented through the use of descriptive statistics. Descriptive statistics are the basic computations used for interpreting quantitative data. Black (1999) noted that descriptive statistics compute summary statistics that describe exact values or central tendencies and how data are spread around them. In this chapter, the descriptive statistics tools used are frequency scores, means and standard deviations. Cross-tabulations are presented to show the distribution of variable(s) to other variable(s). The chapter begins by analysing the data by focusing on the following sections: organisational characteristics, knowledge and understanding of TQM, quality management constructs and performance and organisational maturity.

6.1. Organisational characteristics

The first aspects to be investigated were the general background of the study participants and include business activity, number of employees, ownership types, certification types and quality initiatives.

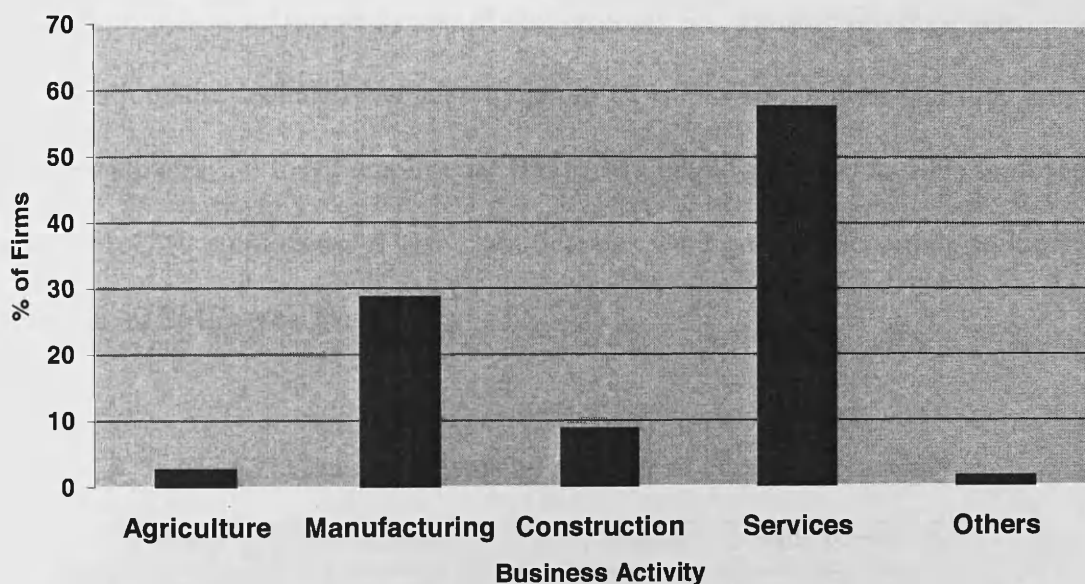
6.1.1. Sample distribution by business activity

The questions included four main groups of sectors for organisations to choose from and participants could also specify others. The results of the sample distribution by business activity are presented in Table 6.1 and Figure 6.1.

Table 6.1: Sample distribution by business activity (n=180)

Activity (sectors)	Frequency	Valid Percent (%)
Agriculture and Forestry	5	2.8
Manufacturing	52	28.9
Construction	16	8.9
Services	104	57.8
Others	3	1.7
Total	180	100

Figure 6.1: Distribution of the sample firms by business activity (n=180)



As can be seen, services ranked first with 104 organisations, representing 57.8% of all these were surveyed. Manufacturing organisations ranked second with 52 or 28.9% of the respondents, while construction (16 or 8.9%), agriculture and forestry (5 or 2.8%) and other organisations (3 or 1.7%) followed. Quazi and Padibjo (1998a) investigated TQM factors in 39 ISO-certified SMEs in Singapore. Most of the respondent companies were services (32%), followed by manufacturing (18%), transport and wholesales (14%), and other companies (26%). Further, Beaument et al. (1997) indicated that service sector respondents (47%, 66%) outnumbered other organisations in different sectors. The results of these studies are consistent with

those of the present study. This can be explained by the fact that services account for between 60% and 80% of a modern economy's output and employment (Voss et al., 1997). More specifically, The Scottish Office (2001) has confirmed that the largest share of Gross Domestic Product (GDP) is accounted for by services (64.1%) in Scotland, and that the remainder is made up of the other sectors (see Appendix D Table D1). Further, 75% of all new jobs are created in services rather than in other sectors in Scotland (see Appendix D Table D2).

6.1.2. Sample distribution by size of respondents (i.e. number of employees)

The questionnaire included five classifications of employee numbers and they are: 1 to 49 employees; 50 to 99 employees; 100 to 149 employees; 150 to 199 employees and 200 to 249 employees. These classifications were grouped according to the EC definition of SMEs (see Table 6.2).

Table 6.2: Grouping firms by number of employees (n=180)

Number of employees category	Frequency	Valid percent (%)
1-49 (small)*	66	36.7
50-249 (medium)*	114	63.3
Total	180	100.0
<i>*Number of employees grouping is based on small and medium firms definition</i>		

Table 6.2 shows that medium-sized organisations (50 to 249 employees) constituted the largest proportion (63.3%) of respondent ones, with 114 organisations. 66 small firms, with employees numbering between 1 to 49, therefore represented a relatively low percentage of 36.7%, compared to the total number of medium-sized firms. Clearly, the present study showed that the majority of organisations were medium-sized firms. Taylor (1995) found that medium-sized firms in the UK represented the

majority of the sample of SMEs. Singels et al. (2001) investigated the benefits of ISO 9000 on a sample of 192 SMEs in Holland, and they indicated that the number of medium-sized organisations was higher (61%) than that of small firms (39%). Further, Tan and Lim-Teck Sia (2001) found similar results in Malaysia and Thailand, with most of firms being medium-sized. Those findings are similar to the present case of SMEs in Scotland. It can therefore be concluded that the medium-sized firms constituted the largest proportion in the Scottish sample and this compares favourably with the above studies.

6.1.3. Sample distribution by ownership

Ownership classification was based on different forms recommended in the literature to reflect SME characteristics. Table 6.3 demonstrates the sample distribution by ownership in Scotland. The sample distribution by ownership analysis showed that (see Table 6.3) 61 respondents were sole proprietorships, representing a considerable percentage of 33.9% of the sample and ranked first. Partnerships came second, with 59 organisations, accounting for 32.8% of the participants, followed by private limited (26.7%), subsidiary (5%) and other types of ownership (1.7%). Ownership types were distributed closely between sole proprietorship, partnership and private limited.

Table 6.3: Sample distribution by ownership (n=180)

Type of ownership	Frequency	Valid percent (%)
Sole proprietorship	61	33.9
Partnership	59	32.8
Private limited	48	26.7
Subsidiary	9	5.0
Others	3	1.7
Total	180	100.0

The sample distribution by ownership analysis revealed that most of the organisations were sole proprietorships and partnerships. This may be because most SMEs are more likely to be run and owned by entrepreneurs, who have the determination to create a successful business without any external control by subsidiary or partners. As Beaver and Prince (2002) pointed out, entrepreneurs prefer to control their own destiny and not to be controlled. Comparing ownership findings in Scottish SMEs with those of other studies, Lee (1998) investigated quality management in the manufacturing sector in the Republic of Korea and found that most of the organisations surveyed were sole proprietorships (29.2%) and partnerships (24.1%) of the sample of 72. The results of this study are consistent with those in the case of Scottish SMEs, where most of SMEs are sole proprietorships and partnerships. The OECD (2000) further supports this strongly.

6.1.4. Sample distribution by ISO 9000 certification

Companies that are certified to ISO 9000 reflect their commitment to quality management practices and the number of companies involved may be an indicator of quality development and enhancement in a particular country. To assess the state of quality in Scotland, the researcher illustrated the number of certified and non-certified organisations in the sample (see Table 6.4).

Table 6.4: Extent of ISO 9000 certification (n=180)

ISO certified	Frequency	Valid percent (%)
Yes	82	45.6
No	98	54.4
Total	180	100.0

Table 6.4 shows the number of ISO 9000 certifications among SMEs in Scotland. 45.6% of the sample was certified, which accounted for 82 organisations, while 54.4% of participants were not certified, which accounted for 98 organisations. Clearly this analysis suggests that there is a relatively low rate of ISO 9000 certification in Scotland (45.6%). This may be because of the high costs associated with ISO 9000 implementation; these companies are small and do not have the resources that larger companies do and also they may not have the benefits of ISO 9000 (Nwankwo et al., 1998; Augustyn and Pheby, 2000). It can be suggested that SMEs are less comfortable with the formal procedures involved in implementing the standard. However, on the other hand this rate of certification (45.6%) can be seen as progression for SMEs, as they are reluctant to implement the standard and further development can be obtained. This also suggests that SMEs show that they are changing their attitudes and commitment to the implementation of the standard.

The findings of this study can be compared with those of Beaument and Sohal (1999) in Australia, where 55.2% of the 105 companies that responded were ISO 9001/9002 certified, and 47.8% were not. McAdam and Canning (2001) investigated SMEs perceptions of ISO 9000 in the Republic of Ireland and they noted that 41% of the sample of 52 were not certified and 39% were and the rest of the sample were undecided. These findings are similar and consistent with the present study. However, there are other findings which are not similar to those of the present study. In Singapore, Quazi and Padibjo (1998a) found that only 26% of the respondents of 39 were ISO 9001/9002 certified. 50% of these companies (13% of the total sample) had achieved their certification within the previous year. In addition, Abdul Aziz et al. (1998) found in Malaysia that 43% of small companies had not implemented ISO

9000. Clearly, there is a mix results concerning ISO 9000 implementation in different countries, however ISO 9000 seems to be implemented more in developed countries (Australia, Ireland, and Scotland) than in less developed countries (for example, Malaysia, Singapore).

6.1.5. Quality management initiatives

In an attempt to discover whether the participants had embarked on a TQM programme or not, a question was included which required respondents to indicate which quality initiatives they had implemented. Table 6.5 and Figure 6.2 show the use of particular initiatives and identify the main ones associated with quality management according to SMEs in Scotland.

Table 6.5: Usage of quality management initiatives among SMEs (n=180)

Quality Initiatives	Frequency	Valid percentage (%)
Quality circles	31	17.2
Customer satisfaction surveys	50	27.8
Customer needs surveys	41	22.8
Statistical process control	14	7.8
Quality awareness training	11	6.1
Cultural change programme	4	2.2
Others	7	3.9
None	22	12.2
Total	180	100.0

The initiatives that were implemented by the majority of the participant companies were customer satisfaction surveys (27.8%), customer needs surveys (22.8%) and quality circles (17.2%). The least implemented were initiating Statistical Process

Control (SPC) (7.8%), quality awareness training (6.1%) and cultural change programmes (2.2%).

Figure 6.2: Usage of quality initiatives among SMEs (n=180)



It was surprising to find that 7.8% or 14 of the firms in the sample were not applying SPC, especially as the technique is considered to be widely used. This can be explained by the fact that most of the sample consists of service organisations (see Table 7.1) and they do not tend to implement SPC as much as do manufacturing companies. Also it can be suggested that SMEs did not use SPC because they are not culturally ready for it, it is not important for their organisations, management are not aware of the benefits and they lack the resources and budget (Rungasamy et al., 2002). In conclusion, most of the firms (70%) in the sample used quality circles, customer satisfaction surveys and customer needs surveys.

Comparing these findings with those of other previous studies, Witcher (1994) concluded that most (73%) of the organisations sampled (650) in Scotland had surveyed their external customers. Most of them had surveyed customers more than

once during 1993. These findings indicate that Scottish organisations are more customer-focused than they had been three years before, when only 45% had surveyed their customers. In the UK, Redman et al. (1995) noted that the most frequently employed quality initiatives in the sample of 880 were customer satisfaction surveys (81%), customer needs surveys (77%) and quality awareness training (75%). These results are consistent with the case of Scottish SME, in that they implemented customer satisfaction surveys, customer needs surveys and quality circles. Clearly the present study suggests that these initiatives are popular among the sample companies because SMEs recognise the importance of customer satisfaction and need to survive and compete in the business world.

6.1.5.1. Quality management initiatives among ISO 9000 certified SMEs

To establish whether ISO certification has an effect on the use of quality management initiatives, a cross-tabulation of quality management initiatives by ISO 9000 certified and non-ISO 9000 certified companies was performed (see Table 6.6). Table 6.6 shows that ISO 9000 certified firms in Scotland had a very slightly higher rate of quality initiatives practices (51.5%) than non-ISO 9000 certified firms (48.5%). A statistical t-test was performed to establish any significant differences between ISO 9000 certified firms and non-ISO 9000 certified firms in their usage of quality management initiatives (see Table 6.7). The t-test showed that there were no significant differences between the mean scores ($P=0.069$ [two tailed]). It can therefore be suggested that Scottish SMEs are realising the importance of achieving quality products and/or services and more emphasis is being placed on the use of quality management initiatives, as most of them implemented initiatives that focus on

customers, for example, customer satisfaction surveys, customer needs surveys and quality circles.

Table 6.6: Usage of quality management initiatives versus ISO certification (n=180)

QUALITY INITIATIVES	ISO CERTIFICATION			
	ISO 9000 CERTIFIED COMPANIES (N=82)		NON-ISO 9000 CERTIFIED COMPANIES (N=98)	
	Frequency	%	Frequency	%
Quality circles	19	61.3	12	38.7
Customer satisfaction surveys	22	44	28	56
Customer needs surveys	16	39	25	61
Statistical process control	7	50	7	50
Quality awareness training	6	54.5	5	45.5
Cultural change programme	2	50	2	50
Others	7	100	-	-
None	3	13.6	9	86.4
Total	82	51.5	98	48.5

Table 6.7: Comparison of ISO 9000 firms and Non-ISO 9000 firms (n=180)

QUALITY MANAGEMENT INITIATIVES	ISO CERTIFICATION				T-TEST P-VALUE*
	ISO CERTIFIED (N=82)		NON-ISO CERTIFIED (N=98)		
	MEAN	SD	MEAN	SD	
Overall Scores	3.10	2.03	3.67	2.38	0.069

*p value denotes significant at 0.05 (two-tailed).

6.1.5.2. Quality management initiatives among SMEs in general

A cross-tabulation of quality management initiatives was conducted to establish the use of quality management initiatives among small firms (1 to 49 employees) and medium-sized firms (50 to 249) in Scotland (see Table 6.8).

Table 6.8: Usage of quality management initiatives versus firm sizes (n=180)

QUALITY INITIATIVES	FIRM SIZE			
	Small (n=66)		Medium (n=114)	
	Frequency	%	Frequency	%
Quality circles	10	32.3	21	67.7
Customer satisfaction surveys	25	50	25	50
Customer needs surveys	13	31.7	28	68.3
Statistical process control	2	14.3	12	85.7
Quality awareness training	2	18.2	9	81.8
Cultural change programme	1	25	3	75
Others	-	-	7	100
None	13	59.1	9	40.9
Total	66	28.8	114	71.2

Table 6.8 shows the results and that medium-sized firms in Scotland had a higher rate of using quality initiatives (71.2%) than did small firms (28.8%). This suggests that small firms are weaker in implementing or practising standard quality initiatives than medium-sized ones. This may be because small firms are more disadvantaged in terms of the financial and technical resources available to them and they often lack management expertise to implement any quality initiatives (Yoo, 1998). This conclusion is consistent with those reached by Temtime and Solomon (2002) and Terziovski and Samson (2000).

6.2. Total Quality Management (TQM)

TQM principles and techniques are now well accepted as part of almost every manager's "toolkit" (Dow et al., 1999). The successful implementation of TQM will lead to improved firm performance (Huang and Lin, 2002; Samson and Terziovski, 1999; Easton and Jarrell, 1998). Given the theoretical link that exists between competitive advantage and performance, it is perhaps not too surprising that it has

been claimed that TQM can be used to generate competitive advantage (Reed et al., 2000; Douglas and Judge, 2001). It is important for organisations to ensure the success of implementing TQM, in order to gain the associated benefits. To do this, it is important for every individual in organisations to have a full understanding of the TQM philosophy (Al-Khalifa and Aspinwall, 2000).

6.2.1. Level of understanding and knowledge of TQM

To investigate the level of understanding and knowledge of the participants about TQM in general, Fifteen statements (adapted from Yusof and Aspinwall, 2000) were included in the questionnaires, ranging from the philosophy of TQM, through TQM techniques to social aspects. The participants (n=180) were asked to indicate their levels of agreement with each statement on a scale of 1 to 5 (1=strongly disagree; 2=disagree; 3=not sure; 4=agree; 5=strongly agree). Table 6.9 shows the mean score for each statement and highlights their rank. This analysis indicated the critical factors in understanding TQM among SMEs in Scotland. Table 6.9 shows some points about the most important TQM critical factors. The bracketed figures represent the mean scores. Management leadership, commitment and support determine the success of new change initiatives (4.91); business performance measurement must be given the same priority as financial measures (4.68); teamwork and participation are important for achieving a continuous improvement culture (4.67); and supplier involvement is vital in supporting quality improvement (4.62). On the other hand, the analysis shows that there is some uncertainty as to the level of understanding of TQM with respect to the following factors: a work environment which is conducive to improvement is created through a management worker partnership; training and education are vital elements when adopting TQM, since the mean scores for these

statements were low by comparison to those other statements. It is, however, widely accepted that a management worker partnership and training and education are important to business improvement, and this is evident from the fact that the mean scores for these two statements were high (4.18 and 4.14), which indicated high levels of understanding and knowledge of TQM.

Table 6.9: Mean score for each statement (n=180)

Statement ^a	M*	SD**	Rank
TQM is a management philosophy and practice to ensure effective and efficient use of all available resources.	4.44	0.59	8
TQM aims to make customers the focus of a business.	4.56	0.50	7
Teamwork and participation are important for achieving a continuous improvement culture.	4.67	0.47	3
TQM helps ensure problems are prevented through effective management decisions and operating systems.	4.32	0.50	11
Customers drive the improvement efforts in all affected business processes.	4.40	0.56	9
Business performance measurement (including product/service quality level, customer and employee satisfaction levels, delivery time) must be given the same priority as financial measures (profit/loss, etc.)	4.68	0.47	2
Training and education are vital elements when adopting TQM.	4.14	1.52	14
Quality systems standards such as ISO 9000 will not on their own ensure high quality of products and services.	4.59	0.56	6
Statistical techniques (such as statistical process control, design of experiments, etc.) are important to ensure consistency of products and process quality.	4.39	0.55	10
Quality improvement can only be conducted when proper policies are in place.	4.22	0.55	12
Supplier involvement is vital in supporting quality improvement.	4.62	0.49	4
Management leadership, commitment and support determine the success of new change initiatives.	4.91	0.29	1
Management must provide adequate resources in every aspect of the business.	4.59	0.49	6
A work environment which is conducive to improvement is created through management worker partnership.	4.18	0.46	13
Initiatives such as Kaizen, suggestion schemes, quality circles, etc. will motivate employees to participate in quality improvement	4.60	0.49	5
Total score	67.31	8.58	-
Mean score	4.487	0.572	-
*The mean is based on participants level of agreement with each statement on a scale of 1 (strongly disagree) to 5 (strongly agree). A mean score above 4 indicates high, between 3 and 4 indicates moderate and a score less than 3 indicates a low level of TQM understanding.			
**SD= Standard Deviation			

^a The fifteen statements in table 7.12 are adapted from Yusof and Aspinwall (2000)

After comparing the findings of this study to those of previous studies, Yusof and Aspinwall (2000) concluded that management leadership (4.63), business performance measurement (4.62) and teamwork and participation (4.72) were the most critical factors of TQM understanding among SMEs in the UK automotive industry. This finding of the present study of SMEs in Scotland is consistent with the study of Yusof and Aspinwall (2000). Rahman (2001) investigated TQM practices of SMEs in Western Australia and indicated that management leadership (4.18) and teamwork and participation (4.12) were important factors in understanding TQM. In the USA, Ahire et al. (1996) noted that management leadership, teamwork and participation and supplier involvement were critical factors in understanding TQM. Further, other authors (for example, Huang and Lin, 2002; Dayton, 2001; Struebing and Klaus, 1997; Thiagarajan and Zairi, 1997) concluded that management leadership and teamwork and participation were considered to be important in understanding TQM. Clearly the results of the present study are strongly supported by and consistent with the findings of previous studies.

6.2.2. Level of understanding and knowledge of TQM by sector

These fifteen general statements on TQM tend to form the basis of an assessment of TQM understanding. As such it can serve as a tool for allocating scores. The higher the score, the better the understanding and knowledge of TQM. Therefore, a score of four or more indicates high level of understanding and knowledge of TQM, a score between three and four (excluding four) indicates moderate understanding and a score of less than three indicates a low level of understanding. Table 6.10 shows levels of TQM understanding among the sectors and their relative rank. Broadly, agriculture, manufacturing, construction and services have achieved a mean score above four,

which indicates a high level of understanding and knowledge of TQM among Scottish SMEs. A close picture of the analysis reveals that manufacturing firms ranked first in understanding TQM concepts, with a mean score of 4.51, followed by services (4.50), construction (4.48) and agriculture (4.41). Because of the close scores of manufacturing and service organisations, a further analysis was performed. Table 6.11 shows the means and standard deviations for the level of TQM understanding for manufacturing and services organisations. T-tests were performed to compare the levels of TQM understanding. The t-test showed that there were no significant differences between the mean scores ($P=0.827$ {two-tailed}). This suggests that both sectors have high levels of TQM understanding.

Table 6.10: Level of TQM and sector activities (n=180)

Sector	Mean	Level of TQM*	Rank
Agriculture, forestry	4.41**	High	4
Manufacturing	4.51**	High	1
Construction	4.48**	High	3
Services	4.50**	High	2
*A mean score above 4 indicates high, between 3 & 4 indicates moderate and a score less than 3 indicates a low level of TQM understanding. **For a detailed breakdown for mean score for all 15 statements within each sector, see appendix D, table D3			

Table 6.11: Level of TQM understanding among services and manufacturing SMEs (n=180)

TQM Level	ORGANISATION TYPES		T-test* P-value**
	Manufacturing Firms (n=52) Mean (SD)	Services Firms (n=102) Mean (SD)	
Overall TQM Level	4.51 (0.50)	4.50 (0.58)	0.827
*For a detailed t-test for all 15 statements of TQM among manufacturing and services firms in Scotland, see Appendix D, table D4. **P value denotes significant at $P<0.05$ (two tailed)			

6.2.3. Level of understanding and knowledge of TQM among ISO 9000 and non-ISO 9000 firms

The same fifteen statements were used in this section to allocate a score to ISO 9000 firms and non-ISO 9000 firms. The higher the scores, the better the understanding and knowledge of TQM (see Table 6.12). This analysis revealed that both types of firm (certified {4.60} and non-certified {4.40}) had high levels of TQM understanding. However, closer examination revealed that certified firms had slightly higher (4.60) levels of understanding and knowledge of TQM than non-certified ones (4.40). A t-test was employed to establish the existence of any significant differences between ISO 9000 and non-ISO 9000 SMEs (see Table 6.13). The t-test revealed that there were none ($P=0.803$ {two-tailed}).

Table 6.12: TQM and certified and non-certified SMEs (n=180)

	ISO CERTIFICATION	
	Certified firms (n=82)	Non-certified firms (n=98)
Mean*	4.60*	4.40*
Level of TQM understanding**	High**	High**
* For a detailed breakdown for mean score for all 15 statements among certified and non-certified firms in Scotland, see Appendix D, Table D5. **A mean score above 4 indicates high, between 3 & 4 indicates moderate and a score less than 3 indicates a low level of TQM understanding		

Table 6.13: Significance tests of level of TQM understanding among ISO 9000 certified and non-ISO 9000 certified SMEs (n=180)

TQM Level	ISO CERTIFICATION		T-test* P-value**
	Certified Firms (n=82) Mean (SD)	Non-Certified Firms (n=98) Mean (SD)	
Overall TQM level	4.60 (0.49)	4.40 (0.58)	0.803
*For a detailed t-test for all fifteen statements of TQM among certified and non-certified firms in Scotland, see Appendix D, Table D5. **P value denotes significant at $P<0.05$ (two tailed)			

In comparing the findings on the level of understanding and knowledge of TQM in ISO 9000 and non-ISO 9000 SMEs in Scotland to those of other studies, Carr et al. (1997) found that there were no significant differences in the understanding of TQM in small manufacturing firms in New Zealand. Rahman (2001) concluded that SMEs with and without ISO 9000 certification in Australia had high levels of understanding of TQM. Those studies are supportive and consistent with the results of the present study of SMEs in Scotland.

6.3. TQM Constructs: EQA Model

Since the early 1980s, interest in TQM as a framework for raising quality and improving the competitiveness of organisations has burgeoned (Woon, 2000). According to *The Economist* (1992), three quarters of American and British firms have claimed that they have had some form of TQM programme in place. Besides the studies in Japan and the USA, Wiele and Brown (2002) found that TQM had become widespread in Europe and in the developing nations. TQM tends to focus on the management of quality in all aspects and stages of a business to achieve and sustain high quality output that meets customer expectations. This philosophy is reflected in a set of constructs (as discussed in chapter 4) that define a systems approach to TQM implementation. Although there are various models emphasising different constructs, the TQM one underpins national awards such as the MBNQA and the EQA (Zhang et al., 2000). Research based on quality awards has not been the subject of much empirical work because the use of quality award models as standards for TQM is relatively new (Armitage, 2001).

The researcher used the criteria specified in the European Quality Award (EQA), which served as a conceptualisation of the TQM approach to management. The EQA framework is structured with nine constructs as follows: leadership; policy and strategy; people management; resources; process; people satisfaction; customer satisfaction and impact on society; and business results (see Appendix D, Table D6 for more details). Under each of the criteria there are one or more sub-criteria. Using these sub-criteria as a guide, a questionnaire was developed to identify SME managers and owners' attitudes towards the EQA model.

6.3.1. Management attitudes towards the EQA model

To develop a profile of management attitudes in Scottish SMEs towards the EQA model, responses were solicited for the nine constructs of the EQA model. The respondents (n=180) were asked to indicate their level of agreement and disagreement with each construct on a scale of 1 to 5 (1=strongly disagree; 2=disagree; 3=not sure; 4=agree; 5=strongly agree). Table 6.14 shows the mean scores and standard deviations for each construct. The overall score reflects the attitudes of managers and owners of Scottish SMEs, which is the average for the nine constructs.

Table 6.14 shows that the means for the nine constructs range between 4.56 and 3.94 at the construct level. An initial analysis of management attitudes towards the EQA model showed a mean score of 4.31, which is considered high, with a standard deviation of 0.44. It is suggested that a score of four or more indicates high level of agreement and positive attitudes with a particular criterion, and that a score of less than four indicates a lower level of agreement and positive attitudes. Therefore, the

higher the level of agreement and positive attitudes, the higher the applicability of the EQA constructs to the needs of SMEs in Scotland.

Table 6.14: Mean ratings of the quality management criteria (n=180)

Quality Management criteria*	Mean**	SD***
Leadership	4.56	0.21
Policy and strategy	3.94	0.64
People management	3.94	0.64
Resources	4.50	0.36
Process	4.35	0.38
People satisfaction	4.23	0.49
Customer satisfaction	4.49	0.25
Impact on society	4.31	0.72
Business results	4.52	0.29
Overall score	4.31	0.44
*For a full mean rating of the quality management criteria and sub-criteria, see appendix D, table D7-D15.		
**The mean score is based on participants level of agreement with each construct on a scale of 1 to 5.		
***SD= Standard Deviation		

It was found that in general SME owner-managers had positive attitudes towards the nine constructs underlying the EQA model (see table 6.14) and that, more specifically, leadership was identified as playing an important role. Leadership had the highest overall mean rating (4.56) of all the nine constructs, indicating that it plays a significant role in stimulating quality consciousness in these firms. Since the standard deviation (0.21) is relatively small, it can be argued that there is general agreement on the importance of leadership among these firms. From table 6.14, it can be observed that seven constructs, namely, leadership, resources, processes, people satisfaction, customer satisfaction, impact on society, business results, have been rated at the lower end between 'agree' and 'strongly agree', hence indicating that managers and owners of SMEs are realising the importance of these constructs in achieving quality improvements. The mean rating of the remaining two constructs people management, and policy and strategy falls between 'not sure' and 'agree', suggesting

that these companies are starting to realise the importance of these quality management constructs.

In Western Australia, Rahman (2001) investigated TQM practices in SMEs and found that the leadership construct obtained the highest mean score of 4.18. In the UK and the USA, a study undertaken to identify TQM critical success factors by Dayton (2001) appears to demonstrate that most participants stressed the importance of leadership to their quality success and financial performance. Yusof and Aspinwall (2000) came to the same conclusion. They investigated TQM critical success factors in SMEs in the UK and found management leadership to be the most critical TQM construct of them. Anderson and Sohal (1999) also investigated TQM in Australian SMEs through the use of the Australian Quality Award, while Solis et al. (1998) investigated quality management practices in Taiwanese organisations. A common conclusion was that leadership was significant in creating the goals, values and systems that guided the pursuit of continuous performance improvement. Further supportive studies by Neergaard (2002), Prabhu et al. (2002), Chin et al. (2002), Longenecker and Scazzero (2000), Edgeman (1999) and Dow et al. (1999) reported that organisational success in TQM was due to a greater degree of leadership than to other constructs of TQM. The results of these studies are consistent with those of the present study of SMEs in Scotland. Managers and owners of SMEs are no doubt aware of the importance of leadership and that the lack of it will tend to lead to TQM failure. This recognition of the quality management constructs and, in particular the role of leadership, has been suggested in the present study by those seeking quality improvement.

6.3.2. Distribution of management attitudes towards the EQA model

The overall indicator reflects owners' and managers' attitudes in SMEs in Scotland, which is a vector of the averages for the nine constructs underlying the EQA model. The distribution of the mean scores for this indicator and for all the nine constructs is divided into two bands, high (score of 4 to 5), and low (1 to <3), derived from the scales of the measurement instrument (see Table 7.15).

Table 6.15: Management attitude scores with regard to the EQA model (n=180)

Quality Management Construct*	Mean**	SD***	Percentage distribution of mean scores	
			High % (4-5)	Low % (1 - <3)
Leadership	4.56	0.21	99.1	0.9
Policy and strategy	3.94	0.64	86.3	13.7
People management	3.94	0.64	86.1	13.9
Resources	4.50	0.36	98.4	1.6
Process	4.35	0.38	96.3	3.7
People satisfaction	4.23	0.49	92.6	7.4
Customer satisfaction	4.49	0.25	98.1	1.9
Impact on society	4.31	0.72	95.3	4.7
Business results	4.52	0.29	93.8	6.2
Overall score	4.31	0.44	94	6

*For a full mean rating of the quality management criteria and sub-criteria, see appendix D, table D7-D15.
 **The mean score is based on participants level of agreement with each statement on a scale 1 to 5.
 ***SD= Standard Deviation

Table 6.15 shows the mean scores, standard deviations and percentage distributions of the mean scores for each of the nine TQM constructs underlying the EQA. Table 6.15 reveals that, at the aggregate level, the 180 SMEs investigated achieved a mean score of 4.31 with a positive score of managers' and owners' attitudes (94%) towards the EQA model. Similarly, all of the aggregated mean scores at the construct level fell within this score interval of owner-managers' attitudes to the EQA model, apart from the aspects of people management and policy and strategy. Therefore, it can be observed that all nine constructs underlying the EQA model achieved a high score, reflecting positive management attitudes. More specifically, leadership received the

highest score. However, people management achieved the lowest score: over 85% of the participants supported people management and 13.9% of the respondents had relatively negative attitudes. In conclusion, the scores for management attitudes towards TQM constructs underlying the EQA model reflect the progress of organisations in attaining and implementing the EQA model. In general, the findings revealed that positive management attitudes exist in SMEs in Scotland. In comparing the findings on management attitudes to the EQA model to those of other studies, Table 7.16 provides such a comparison using TQM constructs.

The conclusion reached here for this present study is that Scottish SMEs displayed more positive attitudes than organisations elsewhere and that they outperformed other studies, as seen from Table 6.16. The attitudes of Scottish managers and owners were as positive as those in the developed economy of the USA and more so than those in the developing economies of India, China, Mexico, and the United Arab Emirates, where the emphasis on TQM has been more recent. This suggests that attitudes to and the implementation of TQM tend to be influenced by the stage of development of a country.

Table 6.16: Comparison of TQM construct implementation levels among various studies

Construct	This study (2001) Scotland (180)	Woon (2000) Singapore (240)	Quazi et al. (1998) Singapore (33)	Badri et al.(1997) UAE (424)	Rao et al. (1997) India (183) China (94) Mexico (113)	Flynn et al. (1995) USA (42)
Leadership	High	Medium	Medium	Low	Medium	High
Use of info and analysis	-	Medium	Medium	Low	Medium	Medium
Policy & strategy	High	Medium	-	-	Medium	-
People management	High	Medium	Medium	Low	Low	Medium
Process	High	Medium	Medium	Low	Medium	High
Resources	High	-	-	-	-	-
Business results	High	Medium	-	-	Medium	-
People satisfaction	High	-	-	-	-	-
Impact on society	High	-	-	-	-	-
Customer satisfaction	High	Medium	-	-	Medium	-
Overall	High	Medium	Medium	Low	Medium	High
Organisations included in the study	Various sectors	M and S*	M and S*	M and S*	M and S*	M**
* Manufacturing and Service organisations **Manufacturing organisations only						

6.3.3. Management attitudes towards the EQA model among services and manufacturing SMEs

Table 6.17 shows the mean scores and the standard deviations for the nine constructs for SMEs in manufacturing and services. The mean ranged between 4.55 and 4.19 for firms in manufacturing and between 4.59 and 4.20 for services. Responses fell slightly more in services than in manufacturing. Service firms had more positive attitudes towards the EQA constructs than the manufacturing ones, which is maybe surprising. This may be because they have recognised the importance of implementing TQM factors for achieving quality in their organisations (Yusof and Aspinwall, 2002; Woon, 2000).

**Table 6.17: Manufacturing and services managers' attitudes to EQA constructs
(n=180)**

EQA Constructs****	SECTOR				T-test P-value*
	Manufacturing (n=52)		Services (n=104)		
	Mean***	SD**	Mean***	SD**	
Leadership	4.55	0.26	4.59	0.16	0.002*
Policy and strategy	3.61	0.69	4.20	0.37	0.000*
People management	3.51	0.71	4.24	0.43	0.000*
Resources	4.54	0.28	4.53	0.37	0.477
Process	4.35	0.27	4.41	0.37	0.933
People satisfaction	4.14	0.57	4.36	0.34	0.000*
Customer satisfaction	4.47	0.22	4.54	0.21	0.096
Impact on society	4.19	0.90	4.41	0.50	0.059
Results	4.50	0.33	4.55	0.28	0.291
Overall	4.21	0.47	4.42	0.34	0.056
****For a full mean rating of the quality management criteria and sub-criteria, see appendix D, table D16-D24. ***The mean score is based on participants level of agreement with each statement on a scale 1 to 5. **SD= Standard Deviation *P value denotes significant at $P < 0.05$ (two tailed)					

The leadership construct had the highest overall mean rating of the nine constructs for both manufacturing and service SMEs, indicating that leadership plays a significant role in achieving quality in both sectors. The small standard deviation indicates that there is general agreement on the role of leadership in these organisations in Scotland. Resources management had the second highest overall mean, followed by business results, customer satisfaction, process management, impact on society, people satisfaction, policy and strategy and people management for manufacturing firms. Service firms, however, had business results as the second highest overall mean, followed by customer satisfaction, resources management, process management, impact on society, people satisfaction, people management and policy and strategy.

Analysis of management attitudes towards the EQA model (see Table 6.17) has shown that the 52 manufacturing SMEs achieved a mean score of 4.21 with a standard deviation of 0.47, compared to the 4.42 mean score and 0.34 standard deviation for

the 104 service ones. A t-test was performed and it was noted that there were no significant differences between the mean scores ($P=0.056$ [two-tailed]) in the overall score of SMEs. This suggests that manufacturing and service SMEs are willing to implement and practise these nine constructs underlying the EQA model. However, at the construct level, significant differences were observed for four of the nine constructs, leadership ($P=0.002$ [two-tailed]); policy and strategy ($P=0.000$ [two-tailed]); people management ($P=0.000$ [two-tailed]) and people satisfaction ($P=0.000$ [two-tailed]). This implies that service SMEs considered these four constructs to have been more important for the success of their organisations than did manufacturing ones. This also suggests that service SMEs appear to focus on achieving successful internal systems by focusing on employee management and satisfaction and developing policies through effective leadership skills, in order to achieve success externally. These internal systems will lead to customer satisfaction and improved financial performance.

In comparison with those of other previous studies (see Table 6.18), the study undertaken by Yu et al. (1998), which covered 22 service and 99 manufacturing organisations in China, found no significant differences between service and manufacturing organisations. However, the TQM constructs used for this comparison were restricted to only training and employee participation. The conclusions for these dimensions are somewhat similar to those reached by Redman et al. (1995) and Beaumont et al. (1997). In Singapore, Woon (2000) found that the extent of TQM implementation in services was the same as in manufacturing ones. At the construct level, only a significant difference was present for two of the seven constructs, namely, management of process quality, and quality of operational results. These

studies are consistent with those of the findings from the present study, where there is no significant difference among manufacturing and service SMEs in the overall score. However, at the construct level, there are significant differences for four of the nine constructs. Scottish service SMEs are more advanced in terms of quality management than manufacturing organisations. Managers and owners of Scottish service SMEs seem to be realising the importance of quality management and are willing to embrace the key factors of TQM.

On the other hand, a great deal of research has supported the fact that manufacturing SMEs have a higher rate of TQM implementation than services ones. In Singapore, Quazi et al. (1998) observed that all the constructs measuring the extent of TQM implementation were significantly lower in services than in manufacturing. In Taiwan, Solis et al. (1998) investigated 131 manufacturing and 109 service organisations and they reported that of the nine constructs measuring the extent of TQM implementation, seven constructs were found to be significantly lower in the service organisations. In the United Arab Emirates, Badri et al. (1995) investigated 228 service and 196 manufacturing organisations. They used the same set of constructs as those used by Quazi et al. (1998) and they reported that the overall TQM implementation level and scores for all the constructs were significantly lower in services. These studies are not consistent with the present study, which suggests no significant differences among manufacturing and service managers attitudes towards the EQA in the overall score. This suggests further that managers and owners of all types of SME are willing to use the EQA model to achieve quality improvements.

Table 6.18: Comparison of services organisations versus manufacturing organisations

Construct	This research Scotland	Woon (2000) Singapore	Hug & Stolen (1998) USA	Redman et al. (1995) UK	Solis et al. (1998) Taiwan	Quazi et al. (1998) Singapore	Beaumont et al. (1997) Australia	Badri et al. (1995) UAE	Yu et al. (1998) China	Yoo (1998) Korea
Leadership	SD	ND*	ND*	-	ND*	L**	-	L*	-	ND*
Use of information and analysis	SD	ND*	L**	L*	L**	L**	L**	L**	-	ND*
Human resource management	SD	ND*	-	-	L**	-	-	-	-	ND*
Management of process	ND*	ND*	L**	ND*	L**	L**	ND*	L**	ND*	H***
Quality of operational results	ND*	L**	L**	L**	L**	L**	L**	L**	-	ND*
Customer focus and satisfaction	SD	L**	-	-	L*8	-	-	-	-	ND*
Resources	ND*	ND*	ND*	ND*	L*8	-	L**	-	-	-
People satisfaction	ND*	-	-	-	-	-	-	-	-	-
Impact on society	ND*	-	-	-	-	-	-	-	-	-
Overall	ND*	-	-	-	-	-	-	-	-	-
Organisations included	ND*	ND*	L**	L**	L**	L**	L**	L**	ND*	ND*
S(104) and M (52)	S(104) and M (52)	S (111) and M (129)	S (18) and M (129)	S (394) and M (486)	S (190) and M (131)	S (20) and M (13)	S (85) and M (261)	S (228) and M (196)	S (22) and M (99)	S and M (110)
SD Significant differences										
*ND No differences										
**L Lower										
***H Higher										
S and M Services and manufacturing organisations										

6.3.4. Management attitudes towards the EQA model among ISO and non-ISO certified firms

In this section the researcher intends to establish Scottish management attitudes towards TQM constructs underlying the EQA model among ISO and non-ISO certified SMEs (see Table 6.19). Table 6.19 shows the means and standard deviations for the nine constructs for SMEs with and without ISO 9000. The mean ranged between 4.00 and 4.67 for firms with ISO 9000 certification and between 3.85 and 4.47 for firms without ISO 9000 certification. ISO 9000 firms had more positive attitudes towards the EQA constructs, while non-ISO 9000 certified firms had high (seven constructs out of the nine) and moderate (two constructs out of the nine constructs) attitude scores.

Table 6.19: ISO certified firms versus non-ISO certified firms comparison (n=180)

EQA constructs****	ISO certified (n=82)		Non-ISO certified (n=98)		T-test
	Mean***	SD**	Mean***	SD**	P-value*
Leadership	4.66	0.23	4.47	0.15	0.000
Policy & Strategy	4.04	0.58	3.85	0.67	0.126
People management	4.00	0.59	3.89	0.68	0.135
Resources	4.54	0.46	4.46	0.26	0.01
Process	4.37	0.50	4.33	0.24	0.001
People satisfaction	4.33	0.54	4.15	0.43	0.235
Customer satisfaction	4.57	0.26	4.43	0.22	0.021
Impact on society	4.40	0.66	4.22	0.75	0.802
Business results	4.67	0.27	4.40	0.25	0.012
Overall	4.36	0.28	4.26	0.27	0.686
****For a full mean rating of the quality management criteria and sub-criteria, see appendix D, table D25-D33.					
***The mean score is based on participants level of agreement with each statement on a scale 1 to 5.					
**SD= Standard Deviation					
*P value denotes significant at P< 0.05 (two-tailed)					

Analysis at the construct level revealed that the business results construct had the highest overall mean rating of the nine constructs for firms with ISO 9000

certification. ISO 9000 registered firms considered the business results construct to be important because of its link with the financial results to be achieved from ISO 9000 implementation (McAdam and Fulton, 2002; Carr et al., 1997). On the other hand, leadership had the highest overall mean rating of the nine constructs for firms without ISO 9000 certification. It is clear that non-ISO 9000 firms considered the importance of leadership in the success of their operations and its role in achieving quality products and/or services. In support of this, Anderson and Sohal (1999) reported that non-ISO 9000 certified firms considered leadership to be of vital importance in creating the goals, values and systems that guide the pursuit of continuous performance improvement.

Leadership had the second highest overall mean, followed by customer satisfaction, resources management, impact on society, process management, people satisfaction, policy and strategy and people management for firms with ISO 9000 certification. Resources management had the second highest overall mean rating, followed by customer satisfaction, business results, process management, impact on society, people satisfaction, people management and policy and strategy for firms without ISO 9000 certification.

In terms of management attitudes towards TQM constructs underlying the EQA model, it is anticipated that management attitudes would differ between ISO 9000 and non-ISO 9000 certified SMEs. At the overall level of the EQA model, Table 6.19 showed that the 82 certified firms achieved a mean score of 4.36 with a standard deviation of 0.28, compared to the 4.26 mean score and 0.27 standard deviation for the 98 non-ISO 9000 certified firms. A t-test reported that there were no significant

differences between the overall mean scores among the certified and non-certified sample in Scotland. However, at the construct level, statistically significant differences existed between the certified and non-certified participants, except for people satisfaction, people management, impact on society, and policy and strategy. The lack of significant differences in people satisfaction and people management constructs between the two types of SMEs may be because of an increased awareness of the important role of customers. This can be achieved through managing and satisfying people effectively (Ahire et al., 1996; Zhang et al., 2000). Therefore, SMEs appear to be realising the importance of employee participation, training, recognition and reward and employee empowerment in achieving quality products and/or services and financial results (Brown et al., 1994; Heneman et al., 2000).

The impact on society construct in the sample revealed no significant statistical differences. This implies that SMEs in Scotland realise the importance of this construct in achieving and satisfying the needs and expectations of the local, national and international communities. Achieving this will in turn lead to a good company reputation with a caring approach to the community, and this may achieve better financial performance (Nabitz and Walburg, 2000; Moeller et al., 2000). To achieve superior quality products and/or services, managers and owners of SMEs have also realised the importance of designing policies and strategies to support the vision of the organisation. This can be done through the development of plans such as a quality policy, quality goals and a quality improvement plan. These plans need to be communicated to employees to gain their support and commitment (Zhang et al., 2000; Mersha, 2000).

Comparing the findings of management attitudes towards TQM constructs underlying the EQA model among certified and non-certified firms in Scotland to those of other studies, Hua et al. (2000) investigated quality management practices in the Shanghai manufacturing industry, and they found that there were no significant differences in TQM practices among ISO 9000 and non-ISO 9000 certified manufacturing firms. In Singapore, Woon (2000) found that ISO 9000 status did not have any effect on differences in the scores of TQM constructs. These studies are consistent with the findings concerning no significant differences in the overall score between management attitudes towards the EQA model among ISO and non-ISO certifications in SMEs.

Additionally, Yusof and Aspinwall (2002) explored TQM practices among QS 9000 and non-QS 9000 small companies in Malaysia. They anticipated that the level of TQM practice for each factor would differ, however, it was found that only one factor, namely, continuous improvement techniques, showed a significant difference. Ahire et al. (1996) investigated quality management practices in TQM versus non-TQM firms in the motor vehicle parts and accessories industry in the USA. They revealed significant differences between TQM and non-TQM firms, except for customer focus. Additional studies undertaken by Sun (1997) and Rao et al. (1997) reported that companies with ISO 9000 registration had the same score as non-ISO 9000 certified firms with the exception of two constructs. These studies have shown that there is no consistency in the results from different countries, but they seem to agree that, whilst there are no differences in the overall combination of the constructs, there are some differences among individual constructs.

The overall conclusion of these studies is consistent with the findings regarding management attitudes towards the EQA constructs among certified and non-certified Scottish SMEs, which has reported no significant differences in the overall mean scores, but significant differences within the individual constructs of leadership; resources management; process management; customer satisfaction and business results. These differences appear to exist because ISO 9000 certified firms tend to have more positive attitudes towards TQM implementation, and this is evident throughout their efforts in implementing ISO 9000. The resources and process management constructs obtained a higher mean rating for firms with ISO 9000 compared to firms without ISO 9000, and this may be because ISO 9000 certified firms spend substantial amounts of resources to document their processes as part of ISO certification (McAdam and Canning, 2001; Tari and Molina, 2002).

6.3.5. Management attitudes to the EQA model by firm size (i.e, small and medium)

This section intends to monitor management attitudes to the EQA model in SMEs and identify any significant differences. Table 6.20 compares management attitudes with regard to TQM constructs underlying the EQA model by firm size, broken down into small (1 to 49 employees) and medium (50 to 249 employees). The means and standard deviations for the nine constructs for SMEs in Scotland are reported in Table 6.20. The means ranged between 4.50 and 3.74 for small firms, and between 4.61 and 4.06 for medium-sized firms. At the construct level, responses fell into the high and moderate levels of management attitude for small firms, while the mean scores for medium-sized firms were all at the high level. This implies that medium-sized firms

tend to have more positive attitudes towards the implementation of the EQA model than small firms.

Table 6.20: Management attitudes to the EQA by firm size (n=180)

EQA constructs****	FIRM SIZE				ANOVA test F-value*
	Small (n=66)		Medium (n=114)		
	Mean***	SD**	Mean***	SD**	
Leadership	4.50	0.22	4.61	0.20	0.005
Policy and strategy	3.74	0.75	4.06	0.54	0.021
People management	3.74	0.76	4.06	0.53	0.011
Resources	4.45	0.38	4.54	0.24	0.066
Process	4.27	0.37	4.40	0.34	0.154
People satisfaction	4.11	0.51	4.30	0.47	0.115
Customer satisfaction	4.47	0.30	4.51	0.22	0.679
Impact on society	4.07	0.91	4.44	0.53	0.016
Business results	4.44	0.27	4.59	0.29	0.003
Overall	4.20	0.50	4.39	0.37	0.000
****For a full mean rating of the quality management criteria and sub-criteria, see appendix D, table D34-D42.					
***The mean score is based on participants level of agreement with each statement on a scale 1 to 5.					
**SD= Standard Deviation					
*F value denotes significant at P < 0.05 (two tailed)					

The leadership construct had the highest overall mean rating of the nine constructs for both small and medium-sized firms in Scotland, indicating the importance of leadership in these organisations. The customer satisfaction construct achieved the second highest overall rating in small firms, followed by resources management, business results, process management, people satisfaction, impact on society, people management and policy and strategy. On the other hand, the business results construct ranked the second highest, followed by resources management, customer satisfaction, impact on society, process management, people satisfaction, people management and policy and strategy in the medium-sized firms.

Small firms in Scotland achieved a mean score of 4.20, compared to 4.39 for medium-sized firms (see Table 6.20). An analysis of variance (ANOVA) test was performed

and showed that there were significant differences between these mean scores ($F=0.000$ [two-tailed]). This suggests that medium-sized firms had more positive attitudes towards the EQA model and they were more likely to use the constructs underlying the EQA model. At the construct level, a significant difference was also observed in the mean scores for four out of the nine constructs, namely, policy and strategy ($F=0.021$ [two-tailed]); people management ($F=0.011$ [two-tailed]); impact on society ($F=0.016$ [two-tailed]) and business results ($F=0.003$ [two-tailed]) (see Table 6.20). This implies that small firms tend to be weaker than medium-sized firms concerning policy and strategy, people management, impact on society and business results, because of their small scale.

Clearly the analysis suggested that firm size in Scotland and management attitudes each other. Woon (2000) reported that organisation sizes accounted partly for the significant difference in the scores for human resource management, quality and operational results and customer focus and satisfaction, while in the Republic of Korea, Yoo (1998) noted that SMEs were weak with regard to TQM in comparison to large organisations. The areas of weakness were information and analysis, human resource development and management, strategic quality planning and management of process quality. Other studies undertaken by Terziovski and Samson (2000) reported that the nature of the TQM approach adopted in Australia varied considerably according to company size. These studies are supportive and consistent with the findings about management attitudes in SMEs in Scotland.

6.4. Correlation Analysis

6.4.2. Correlation between the TQM constructs

The nine constructs of the EQA model are under investigation to establish any relationships between them. Table 6.21 shows the relationship between the TQM constructs in the form of a correlation matrix through the use of Pearson correlation. The correlation matrix is employed to indicate the strength of relationship between the TQM constructs underlying the EQA model.

Table 6.21: Pearson's correlation among TQM constructs in SMEs (n=180)

	EQA scales	M	SD	1	2	3	4	5	6	7	8	9
1	<i>Leadership</i>	4.56	0.21	1.000								
2	<i>Policy & strategy</i>	3.94	0.64	.347**	1.000							
3	<i>People management</i>	3.94	0.64	.320**	.791**	1.000						
4	<i>Resources</i>	4.50	0.36	.203**	.227**	.158*	1.000					
5	<i>Process</i>	4.35	0.38	.220**	.441**	.343**	.629**	1.000				
6	<i>People satisfaction</i>	4.23	0.49	.388**	.545**	.663**	.364**	.465**	1.000			
7	<i>Customer satisfaction</i>	4.49	0.25	.399**	.291**	.278**	.416**	.433**	.377**	1.000		
8	<i>Impact on society</i>	4.31	0.72	.018	.311**	.269**	.190*	.299**	.194**	.171*	1.000	
9	<i>Results</i>	4.52	0.29	.171*	.302**	.342**	.202**	.275**	.351**	.366**	.184*	1.000

** Correlation is significant at the 0.01 level (two-tailed)

* Correlation is significant at the 0.05 level (two-tailed)

Interestingly, all the estimated correlations were statistically significant, thus t-values for all the parameter estimates corresponded to statistical significance levels of $p < 0.01$ and $p < 0.05$ {two-tailed}. The correlation matrix (see Table 6.21) shows that the TQM constructs are inter-correlated. The highest correlation coefficient is 0.791, representing the relationship between people management and policy and strategy. The highest correlated factors are in fact people management and policy and strategy. Leadership, people satisfaction, customer satisfaction and business results are medium to highly correlated to all the other constructs.

The correlation results suggest that the TQM constructs underlying the EQA model have significant correlations among themselves. This positive and statistically significant correlation supports the notion that the TQM constructs should be implemented holistically rather than on a piecemeal basis. The positive and significant correlation provides an indication of the extent to which they reinforce each other in the TQM effort and underlines the synergy identified by management attitudes to implementing the various constructs that were critical to their organisations.

Comparing correlation between the TQM constructs in Scottish SMEs with those of other studies, Woon (2000) found that all the correlations between the TQM constructs were statistically significant in Singapore. He reported further a high level of correlation between leadership and quality culture and each of the other constructs. This implies that the leader plays an important role in developing and implementing a quality culture in organisations, which is supported through the emphasis in the literature on the role of an organisation's leaders in TQM (Flynn et al., 1994). Ahire et al. (1996) confirmed that all of the correlations between TQM constructs in their study were positive and they exhibited synergy with each other in the USA. The conclusions of the above two studies and of the present study in Scotland are consistent with the findings of Flynn et al. (1995), Rao et al. (1997), and Agus et al. (2000). The only difference here is that SMEs tend to show a higher correlation between people management and policy and strategy, which is interesting. Therefore, it can be suggested here that SMEs are recognising the importance of these two constructs in achieving quality and organisational success. This finding is supported through in work of Bowen and Lawler (1995).

6.4.3. Correlation between TQM constructs and quality performance measures

Table 6.22 presents the Pearson and Zero order partial correlation coefficients between the critical factors of TQM constructs underlying the EQA model and the two measures of quality performance, namely customer satisfaction and business results.

Table 6.22: Relationship between TQM constructs and quality performance measures (n=180)

TQM constructs	Customer satisfaction		Business results	
	Pearson correlation	Zero partial correlation	Pearson Correlation	Zero partial correlation
Leadership	.399**	.3990**	.171*	.1706*
Policy and strategy	.291**	.2911**	.302**	.3019**
People management	.278**	.27800**	.342**	.3424**
Resources	.416**	.4159**	.202**	.2016**
Process	.433**	.4326**	.275**	.2752**
People satisfaction	.377**	.3765**	.351**	.3514**
Impact on society	.171*	.1705*	.184**	.1837*
** Correlation is significant at the 0.01 level (two-tailed)				
* Correlation is significant at the 0.05 level (two-tailed)				

From Table 6.22 it is evident that all TQM constructs are correlated significantly with the two measures of quality performance, namely customer satisfaction and business results. Employee focus has a strong correlation with business results, which suggests a reinforcing impact of the critical role of human resource management in attaining people satisfaction and business results. Agus (2000) emphasised the point by suggesting that an organisation's long-term success depends upon its customer retention efforts. SMEs have identified the importance of managing people in organisations, where they can make a personally satisfying contribution to achieving organisational goals and objectives (business results). This observation is supported by a great deal of research (for example, Brown, 1992; Ebrahimpour and Withers,

1992), while Edelman et al. (2002) reported that effective employee management could have positive returns for employees, customers and the financial performance of the organisation.

The significant Pearson and Zero correlation between process management, resources management, and leadership and customer satisfaction provides statistical evidence of the opinion of quality experts that SMEs in Scotland consider providing the required resources, processes and leadership skills to be important for organisational success. Managers and owners of SMEs in Scotland may have realised the importance of the relationship between resources, processes and customer satisfaction. This is because a key part of any total quality strategy is the management of processes and resources (Zhang et al., 2000). Effective management of processes and resources will contribute to organisational performance and customer satisfaction (Ahire et al., 1996; Woon, 2000). Leadership is also supported through the present study, where managers and owners of SMEs have recognised the crucial importance of leadership. Leaders act as drivers of TQM, creating values, goals and systems to satisfy customer expectations and to improve performance in SMEs (Ahire and O'Shaughnessy, 1998).

The bivariate correlation between the TQM constructs (independent variables) and customer satisfaction and business results (dependent variables) should be considered with caution (see Table 6.23), because of the significant correlations among themselves. To avoid any problem resulting from high correlation among the TQM constructs, there is a need to detect the level of multicollinearity. Several diagnostic procedures have been proposed in the literature for detecting the presence of approximate linear relationships among TQM constructs (Zhang et al., 2000). In this

study VIF (Variance Inflation Factors) with each predictor variable were determined. If one or more of these variance inflation factors is large, then it can be concluded that nearly linear relationships exist among the TQM constructs. The analysis of the variance inflation factors revealed that none of the TQM constructs exhibited values of greater than 3.00 and it can be concluded that the presence of multicollinearity among the TQM constructs is mild (Fielding and Gilbert, 2000).

Table 6.23: Correlation matrix of the EQA constructs (independent variables)
(n=180)

	EQA scales	M	SD	1	2	3	4	5	6	7
1	<i>Leadership</i>	4.56	0.21	1.000						
2	<i>Policy & strategy</i>	3.94	0.64	.347**	1.000					
3	<i>People management</i>	3.94	0.64	.320**	.791**	1.000				
4	<i>Resources</i>	4.50	0.36	.203**	.227**	.158*	1.000			
5	<i>Process</i>	4.35	0.38	.220**	.441**	.343**	.629**	1.000		
6	<i>People satisfaction</i>	4.23	0.49	.388**	.545**	.663**	.364**	.465**	1.000	
7	<i>Impact on society</i>	4.31	0.72	.018	.311**	.269**	.190*	.299**	.194**	1.000

** Correlation is significant at the 0.01 level (two-tailed)

* Correlation is significant at the 0.05 level (two-tailed)

In comparing the finding of the present study concerning the correlations between TQM and quality performance measures with those of other studies, Rahman (2001) investigated TQM among SMEs in Western Australia and found that all TQM constructs showed a significant relationship with the business outcome ($P < 0.05$ [two-tailed]), except for the information and analysis and strategy and planning constructs. In Australia, Samson and Terziovski (1999) reported that three out of six TQM constructs were significantly correlated with overall organisational performance. These highly correlated constructs are leadership, people management and customer focus. Motwani et al. (1994) performed a similar correlation analysis between the critical factors of quality management (nine constructs) and the measure of quality performance. They reported that only six of the nine critical factors in quality

management were correlated significantly. The three factors that were not correlated were the role of top management, product design and feedback and employee relations. In Singapore, Quazi et al. (1998) concluded that all eight critical factors in quality management were significantly correlated with quality performance and customer satisfaction. Clearly, the literature (above studies) indicates that most findings of previous studies are consistent with those of the present investigation. The only difference is that this present study has shown stronger correlations than any other study. The present study has suggested statistically that all the TQM constructs under investigation (EQA constructs) are linked to customer satisfaction and business results.

6.5. Quality Performance

6.5.1. Product and service quality performance measures

To encourage SMEs to be competitive and able to survive, they should compete on quality issues to meet customers' needs (Kate and Dyason, 1999). Therefore, this section intends to identify the state of product and/or service quality performance in SMEs in Scotland. To do this, the researcher selected six dimensions of quality, namely performance, conformity, reliability, durability defect rates and internal failure costs, based on the eight dimensions proposed by Garvin (1987). The participants were asked to indicate the status of their primary products and/or services on a scale of 1 to 5 (1=worst in the industry; 2=below average; 3=average; 4=above average; 5=best in the industry). It could be suggested that the higher the mean score, the better the performance of SME products and/or services. A score of 4 or more indicates a high level of product and/or service quality, a score of between 3 and 4 (excluding 4) indicates a moderate level of product and/or service quality, and a score

of less than 3 indicates a low level of product and/or service quality. Table 6.24 shows the mean scores and standard deviations for each quality dimension for SMEs.

Table 6.24: Product and service quality performance among SMEs (n=180)

Quality dimensions	Mean score	SD
Performance	3.40	0.88
Conformity rates	3.09	0.96
Reliability	3.08	0.94
Durability	2.89	1.01
Defect rates	2.89	0.97
Internal failure costs	2.98	1.04
Overall	3.05	0.88

Table 6.24 shows that the means for the six dimensions range between 3.40 and 2.89, signifying moderate and low level of product and/or service quality, while an initial analysis of the overall product and/or service quality score was reported to be 3.05, which is considered to be moderate, with a standard deviation of 0.88. Table 6.24 reveals that, of these six quality dimensions, performance has the highest overall mean rating (3.40), followed by conformity (3.09), reliability (3.08), internal failure costs (2.98), defect rates (2.89) and durability (2.89).

The findings of this study suggest that SMEs in Scotland have achieved a moderate level of product and/or service quality. This suggests that they are not doing enough to achieve a superior product and/or service quality to enable them to compete in the dynamic market and survive. Zhang et al. (2000) investigated TQM implementation in China and reported that Chinese companies achieved a moderate (mean score=3.82) level of quality products and/or services. Other studies undertaken by Solis et al. (1998) in Taiwan and Woon (2000) in Singapore noted that the level of product and/or service quality in Taiwan (mean score=3.53) and Singapore (mean

score=3.41) was moderate. These findings are consistent with those of the present study, which imply that the level of product and/or service quality among SMEs in Scotland is moderate, suggesting that these firms have just started the quality journey and are lagging behind in implementing TQM constructs. It is therefore important for them to understand the need for achieving better quality products and/or services. Superior quality practice resulting in the improvement of internal quality performance will lead to the improvement of external performance, such as competitive advantage, profitability and customer satisfaction (Rao et al., 1999; Evans and Lindsay, 1996).

6.5.2. Product and service quality performance measures among ISO and non-ISO certified firms

To identify whether ISO 9000 certification has had an effect on the quality of their products and/or services. Table 6.25 shows the means and standard deviations for the six dimensions of quality for SMEs with and without ISO 9000. The mean ranged between 3.93 and 3.52 for firms with ISO certification and between 2.96 and 2.36 for firms without ISO certification. ISO certified firms also had higher quality products and/or services than non-ISO certified firms through the six quality performance measures. At the overall level, ISO certified firms achieved an overall mean score of 3.68 and non-ISO certified firms achieved an overall mean score of 2.54.

Analysis at the six quality dimensions level showed that the performance measure had the highest mean score of the six quality measures for firms with ISO 9000 certification and those without ISO 9000. Both types of firms considered the importance of their product and/or service performance.

Table 6.25: Product and service quality performance measures among certified and non-certified SMEs (n=180)

Quality measures	ISO CERTIFICATION				STATISTICAL TESTS			
	Certified firms (n=82)		Non-certified firms (n=98)		T-Test		ANOVA Test	
	Mean	SD	Mean	SD	F-value	Sig.	F-Value	Sig.
Performance	3.93	0.73	2.96	0.74	0.117*	0.000	76.396*	0.000
Conformity	3.72	0.77	2.56	0.77	0.027*	0.000	99.938*	0.000
Reliability	3.71	0.75	2.56	0.75	0.182*	0.000	105.321*	0.000
Durability	3.52	0.80	2.37	0.84	0.005*	0.000	87.758*	0.000
Defect rate	3.52	0.72	2.36	0.82	0.463*	0.000	101.234*	0.000
Internal failure costs	3.65	0.78	2.43	0.90	2.733*	0.000	92.980*	0.000
Overall	3.68	0.67	2.54	0.68	0.085*	0.000	125.852*	0.000

*F value denotes significant at P <0.05 (two tailed)

The levels of product and/or service quality differ among ISO and non-ISO certified firms in Scotland. At the overall level of the six quality performance measures, Table 6.28 reported that the 52 certified firms achieved a mean score of 3.68 with a standard deviation of 0.67, compared to the 2.54 mean score and 0.68 standard deviation for the 98 non-ISO 9000 certified firms. T and ANOVA tests were undertaken to identify any statistically significant differences among ISO and non-ISO certified firms in their levels of product and/or service quality. The tests suggested that there were significant statistical differences between the overall mean scores between the certified and non-certified sample. Statistically significant differences also existed between the certified and non-certified participants concerning all the six quality performance measures. These findings imply that ISO certified firms tend to perform better than non-ISO certified ones, and this because managers and owners of SMEs are aware of the impact of quality measures on customer satisfaction and financial gains. Moreover, ISO certified firms tend to provide training for managers and employees in quality tools (Galagan, 1992), develop employee involvement strategies

(Stalk et al., 1992; Everett and Sohal, 1991) and make efforts to realign reward systems with quality goals (Walker, 1992).

In comparing the findings of the present study concerning the effect of ISO certification on quality performance measures with those of other studies, in Western Australia Rahman (2001) and Ahire and Golhar (1996) reported that ISO 9000 status did have an effect on the significant differences in the scores of the sample concerning quality and operational measures. Ahire et al. (1996) investigated quality management in TQM versus non-TQM firms in the USA and noted that there were statistically significant differences between TQM firms and non-TQM firms in terms of focus on quality and achieving better quality products and/or services. These studies are consistent with the findings of the present study, where ISO certification seems to have affected the quality performance of products and/or services in Scotland.

6.5.3. Product and service quality performance measures between manufacturing and service SMEs

The quality level of products and/or services is derived from the ratings or scores of the items. For each quality measure, the level of practice is represented by the average of the item scores for it. The average score for the six quality measures represents the overall quality level of products and/or services for SMEs. In Table 6.26 the level of quality products and/or services by industry type is compared, broken down into manufacturing and service firms. At the overall level, manufacturing organisations achieved a mean score of 3.30 with a standard deviation of 0.77,

compared to the 2.78 mean score and 0.77 standard deviation for the service organisations (see Table 6.26).

Table 6.26: Product and service quality performance measures between manufacturing and service SMEs (n=180)

Quality measures	INDUSTRY TYPE				STATISTICAL TESTS	
	Manufacturing (n=52)		Service (n=104)		T-Tests	
	Mean	SD	Mean	SD	F-value	Sig.
Performance	3.58	0.87	3.21	0.77	1.890*	0.008
Conformity	3.38	0.87	2.78	0.82	1.126*	0.000
Reliability	3.25	0.88	2.83	0.81	0.424*	0.003
Durability	3.31	0.90	2.50	0.85	0.076*	0.000
Defect rate	3.17	0.81	2.58	0.90	1.291*	0.000
Internal failure costs	3.13	0.82	2.77	1.06	6.909*	0.031
Overall	3.30	0.77	2.87	0.77	0.144*	0.000
*F value denotes significant at P <0.05 (two tailed)						

At the construct level, manufacturing organisations achieved higher mean scores for performance measure (3.58), conformity (3.38), durability (3.31), reliability (3.25), defect rate (3.17) and internal failure costs (3.13) than did service organisations. To establish statistically significant differences between manufacturing and service firms a t-test was performed and suggested that there was a significant statistical difference between the mean scores at the overall level. At the construct level, significant statistical differences were also observed for all six quality measures. Therefore it can be concluded that manufacturing firms in Scotland have a higher level of quality in their products and/or services. This may be because of the high level of ISO certification among manufacturing firms and their longer history of quality management practice than in service organisations. It is evident that industry type (major activity groupings) in Scotland has an effect on the quality levels of products and/or services achieved by SMEs.

Comparing the findings of products and/or services performance measures between manufacturing and service organisations in Scotland to those of other studies, Woon (2000) explored TQM implementation in service and manufacturing firms in Singapore and reported that there was a significant difference in the sample concerning quality results measures. He also reported that manufacturing organisations had higher levels of quality in their products and/or services. The study by Quazi et al. (1998) covering service and manufacturing organisations in Singapore revealed that all the eight constructs measuring TQM implementation, including quality results measures, were found to be significantly lower in the service organisations. These findings seem to fit with those of the present study strongly, where manufacturing organisations have a higher level of quality in their products and/or services than other organisations in different industries. Therefore, industry type (major activity groupings) tends to have a strong effect on the quality level of products and/or services in Scottish SMEs.

6.5.4. Correlations between quality performance measures

The six quality measures were explored to establish whether there were any relationships between them. Table 6.27 reports the relationship between the six quality measures in the form of a correlation matrix, using Pearson correlation. All the estimated correlations were found to be statistically significant. Thus t-values for all the parameter estimates corresponded to a statistical significance level of $P < 0.01$ {two-tailed}. Table 6.27 shows that the quality measures in Scottish SMEs are inter-correlated. The highest correlation coefficient is 0.804, representing the relationship between performance and conformity. These two measures are the highest correlated factors. The remaining quality measures are also highly correlated to all other quality

measures since none of them scored less than a correlation value of 0.60. Kline (1994) supports this interpretation by indicating that a value greater than 0.60 (positive or negative) is highly correlated. The correlation results indicate that the six quality measures have significant correlations between themselves and that they reinforce each other. The positive and significant correlation in the sample revealed the importance of these variables in measuring organisational quality products and/or services in SMEs.

Table 6.27: Correlation between the six quality performance measures in SMEs (n=180)

	Quality measures	M	SD	1	2	3	4	5	6
1	<i>Performance</i>	3.40	0.88	1.000					
2	<i>Conformity</i>	3.09	0.96	.864**	1.000				
3	<i>Reliability</i>	3.08	0.94	.844**	.812**	1.000			
4	<i>Durability</i>	2.89	1.01	.766**	.776**	.791**	1.000		
5	<i>Defect rate</i>	2.89	0.97	.753**	.782**	.766**	.774**	1.000	
6	<i>Internal failure costs</i>	2.98	1.04	.813**	.749**	.804**	.790**	.882**	1.000

**Correlation is significant at the 0.01 level (two-tailed)

6.5.5. Correlation between the EQA constructs and product and service quality performance measures

Bivariate correlation was employed to study the interrelationships between the EQA constructs and the product and/or service quality measures. Table 6.28 shows the bivariate correlation and reports strong and positive correlations between the EQA constructs and the six quality performance measures. Thus t-values for all the parameter estimates corresponded to a statistical significance level of $P < 0.01$ {two-tailed}. Table 6.28 shows that the correlation coefficient values ranged from 0.301 and 0.646, which suggested the existence of high and positive correlation between the

EQA constructs and product and/or service quality performance measures in SMEs. In Singapore, Quazi et al. (1998) noted that all eight critical factors in quality management were found to be correlated significantly with quality performance measures and customer satisfaction, while Anderson and Amrik (1999) and Ahire et al. (1996) observed a medium to high correlation between the TQM constructs and product quality measures. These studies are consistent with the findings of the present study.

**Table 6.28: Correlation between the EQA constructs and quality measures
(n=180)**

	EQA scales	Product/service quality measures						Average
		1	2	3	4	5	6	
1	Leadership	0.631	0.611	0.587	0.547	0.390	0.409	0.529
2	Policy and strategy	0.524	0.561	0.574	0.506	0.346	0.419	0.488
3	People management	0.617	0.645	0.634	0.563	0.364	0.460	0.547
4	Resources	0.608	0.628	0.612	0.565	0.371	0.432	0.536
5	Process	0.623	0.646	0.630	0.553	0.422	0.523	0.566
6	People satisfaction	0.536	0.576	0.535	0.500	0.371	0.441	0.493
7	Customer satisfaction	0.547	0.605	0.568	0.531	0.351	0.434	0.506
8	Impact on society	0.544	0.569	0.544	0.508	0.301	0.341	0.467
9	Results	0.572	0.601	0.581	0.509	0.384	0.465	0.518

Correlation is significant at 0.01 (two-tailed)

6.6. TQM Maturity

Researchers (e.g. Crosby, 1979, Quazi et al., 1998) have suggested that organisations can be placed at different TQM maturity levels, and there is no consensus on the number of levels and their definitions (see Table 6.29). This section intends to

establish TQM maturity level in SMEs in Scotland. Participants were asked to position their organisations on Crosby's (1979) quality maturity grid by indicating which of the following statements best reflected the TQM maturity of their organisations.

Table 6.29: Levels of TQM maturity

PHASE 1 -	UNCERTAINTY	■ We don't know why we have problems with quality
PHASE 2 -	AWAKING	■ Is it absolutely necessary always to have problems with quality
PHASE 3 -	ENLIGHTENMENT	■ Through management commitment and quality improvement we are identifying and resolving our problems
PHASE 4 -	WISDOM	■ Defect prevention is a routine part of our operation
PHASE 5 -	CERTAINTY	■ We know why we do not have problems with quality

The results of the TQM maturity assessment among SMEs are presented in Table 6.30. TQM maturity analysis shows that the enlightenment phase ranked first with 64 organisations, representing 35.6% of the total. There were 49 organisations in the awaking phase which ranked second with 27.2% of the total, followed by 28 organisations in the wisdom phase, which accounted for 15.6% of the number of respondents. 13.9% of the sample were in the uncertainty phase of the TQM maturity grid, which accounted for 25 organisations with a fourth place. Finally, the remaining 14 organisations were located in the certainty phase which accounted for 7.8% of the participants. There is a relatively high percentage of firms in the middle of the quality ladder. This observation implies that SMEs recognise the importance of management commitment and quality improvement in the implementation of TQM and of achieving competitive advantage and financial gains (Ahire and O'Shaughnessy, 1998; Edgeman, 1999; Hua et al., 2000). These organisations have started the quality

journey and, with the implementation of TQM constructs and models, they can achieve to reach other phases in Crosby's TQM maturity grid.

Table 6.30: TQM maturity among SMEs (n=180)

Phase numbers	TQM maturity	Frequency	Valid percentages
1	Uncertainty	25	13.9
2	Awaking	49	27.2
3	Enlightenment	64	35.6
4	Wisdom	28	15.6
5	Certainty	14	7.8

The findings about the level of TQM maturity among SMEs in Scotland provide a positive and optimistic view in comparison with those of other studies. A survey by the Ministry of Economic Affairs in the Netherlands in 1992 showed that only 1% of companies were working on TQM seriously and most of them were located in the uncertainty and awaking phases (Hakes, 1994). However, Wiele et al. (1996) found that most of the organisations surveyed achieved a high score in the middle of the quality ladder into the enlightenment phase. This finding is consistent with the present study where a relatively high proportion of managers and owners of SMEs in Scotland believed their companies to be in the enlightenment phase (35.6% of the respondents).

6.6.1. TQM maturity among ISO and non-ISO certified firms

A cross-tabulation between ISO certification and TQM maturity of the sample was also performed. This aimed to pinpoint levels of TQM maturity among certified and non-certified firms in Scotland. Table 6.31 shows the number of certified and non-certified firms and their respective TQM maturity phases. This cross-tabulation revealed that most of the certified firms in the Scottish sample were in the enlightenment (40.2%) and wisdom phases (30.5%) of TQM maturity, and most non-certified firms were in awaking (41.8%) and enlightenment ones (31.6%). ISO

certified SMEs in Scotland appear to be more advanced than non-ISO certified ones in their level of TQM maturity and it seems that further enhancement can be achieved through the implementation of TQM models and quality awards. To establish any significant differences between ISO and non-ISO certified firms in Scotland concerning the level of TQM maturity, T and ANOVA tests were performed and suggested that there was a significant difference among the certified and non-certified samples (see Table 6.32).

Table 6.31: Quality management maturity among certified and non-certified SMEs (n=180)

TQM maturity phases	ISO CERTIFICATION			
	Certified firms (n=82)		Non-certified firms (n=98)	
	Frequency	%	Frequency	%
Uncertainty	3	3.7	22	22.4
Awaking	8	9.8	41	41.8
Enlightenment	33	40.2	31	31.6
Wisdom	25	30.5	3	3.1
Certainty	13	15.9	1	1

Table 6.32: Statistical tests of TQM maturity among certified and non-certified firms (n=180)

TQM maturity	ISO CERTIFICATION				STATISTICAL TESTS			
	Certified firms (n=82)		Non-certified firms (n=98)		T-test		ANOVA test	
	Mean	SD	Mean	SD	F-value	.Sig	F-value	.Sig
Overall score	3.45	1.00	2.18	0.85	3.1999*	0.000	84.555*	0.000

**F value denotes significant at P <0.05 (two tailed)

This suggests that certified firms in Scotland had a higher level of TQM maturity than non-certified firms and they are more likely to take the TQM journey forward to achieve their objectives and goals. It may be concluded that ISO certification in Scotland has had an effect on the level of TQM maturity that organisations can achieve.

6.6.2. Correlation between TQM maturity and performance

The level of TQM maturity is associated with organisational performance; the higher the level of TQM maturity, the higher the level of organisational performance (Dale and Smith, 1997). This section focuses on the identification of any correlation between TQM maturity and organisational performance. Organisational performance is identified as customer satisfaction, business results and quality performance measures (performance, conformity, reliability, durability, defect rate, and internal failure costs). Table 6.33 presents the Pearson correlation coefficients between TQM maturity and organisational performance.

Table 6.33: Pearson correlation between TQM maturity and organisational performance (n=180)

Organisational performance measures	Quality management maturity
Customer satisfaction	0.286**
Business results	0.294**
Performance	0.813**
Conformity	0.793**
Reliability	0.787**
Durability	0.784**
Defect rate	0.813**
Internal failure costs	0.831**
** Correlation is significant at the 0.01 level (two-tailed)	

From Table 6.33 it is evident that TQM maturity is correlated significantly with organisational performance measures. It may be observed that SMEs in Scotland which are pursuing TQM are more likely to achieve customer satisfaction, quality products and/or services and have the potential for securing financial results. This also implies that SMEs in Scotland are aware of the potential importance of TQM to their survival and success. It may be concluded that TQM maturity among SMEs in Scotland results in better business performance. Hardie (1998) focused on the relationship between TQM maturity and business performance. He reported a

positive correlation between TQM maturity and business performance. Woon (2001) investigated TQM maturity in Singapore and explored any association with business performance. The study revealed a high level of correlation between the level of TQM maturity and business performance. The findings of these studies are consistent with those of the present one. However this study goes further in representing a strong correlation between TQM maturity and customer satisfaction and results as well as business results.

6.7. SUMMARY

This chapter has covered different aspects of SMEs with regard to quality management. First, SMEs were classified in terms of business activity, number of employees, ownership, business size, ISO 9000/ ISO 9002 certification and quality initiatives. This section also included some cross-tabulations among these characteristics to find relationships among them. Second, the level of TQM understanding and knowledge among SMEs was discussed, and some cross-tabulations were undertaken regarding the level of TQM understanding and SME characteristics, for example, sector activities; ISO 9000 and non-ISO 9000 firms. Third, SMEs managers' attitudes towards the EQA model constructs in general were investigated, then analysed in terms of sector activities, ISO 9000 certification and numbers of employees. Fourth, positive correlations between the EQA constructs and quality results were identified and investigated. Finally, the researcher discussed SMEs' positions in Crosby's (1979) quality maturity grid. When possible, a comparisons between the results of the present study and those of other studies were performed. In the next chapter the qualitative data is analysed and discussed to

identify any emerging themes and issues about the applicability of the EQA model to the needs of SMEs in Scotland.

CHAPTER SEVEN

QUALITATIVE DATA ANALYSIS

7. INTRODUCTION

This chapter analyses and assesses in more depth the applicability and the relevance of the EQA model to the needs of SMEs. More specifically, this chapter explores the possibility that although managers in certified companies may offer many of the right answers when confronted by attitudinal surveys, an exploration of aspects of TQM practice related to EQA in SMEs may provide a truer reflection of their perceptions and attitudes towards the EQA. Grounded theory is used here to allow the researcher to use a systematic approach to try and develop themes and issues arising from the qualitative data.

7.1. CHARACTERISTICS OF THE SURVEYED ORGANISATIONS

The organisations participated in the interview were representative of the questionnaire respondents in terms of size and business sector, as shown in table 7.1 and 7.2.

Table 7.1: Interview respondents by business sector

Organisational size	BUSINESS SECTOR	
	Service organisations	Manufacturing organisations
Small (1-49)	6 (40%)	3 (20%)
Medium (50-249)	3 (20%)	3 (20%)
Total	9 (60%)	6 (40%)

Table 7.2: Interview respondents by organisation size (no. of employees)

Number of employees	Organisation size	No. of respondents	% of total
1-49	Small	9	60%
50-249	Medium	6	40%
Total		15	100%

Of the 15 interviewees, 60 percent fell into service sector and they represented small organisations, while the remaining 40 percent constituted of manufacturing and medium size organisations as table 7.1 suggested. As discussed earlier, the interviews were designed to develop a deeper understanding of the managers behaviours concerning the main topics emerged from the questionnaire survey (see table 7.3).

Table 7.3: Main issues concerning TQM constructs (EQA model) emerged from the questionnaire survey

TQM criteria (EQA model)	Positive/negative attitude (outcome)
Leadership	Positive
Policy & Strategy	Positive
People management	Positive
Resources	Positive
Processes	Positive
People satisfaction	Positive
Customer satisfaction	Positive
Impact on society	Positive
Business results	Positive

In the pages that follow, participants' responses to these issues were presented and analysed. The main purpose of the analysis was to organise participant responses in such a way that overall patterns would become clear with regard to their behaviours/actions of each TQM practice.

7.2. EVIDENCE OF MANAGERS ATTITUDES AND BEHAVIOURS/ACTIONS OF TQM (EQA) CONSTRUCTS

7.2.1. Leadership

To achieve quality products and/or services in organisations, leadership by senior executives is the main focal point. To support this finding, the respondents were asked about their responsibilities concerning achieving quality in their organisations. Based on their responses, different themes and categories emerged (see table 7.4).

Table 7.4: Emerged themes and sub themes of leadership

Theme (no. of citation)	Categories (evidence to support themes)	Participants															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	No. of citation
Management commitment/support (60)	Driving force for the implementation of TQM programmes	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	15
	Motivate and encourage staff to achieve quality	x		x				x	x	x	x			x	x		8
	Help in creating the right attitudes		x	x	x	x	x										9
	Communicate quality goals and strategies		x	x				x						x	x	x	10
	Development of quality environment	x			x	x	x			x	x	x	x				8
Effective leaders & managers (41)	Ensuring employees & customers satisfaction on regular basis	x	x	x	x	x								x			10
	Managers are considered to be a tool for change	x	x			x	x	x							x		8
	Involvement & empowerment of employees	x		x	x	x	x								x		10
	Quality starts at the top		x	x	x	x								x	x	x	11
	Providing direction, motivating employees and effective teams	x	x			x	x	x	x					x	x		12
Customer focus (23)	Regular assessments of current & future customers needs	x	x	x		x	x	x									12
	Meet customers' requirements and exceed their expectations		x		x	x	x	x						x	x		11
Management involvement (84)	Focus on customer quality requirements	x	x	x	x	x	x	x									12
	Development of quality plans			x	x	x	x	x									9
	Focus on suppliers & requirements	x	x			x	x							x	x		9
	Regular reviews of quality performance	x	x	x	x	x	x	x						x	x		12
	Involvement in quality improvement teams		x	x	x	x	x	x						x	x		12
	Open door policy for staff				x		x							x			5
	Evaluation of employees performance	x	x	x	x	x		x							x		9
	Assessment of resources needs					x	x	x									9
Development of future resource needs plans	x	x			x		x						x			7	

The qualitative data presented in table 7.4 suggested that there are four identified themes of leadership in achieving quality and they are:

- *Management commitment & support*
- *Effective leaders and managers*
- *Customer focus*
- *Management involvement*

Management commitment & support: The majority of the participants stressed the importance of management commitment & support to the success of achieving quality through different behaviours and they are as follow:

- *They are the driving force for the implementation of TQM programmes;*
- *Their ability to communicate quality goals & strategies;*
- *Their ability to ensure employees & customers satisfaction;*
- *Their ability to help in creating the right attitudes;*
- *Their ability to motivate employees to achieve quality; and*
- *Their ability and support in creating a quality environment*

The most important category of management commitment & support in the interviewed organisations was the notion that management commitment was a driving force for the implementation of TQM programmes. For instance, in one of the participating organisations, according to the current manager, the implementation of the TQM model (ISO 9000) was delayed for a few years because the managing director was not fully committed to it. However, after his departure, the company implemented ISO 9000 with current management commitment.

Based on the data provided in table 7.4, it is clear that management commitment & support was seen important with all the supporting categories for achieving quality and implementing quality programmes. This is supported further as one respondent commented that

Achieving quality depends on top management support and commitment. It's very difficult to motivate staff to achieve quality, unless top management is totally committed to achieving quality

Another one provided a similar view to support the crucial importance of management support in achieving quality:

My main responsibility concerning achieving quality is developing and creating the right attitudes throughout the organisation. This is normally achieved through my full commitment to quality, communicating quality principles and quality strategies to my staff face to face

It is evident that top management commitment and support are seen to be important concepts in achieving quality in SMEs and top management is highly correlated to achieving quality and implementing quality programmes.

Effective leaders and managers: Most of the participants supported the importance of effective leaders and managers in achieving quality in their organisations (see table 7.4). Table 7.4 suggesting that providing direction, motivating employees and effective teams and the support of managers to achieving quality are found to be the most important categories associated with being an effective leader and manager. In recognising the importance of leaders and managers further, one manager added:

...in achieving and sustaining quality, total organisational involvement is required which is not achievable without effective managers. Effective managers act as a powerful tool for change and directing change efforts

One owner stressed a similar view by stating:

...achieving quality and long-term profitability and success involve's everyone in my firm. To be successful I believe quality efforts must start at the top with the leaders of the organisation.

It is clear that leaders in SMEs are an important component of long-term success. Indeed everyone wins when leaders are able to lead their teams and manage quality effectively.

Customer focus: Based on the data provided in table 7.4, which indicated that the majority of the interviewed respondents used regular assessments of current & future customer needs, and meeting customers' requirements and to exceed their expectations are vital for survival. It is clear that SMEs tend to assess customers regularly and adjust their products and/or services accordingly. The following statement supports this further:

We are recognised because of our achievements as the best in the business. Our customers, competitors and suppliers look us up to in the industry. Keeping with the standard required, working hard to better understanding of current and future customers needs, meet customers' requirements and exceed customers' expectations

The use of these methods suggested the importance of customer focus and that customers are the driving force behind the survival of SMEs. As one participant emphasised:

...Consumers come to us with their needs and wants. It is our job and duty to satisfy their needs, wants and expectations. Without them we would have to close our doors and obtain social security benefits

It is clear from the above data that long-term success and achieving quality depends on the ability to satisfy consumers by providing quality products and/or services. Therefore, the interviewed participants considered customer focus to be very important in achieving and implementing quality programmes.

Management involvement: The interviewed participants used different methods to indicate the importance of management involvement in achieving quality. Table 7.4 suggested different methods of management involvement and they are as follows:

- Regular reviews of quality performance;
- Involvement in quality improvement teams;
- Focus on customer quality requirements;
- Development of quality plans;
- Focus on suppliers & requirements;
- Evaluation of employees performance;
- Assessment of resource needs;
- Development of future resource needs plans;
- Open door policy for staff

By examining closely the data provided in table 7.4 concerning management involvement, it is clear that the different methods used for management involvement can be categorised further into three themes (clear quality goals, quality performance assessment, and provision of resources) and they are illustrated in table 7.5. It is clear that SMEs have recognised the importance of management involvement in quality activities to ensure improved products ad/or services, and this is developed through the use of clear quality goals, conducted quality performance and resources assessments.

Table 7.5: Categories of management involvement

New categories		
Clear quality goals	Quality performance assessment	Provision of resources
Focus on customer quality requirements	Regular reviews of quality performance	Assessment of resources needs
Development of quality plans	Involvement in quality improvement teams	Development of future resource needs plans
Focus on suppliers & requirement	Open door policy for staff	
	Evaluation of employees performance	

7.2.2. Policy and strategy

Most of the respondents regarded policy and strategy to be important for achieving and sustaining quality, through the integration of quality and customer requirements into strategic and operational plans. The qualitative data identified similar behaviours of the participants with regard to the development of strategic and operational plans (see table 7.6). Table 7.6 suggested that analysis of external environment; identifying customer needs/requirements and identification of continuous improvement areas are different methods used in SMEs in order to develop strategic and operational plans for quality. Based on the participants' behaviours with regard to strategic and operational plans, they suggested some points undertaken in their organisations to turn these behaviours into the desired results (see table 7.6). In order to achieve the desired results (quality and financial performance), the majority of the respondents recommended the development of clear quality goals and objectives; and allocation of the required resources needed to perform improvement for achieving objectives. The interviewed participants viewed the development of short-term quality policies and strategies as important for them than the development of long-term ones. They felt that the formulation of long-term policies and strategies is a very dynamic process and that it is a reflection of the ever-increasing market turbulence that SMEs face. For example, customers are requesting and demanding higher quality products and/or services at lower prices. Therefore, it is clear that market turbulence affects SMEs' quality plans considerable. This is due most probably to shortages of resources needed to cope, unlike larger organisations. However, most of the interviewed participants have confirmed their ability to manage quality resulting from short-term policies and strategies.

Table 7.6: Similar behaviours and actions of strategic and operational plan development

Similar behaviours	No. of citations
Analysis of external environment	13
Identifying customer needs/requirements	12
Identification of continuous improvement areas	9
Analysis of resource availability	7
Analysis of internal environment	3
Similar actions	
Clear quality goals & objectives	14
Allocate the required resources	11
Development of short-term quality policies and strategies	11
Implementation of policies and strategies	8
Review quality plans and achievements	8

For effective implementation of the identified actions (see table 7.6) to achieve the desired outcomes, the interviewed participants demonstrated commitment to communicating quality aims, values and plans to employees; and ensuring that employees understand the objectives of policies and strategies. These are supported further by some of the following methods used in the interviewed sample (see table 7.7).

Table 7.7: Methods of communication and understanding quality

Methods/examples	No. of citations
Monthly team briefings	11
Daily contact with employees	9
Quality awareness days	5
Progress meetings	4
Notice-boards	1
Newsletters	1

Table 7.7 suggested that the most appropriate methods used for communicating and understanding quality are monthly team briefings and daily contact with employees. These two methods suggest that the interviewed participants are highly committed to communicating quality aims and objectives to their employees as they are vital in

achieving organisational quality. This suggests further that communication of quality matters in SMEs seem to be a primary requirement for effective implementation of policies and strategies.

7.2.3. People management

The interviewed participants stressed the effective role of people management for achieving quality (see table 7.8). Based on the data provided in table 7.8, effective management of people is one of the most crucial TQM concepts; help with achieving quality; determines the long-term success of TQM; and organisational survival and success. It is clear that managers and owners of SMEs viewed achieving effectiveness through continuous quality improvement as depending on the use of employees and managing them effectively. To support this further, one manager stated:

We consider employees as a valuable resource to be efficiently managed to gain competitive advantage, survival and success.

Table 7.8: Perceptions and views of people management

Views of people management	No. of citation
Effective	13
Crucial TQM concept	12
The heart of TQM programmes	12
Help in achieving quality	11
Determine organisational survival and success	11
Determine the long-term success of TQM	10
Cost effective	8

The respondents reported that training, providing resources for training, employee involvement, performance appraisal and employee recognition are important elements of human resource development in SMEs when financial resources are available. As one owner stated:

I believe in having a happy workforce in my company. This is normally achieved through the provision of training, suitable working environment

and their ability to communicate their ideas to me with no barriers. These elements are seen as motivational factors for caring and improving their work.

These human resource concepts are an important contributor to proper and meaningful TQM since achieving quality is focused on the help and the support of SMEs employees. These human resource activities which are regarded to be important in SMEs are discussed next.

Training: The majority of the interviewed respondents perceived training to be important in their organisations and this is clearly suggested in table 7.9. Table 7.9 suggested that training perceived to be an integral and important part of any TQM implementation. They viewed employee training as valuable, crucial and important for developing skills in employees for achieving quality products and/or services. The importance of training is supported further as one manager commented:

If you train your staff on a regular basis, they stay very much effective and efficient employees. No matter how much your company grows, the basics are there. We cannot have a top company without a top trained workforce. Our employees are our future investments.

Table 7.9: Perception of employee training

Perceptions/views	No. of citations
Important part of quality	15
Vital in developing skills	11
Help in achieving quality	11
Has a positive effects:	11
Productivity	11
Job satisfaction	11
Quality	9
Profitability	8

It is clear that employee training has been viewed simply as an additional avenue for achieving quality and effectiveness, which is contrary to the commonly held view that

owners and managers of SMEs do not train (Ram, 2000). To confirm managers and owners' perceptions and views of training, the researcher asked them about what different types of training are used in their organisations. Most of the interviewed respondents (12) performed training in-house and on-the-job. They preferred to use this type of training because they increase the productivity of employees within the organisation, but have no value outside the organisation. These interviewed respondents emphasised that effective employee training is associated with a positive effect on employee productivity, job satisfaction, quality products and/or services and profitability. It is clear that managers and owners of the interviewed sample suggested and viewed training as the only way to provide employees with the socialisation and the skills needed to implement productivity and TQM programmes, which would lead to profitability and competitive advantage.

Recruitment: The interviewed participants believe that staff recruitment/selection is based on different characteristics in their organisations. Most of them consider potential employees to have the required attitudinal and behavioural characteristics. Moreover they tend to select employees based on employees beliefs, values and interests rather than basic knowledge, skills and abilities. These characteristics can be referred to as employees' competencies. This is supported as one owner described:

It is important to employ people who are willing to learn, and have interest in the work they do so they can grow with the company. They can achieve success because of their capabilities to learn.

Clearly managers and owners of SMEs believe in the importance of employees' competencies rather than their basic knowledge and skills. Therefore, employee selection is treated with considerable care in SMEs to recruit the appropriate candidate to suit organisational needs.

Reward and recognition: The majority of the interviewed respondents (13) acknowledged the importance of reward and recognition as motivating factors in achieving quality goals. The respondents viewed reward and recognition as important because they help to enhance the self-esteem of employees. To confirm and support this further, they were asked about the use of any reward and recognition methods in their organisations. The identified methods in the interviewed sample in use were bonuses, monetary payment for higher output and commission. Those managers and owners who have implemented these methods of reward and recognition have witnessed quality improvement, more output, more creativity in carrying out daily tasks, job satisfaction and performance improvement. Therefore, it is clear that reward and recognition methods were correlated positively to quality, job satisfaction and performance.

Performance appraisal: The majority (13) of the interviewed sample used informal meetings with employees. These meetings involve the manager/or owner of the company with each member of staff discussing what are the key competencies of the job, and then deciding on areas which both feel the staff member can develop. Based on their use of the informal meetings in their organisations, they have identified a few uses and benefits of informal meetings (see table 7.10). From table 7.10, it is clear that performance appraisal plays a key role in developing, communicating and monitoring the achievement of quality standards and improvements. As these issues develop, they will lead in turn to quality improvements, profitability, better communication, satisfied employees, motivated workforce and organisational efficiency & effectiveness. It is evident that performance appraisal is important in the interviewed sample as the majority of them use informal meetings.

Table 7.10: Perceptions and views of performance appraisal (informal meetings)

Performance appraisal perceptions and views	No. of citations
Develop quality standards	13
Better communication	13
Monitoring quality and improvements	12
Achieve quality improvement	12
Profitability	12
Satisfied workers	12
Motivated workforce	11
Efficiency & effectiveness	11

Employee involvement: To indicate the interviewed sample behaviours and actions with regard to employee involvement, they were asked about whether they have any methods in place for the use of employee involvement and what are their objectives.

The majority of the sample were found to be using the following:

- Problem-solving teams
- Quality improvement teams

They were using these methods in order to achieve different objectives from the organisational and employees perspectives (see table 7.11). Table 7.11 suggested that employee involvement is regarded to be important in the interviewed sample because it provides opportunities for employees to voice their views and use their initiatives in problem solving, decision making and strategy formulation. Moreover, employee involvement tends to enhance employee performance & satisfaction, achieve continuous quality improvement and employee involvement support. As you can see the most important objective of employee involvement is achieving and improving the quality of products/ or services. This is supported further as one owner commented:

Staff involvement in my company is becoming a fundamental pillar in achieving quality and continuous improvement on a regular basis. They are the ones who best know consumer needs best.

It is clear that the use of employee involvement creates an organisational culture. Their skills and knowledge are used to achieve effectiveness and develop their skills further. It is important for managers to provide the necessary infrastructure to bring out the best in their employees. This in turn should facilitate continuous quality improvement, productivity and organisational performance. The diverse inputs of employees often lead to higher quality decisions, and they help to develop trust between employees and management. As one manager said:

Without involving my staff in different aspects of the organisation, it would be difficult to achieve quality, productivity and profitability improvements. I tend to involve my staff in issues such as decisions on the operational level and dealing with customer complaints to make them feel important.

Table 7.11: Views of employee involvement

Views of employee involvement	No. of citation	Views of employee involvement	No. of citation
Organisational perspectives		Employee perspectives	
Improve the quality of products/ or service	12	Voice their views	9
Enhance employee performance & satisfaction	10		
Achieve continuous quality improvement	10	Use their initiatives to solve problems	8
Employee involvement and support	7	Use their initiatives in decision making & strategy formation	7

Employee involvement appeared to be important for achieving success in the interviewed sample. For example, as table 7.11 suggested that the use of employee involvement could lead to significant and sustained improvement in quality, employee satisfaction and in turn results in financial improvements.

7.2.4. Resources

Financial resources: The majority (12) of the interviewed sample had budgetary systems in place to control their companies' expenditure and they also practised the

“payback” method of financial appraisal. These methods are used by their organisations to restrict their purchases to give them a return at the end of the day, without passing any extra costs on consumers. The use of these methods in their organisations suggest the importance of reviewing financial data to determine any future resource requirements to support short-term policies and strategies for achieving quality.

Organisational information: The availability of information on quality is considered to be the foundation for the development of competitive capabilities for achieving quality. Maintenance and improvement of quality requires continuous flow of accurate information about processes that generate products and/or services. The respondents’ behaviours and actions (see table 7.12) support this further.

Table 7.12: Behaviours of the interviewed sample concerning organisational information

Behaviours concerning organisational information	No. of citation
Collection of information and analysis from customers (evidence: customer surveys and customer visit organisation)	13
Collection of information from employees	11
Collection of information from suppliers	8

Table 7.12 suggests that the interviewed participants practised the idea of collecting and analysing information, as they collect information and make analysis of it from employees (this will be discussed later on), suppliers and customers (these two issues will be discussed next) about products and/or services. Collecting information and analysing it from customers seems to be the most important issue, as customers are considered to be vital in the interviewed participants. This is evident as the interviewed sample uses customer surveys and customer visit organisations, where the

interviewed participants can collect information from their customers and analyse them. After the information has been collected and analysed, based on the analysis outcome managers and owners can provide the relevant resources to support goals, policies and strategies through the development of an action plan in order to achieve quality. As one manager argued:

Information has been recognised as important weapons in companies. It is important for companies to define, maintain and review the current information and the infrastructure necessary to achieve quality products. By using the available information effectively. It is hoped to contribute towards achieving quality.

The participants suggested that they tend to discuss the information analysis with their employees and few reasons were identified as why they follow this procedure (see table 7.13).

Table 7.13: Reasons for information analysis and discussion with employees

Reasons	No. of citation
Communication improvement	11
Improve motivation	9
Employee involvement in problem solving	8
Employee involvement in decision making	8
Achieving quality products/ or services	8
Employee satisfaction	7

Table 7.13 suggested the interviewed sample discusses information analysis with their employees as a way to improve communication, motivation, to provide employees with a sense of involvement (problem-solving and decision-making), achieving quality products/ or services and employee satisfaction. This is evident as one owner added:

Collecting information and analysing it proved to be important to the operation of my company. It may be product information, demand forecast information, customer complaints information etc. However, the collection and analysis of information are used in my company as employees' involvement activities to gain their support and motivation.

External partnerships with customers

Organisations should have the goal of satisfying their final customers' requirements. This goal will help the setting of strategies, plans and resources. With regard meeting customer requirements the interviewed sample stressed the importance of prioritising customers wants and that of their involvement in product and/ or service development. As table 7.12 suggested that most of the interviewed respondents obtain information about customer expectations from customer surveys and customer visits. As illustrated earlier that the information is collected and analysed by management and incorporated into plans to improve product and/ or service quality and to provide a picture of the financial resources needed to satisfy consumers. As one owner said:

Recently, we have managed to outperform other companies in the industry, and this can be only because we have a customer orientation strategy in place. This strategy focuses on satisfying and identifying customers' needs and expectations, and then they can be applied to products and services.

It is clear that by identifying, and focusing on customers' needs this enables organisations to outperform their competition by achieving quality.

External partnerships with suppliers

Tsang and Antony (2001) argued that to obtain the best quality parts for a given price, managers need to develop co-operative and long-term relationships with suppliers. This is evident among the investigated sample (see table 7.14). Table 7.14 suggests that the interviewed participants focused on providing clear specifications to their suppliers to provide them with the desired products/services, development of long-term where both parties can invest in resources an business is guaranteed. The interviewed participants conduct regular meetings with their suppliers and evaluate their performance further to ensure the quality of their products/services.

Table 7.14: Co-operative relationships with suppliers in the interviewed sample

Evidence and behaviours of co-operative relationships with suppliers	No. of citations
Suppliers have clear specifications with the required products/services	12
Development of long-term contracts	10
Regular meetings with suppliers	10
Suppliers' performance evaluation	9

It is clear that table 7.14 seems to suggest that managing supplier relationships is considered to be important in sustaining competitive advantage. Therefore building effective relationships with suppliers has a significant effect on performance, in terms of product and/ or service quality, responsiveness to customer needs and competitive advantage.

7.2.5. Processes

Processes are the basic foundations for developing and providing quality products and/ or service where processes transform inputs into outputs. The interviewed sample stressed the importance of defining, monitoring and controlling (see table 7.15) the inputs to the process in order to produce an output that meets and satisfies the requirements and needs of the customer.

Table 7.15: Elements to produce satisfying output

Identified elements to produce satisfying output	No. of citations
Identify process quality improvement opportunities	14
Identify customer requirements	13
Control of purchased products/services	13
Defining the inputs	11
Monitoring the inputs	11
Controlling the inputs	9

Table 7.15 suggests that the significant importance of identifying process quality improvement opportunities, identify customer requirements, and control of purchased

products/services, in order to produce the required outcome. Importance was given to the ability to identify process quality improvement opportunities and this is clearly significant as quality improvement opportunities have significant effect on cost reduction and quality improvement, whereby customer satisfaction can be achieved and sustained. However to produce effective and quality products and/ or services, organisations must ensure the effective management of processes.

Managing processes

The identified issues/elements of processes in table 7.15 need to be managed in order to achieve the required outcome. Table 7.16 suggests few reasons as why the interviewed sample adopt different approaches in managing their processes.

Table 7.16: Reasons for managing processes in the interviewed sample

Identified reasons for managing processes	No. of citations
To address the quality of services	12
To address the quality of products	12
To ensure quality consistency	11
To ensure quality capability	11
Ability to meet changing external demands	11
Flexibility in meeting customers' requirements & needs	11
Cost reductions	10
Delivery reliability & on time delivery	10

The reasons identified in table 7.16 are condensed to produce the following reasons:

- Managing processes effectively helps organisations to address the quality of products and services in terms of consistency and capability;
- It allows organisations to meet changing external demands and increases flexibility in meeting customers' requirements and needs;
- It allows organisations to reduce the costs, increase delivery reliability and on time delivery.

The identified reasons of managing processes effectively were regarded to be quite important, therefore it is important to manage processes effectively. Therefore, as

table 7.15 identified and emphasised the importance of identifying customer requirements and the control of purchased products and/or services from suppliers, in order to manage process effectively. These two issues are discussed below.

Customer requirements

It was found that it is important to know what customers want and to provide products and/ or services that meet their needs because they are the final arbiters of quality. A close relationship with the customer should be maintained to determine the customer's needs, as well as to receive feedback on the extent to which they are being met. As one respondent commented in support of customer requirements:

By focusing and reviewing customer needs and expectations on a regular basis is a licence to practice success and quality. The voice of our customers is incorporated into our processes to achieve products that comply with their needs and expectations.

The interviewed sample suggested this further by the use of customer surveys and customer visits as illustrated in table 7.14, in order to develop a close relationship with them.

Control of purchased products and services

Purchased products and/ or services need to be controlled to ensure that they are aligned with organisational requirements so as to satisfy customers' needs. Therefore, it is important to select and evaluate suppliers on their ability to supply the product and/ or service in accordance with organisational requirements. As table 7.17 suggests the different criteria used by the interviewed participants for selecting their suppliers.

Table 7.17: Different criteria for selecting suppliers

Criteria for selecting suppliers	No. of citations
Supplier's use of TQM models	15
Time delivery	14
Supplier's performance history	14
Flexibility	12
Financial stability	12
Price	10
Design capabilities and technology	10

Table 7.17 suggests that the identified criteria for selecting suppliers found to be significant within the interviewed sample. Importance was given to quality and TQM usage criteria in the selection of suppliers, where it can help inventory to be reduced, because the availability of supplies is assured and as a consequence, costs are reduced and flexibility is gained. Mistakes are less frequent, disputes and controversial situations with suppliers are reduced and co-ordination is improved, all of which lead to the operational performance of the purchasing function being improved.

Clearly the interviewed sample recognised the importance of supplier selection because an organisation's suppliers directly affect the price, quality, delivery, reliability and availability of its products, all of which have a positive effect on product and/ or service quality, customer satisfaction and organisational performance. Building close co-operation with suppliers (see table 7.14) proved to be correlated to achieving high levels of quality, lowering unit costs and enhanced delivery performance.

Elements of managing process effectively

To manage processes effectively in the interviewed sample, the participants agreed on common elements and they are as follow:

- Management identifies and defines critical processes that are important;

- Management monitors all production processes and introduces continuous improvement whenever possible;
- Prevention and correction details are always included in daily business operations;
- Processes are reviewed regularly and discussed with team members to improve them;
- Improvement strategies are implemented;
- Improvements in the process are measured.

It is clear that process management in the interviewed sample is developed through different stages and these stages can be demonstrated as follows:

- Selection and identification of critical processes.
- Identification of problems in selected processes through the use of quality tools.
- Identification of improvement strategies through the use of quality tools.
- Implementation of improvement strategies using corrective actions.
- Measurement of the improvements in the process.

Selection and identification of the critical processes that characterise the activities of a company and determining which of those processes have the greatest effect on the business are key steps in the implementation of a system of process management. The interviewed sample stressed that great deal of time and money can be wasted if key processes are not identified appropriately. The following steps can generate the methods used for the identification of processes in the interviewed sample:

- Develop a mission statement.
- Collect information.
- Develop a list of process elements and sub-elements.
- Prioritise processes based on importance to the success of the organisation.
- Select key processes based on the prioritised list.
- Re-evaluate the key processes

Processes are systematically reviewed and analysed in the interviewed sample against identified requirements to ensure quality improvement plans are in place for all attributes of the process. For example, a medium-sized firm was continuously reviewing its suppliers against organisational and customer requirements (see figure

7.1). This process can be converted into Plan-Do-Check-Act (PDCA) cycle (see figure 7.2). The interviewed sample suggested also that achieving ISO 9000 enabled them to document each element in their processes, where each process was developed, reviewed and approved to achieve quality. Therefore, it is evident that the processes in the interviewed sample are primarily based on ISO 9000 standards, and backed up by innumerable checklists and self-monitoring instruments.

Tools and techniques for process management

The interviewed participants used different tools and techniques to improve processes. Process flowcharting, brainstorming and SPC were identified as the most appropriate of the tools and techniques used. To ensure process improvement in the interviewed respondents, they recognised the importance of using these tools effectively by employees who are involved in organisational process. Employee commitment is regarded important for achieving process improvement and process improvement will be possible if staff are assured that top management care about improving quality. Moreover, management should provide the necessary support to show their commitment as demonstrated in leadership construct.

In general terms, managing processes effectively is perceived to have a positive effect on internal quality through its effect on the amount of scrap and rework generated. Effects are made in the interviewed sample to identify problems in processes, and corrective actions can be introduced to eliminate quality problems, and a smaller number of defective products and/or services will result.

Figure 7.1: Components of process management

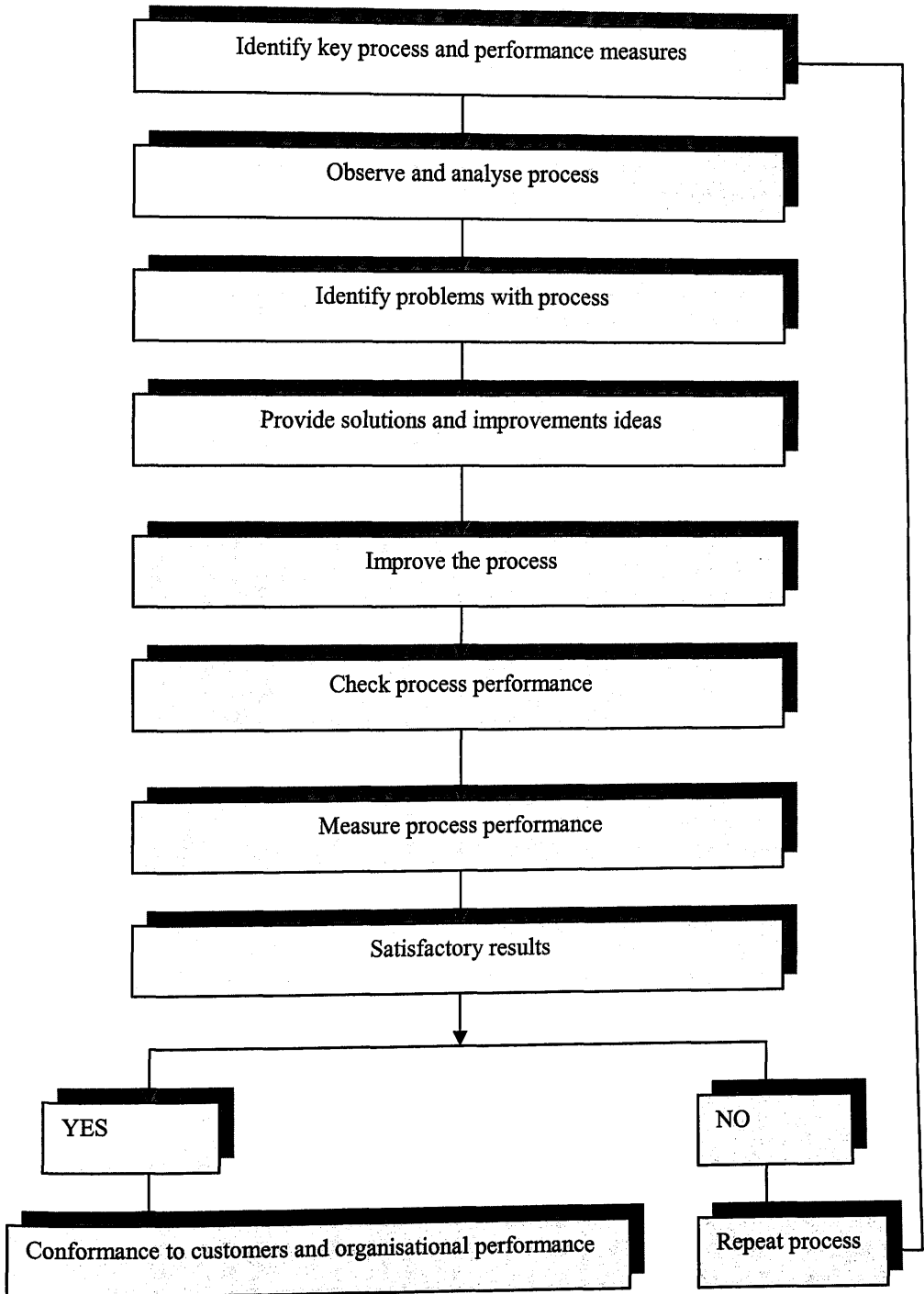
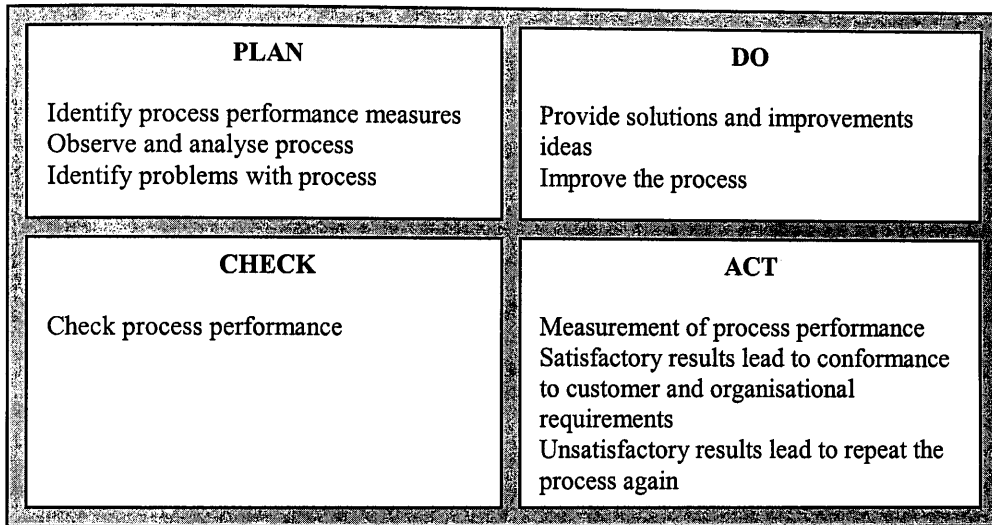


Figure 7.2: Plan-Do-Check-Act of process management



The interviewed participants believe managing processes effectively leads to positive effects on internal quality. Managing processes effectively is also regarded as having a natural effect on external quality. External quality achieved through the development of relationships between customers and SMEs, where direct communications can be established between employees and customers to resolve customer complaints, to provide feedback about product and service quality and to offer suggestions for future improvements.

7.2.6. Customer satisfaction

Customer satisfaction is regarded as the most important practice of TQM for determining the quality that is provided to external customers. To support this from the present study, the interviewed sample used different customer satisfaction measurement methods (see table 7.18).

Table 7.18: Customer satisfaction measurement methods in the interviewed sample

Customer satisfaction measurement methods	No. of citations
Customer satisfaction surveys	14
Interviews with current customers	10
Interviews with previous customers	10
Interviews with competitors' customers	10
Customer complaints	8
Regular meetings with customers	5
Customers visits	5

Table 7.18 suggested that these organisations used customer satisfaction surveys, interviews with current customers, interviews with previous customers, interviews with competitors' customers, collection and analysis of customer complaints, regular meeting with customers, and customer visits. Customer satisfaction surveys and interviews are considered to be quite important, where they ensure that the voice of customers is heard and therefore, business plans are prepared with customers in mind.

In support of this, one respondent commented:

The success we have achieved recently derives primarily from focusing on customers' needs. It's not difficult for us to know what consumers want from us, we ask them and then try to satisfy their needs by producing the required products.

Another respondent provided a similar comment:

Every three months I devote my time to make analysis of customer complaints. The gathered information from this analysis is incorporated into the new and improved products and services.

Other methods were considered to be less important such as meeting with customers and customers visits help to establish and maintain an open relationship with customers, which provides an input to organisational products and services. These methods seem to focus on qualitative measures of customer satisfaction which focus

on perceptions and attitudes of the customer. Analysis of customer satisfaction measurement methods outcomes are performed regularly by managers, and they tend to draw up a list of new attributes that help to satisfy customers, to improve products and/ or services and these attributes are incorporated into organisational products and/ or services.

The interviewed sample recognise the importance of maintaining and sustaining high levels of quality products and/ or services, and awareness of customer expectations and continuous improvement of products and/ or services through the above mentioned methods, in order to achieve customer satisfaction. Therefore, customer satisfaction is considered to be important for the interviewed sample, as they believe in satisfying their customers to achieve different benefits (see table 7.19). The identified benefits in the table seem to suggest the importance of achieving customer satisfaction.

Table 7.19: Benefits of customer satisfaction

Benefits of customer satisfaction	No. of citations
Higher market share	12
Customer loyalty	12
Business loyalty	12
Business expansion	10
Improved financial performance	10
Organisational survival	9
Organisational growth	9

7.2.7. People satisfaction

To survive in highly competitive markets, organisations need to provide goods and services that yield highly satisfied and loyal customers. When customers are satisfied, they are more likely to return to those who helped them, while dissatisfied customers are more likely to go elsewhere. The retention of loyal customers is a key concept for

organisational survival. To attain and sustain excellent customer support requires the support of organisational employees, and to gain employees support, they need to be satisfied. The interviewed sample suggested some elements they use in order to satisfy employees (see table 7.20).

Table 7.20: Conditions for sustaining employee satisfaction

Employee satisfaction conditions	No. of citations
Training	12
Reward & recognition	11
Employee involvement	11
Performance appraisal	8
Job rotation	7
Reasonable workload	7

Table 7.20 suggested the importance of providing employee with the necessary training, reward and recognition, performance appraisal, employee involvement (supported in people management section), job rotation and reasonable workload, in order to be truly satisfied. Importance was given to training, reward and recognition and employee involvement, which suggests that the interviewed sample recognise the importance of employees in their organisations. Those identifiable conditions for sustaining employee satisfaction can be referred to as “suitable working conditions”, which refer to work which offers greater skill variety, work which makes employees feel that they are contributing, learning and enjoying themselves in performing their jobs, a reasonable workload, with appropriate pay and promotion. The interviewed respondents used the identified methods of suitable working conditions to ensure employee satisfaction and they saw several benefits achieved from employee satisfaction (see table7.21).

Table 7.21: Benefits of employee satisfaction in the interviewed sample

Benefits	No. of citations
Quality products and/ or services	12
Productivity	12
Product and/ or service innovation	12
Customer satisfaction	10
Improved employee moral	10
Improved communication	10
Lower turnover	9
Lower absenteeism	9

Table 7.21 clearly suggests that the interviewed sample regarded achieving quality products and/ or services productivity and product and/ or service innovation to be the most important benefits of employee satisfaction. These benefits refer to operational benefits, while other achieved benefits such as improved employee moral, communication, lower turnover, lower absenteeism and customer satisfaction refer to humans side benefits. Those identified benefits lead to improved organisational performance and survival. To support these findings, one owner explained further:

It is important to satisfy my workers, they are of critical importance to the capability of my firm to respond effectively and efficiently to customer needs, whilst enabling us to achieve success through cutting down the cost of turnover, training and absenteeism.

To continue with employee satisfaction, the interviewed sample recognised the importance of using different measures of people satisfaction (see table 7.22). Table 7.22 suggests that the majority of the interviewed sample used different indicators such as accident rate per employee, sales per employee, output per employee and the rate of absenteeism. It is clear that the interviewed participants considered performance indicators to be important in measuring people satisfaction as a process. In turn this will enable them to develop continuous improvement framework for achieving people satisfaction.

Table 7.22: Measures of people satisfaction in the interviewed sample

Measures of people satisfaction	No. of citations
Accident rate per employee	12
Sales per employee	12
Output per employee	11
Rate of absenteeism	11

7.2.8. Impact on society

Impact on society is regarded as important in achieving quality and performance, by ensuring that organisations are socially responsible in their communities. With regard to the interviewed sample, they demonstrated different objectives to indicate their organisational responsibilities to the community (see table 7.23), which suggests their positive behaviours & attitudes towards impact on society.

Table 7.23: The interviewed sample behaviours and responsibilities to the community

Evidence of socially responsible	No. of citations	Level of importance
Quality products and/ or services	14	High
Assessing the needs of customers	13	
Providing some sponsorship to help local sport and leisure activities	10	Medium
Donations to people in need	10	
Providing their business experiences to educational institutions	8	
Helping local schools in raising funds and sports events	7	
Providing work experience to students	7	
Being a good and fair employer	3	Low

Table 7.23 suggests that the interviewed participants recognised that providing quality products and services and assessing the needs of customers were the main contributions made to the community. Therefore the examples provided in table indicated evidence of the interviewed sample involvement in the communities in which they operate. However, a low number of the participants commented that being a good employer was another way of contributing to the community. Clearly the

interviewed sample appear to have positive attitudes towards social/corporate responsibility. Such positive attitudes and behaviours may provide them with a competitive edge, gaining higher level of employee commitment and moral and a superior ability to attract and retrain good employees. Achieving responsible and social organisations in the community will enhance the public image of those firms. In turn the number of consumers purchasing products and services may increase and consequently affecting the customers' overall satisfaction with the products and services and their loyalty to the organisation, leading in turn to improved organisational performance.

7.2.9. Business results

In the context of SMEs, the interviewed sample suggests that organisations, which have adopted various TQM constructs, would normally make use of them for achieving success. As one respondent stated:

Now I understand that using TQM initiatives is a step forward to achieve success. Two years ago, I realised the importance of implementing ISO 9000, which is critical to improve product quality, meet customer requirements and enhance performance.

The term success refers to the different improvements that could be achieved through the implementation of TQM practices (EQA model). The interviewed respondents highlighted different improvements (see table 7.24). Those identified improvements activities suggest that the implementation of TQM (EQA model) is an effective tool for achieving organisational success. Based on the data provided in table 7.24, the researcher identified two factors to refer to the identified improvements as productivity and operational, and financial improvements.

Table 7.24: Improvements activities of TQM (EQA model) implementation

Improvements of TQM (EQA model)	No. of citations	Identified factors
Improved sales revenue	13	Financial improvements
Gross margins can be improved through the reduction in costs because of fewer errors, lower scrap and rework costs	13	
Customer satisfaction increases with quality products and/ or services, improving retention rates for existing customers, plus the gaining of new ones and therefore increased financial gains and market share	12	
Shortening the cycle time during production reduces total costs	11	Productivity & operational improvements
Eliminating errors or non-conformance reduces costs further	11	
Scrap, rework and inventory costs are reduced through improvement of material quality	10	
Reducing waste and rework activities lowers service and support costs	10	

Managing the TQM (EQA model) constructs effectively are regarded by the interviewed participants to be necessary for achieving success (business results). Therefore, achieving high quality products and services is the essence of a company's survival and competitiveness, while continual improvements in quality are critical for achieving and sustaining financial and operational performance. Therefore it is clear to suggest that the EQA model is effective for achieving organisational objectives and performance based on the interviewed participants behaviours and actions. To support this further, the researcher reviewed all the qualitative data and provided a list of perceived benefits were generated and grouped into different categories (see figure 7.3). Figure 7.3 suggests that the implementation of the EQA model leads to employee satisfaction, quality products and/ or services, customer satisfaction, employee satisfaction, and in turn they should lead to financial performance and competitive advantage.

7.3. Emerging new themes

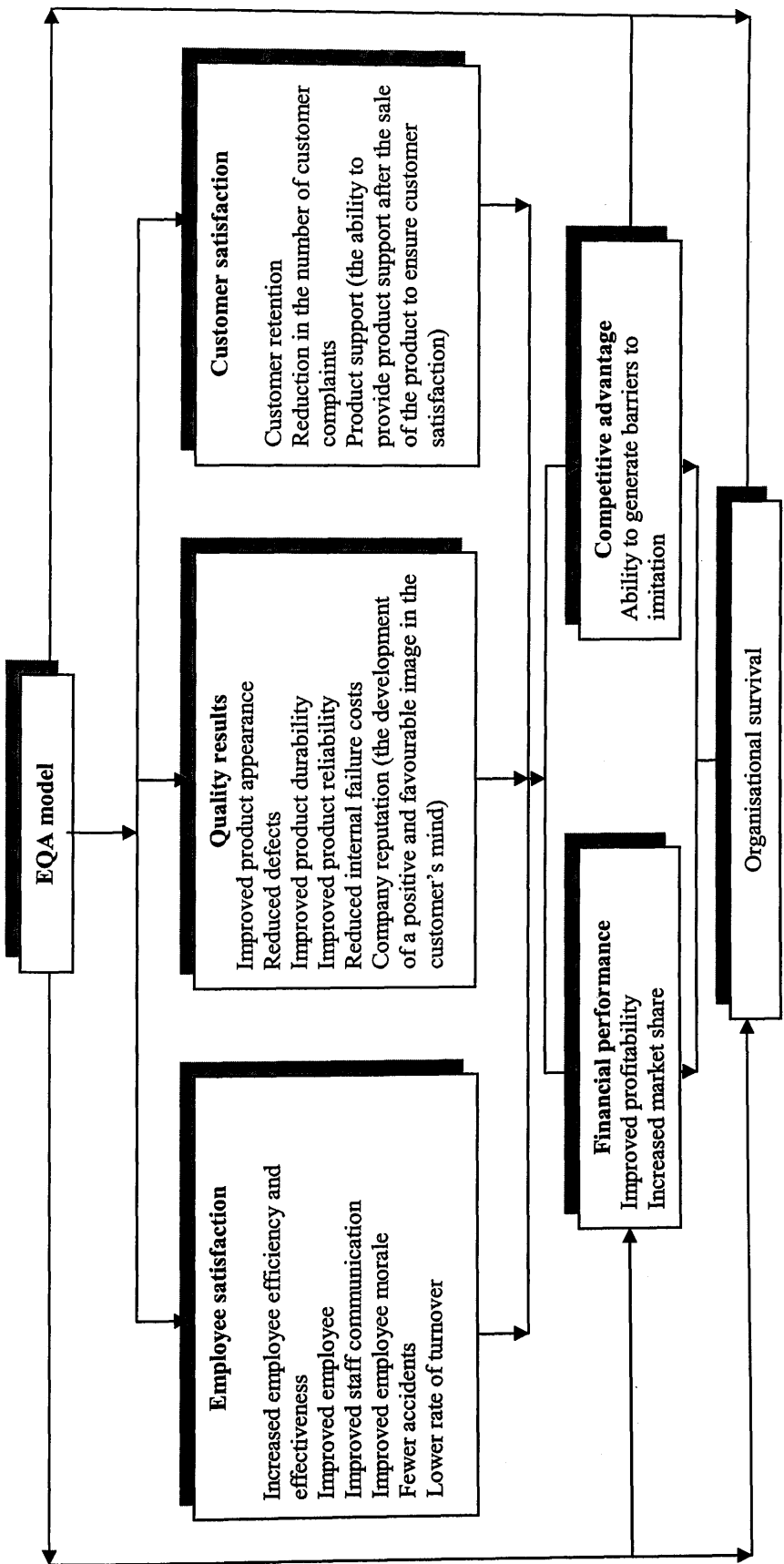
The interviewed participants have emphasised a view that their organisations are under increasing market pressures because large organisations encroaching on SME markets, and increasing integration in the supply chain. Increasing market pressures are found to be given importance by the interviewed respondents (see table 7.25). Table 7.25 suggests that the interviewed sample suggested different issues which, face them in today's business and these issues have been given same weight or importance.

Table 7.25: Issues face the interviewed sample in today's business

Essential issues	No. of citation
Increasing market pressures	12
Turbulent environment	10
Complex environment	10
Globalisation	10
Increased competition	9
Changing consumer demand	8
Changing consumer habits	8

In order to overcome these challenges, the interviewed respondents claimed that they are focusing on developing new products, developing new services, developing new processes, interaction with internal environment, and interaction with external environment. The interviewed participants focused on these issues in an effort to identify new ideas and market opportunities, where an innovative product and service or process can be developed. Also these issues will help the interviewed sample to recognise the importance of sustaining knowledge. Therefore, it is clear that innovation and knowledge are recognised to be important in the interviewed sample in order to overcome these challenges and to improve survive and sustain competitive advantage.

Figure 7.3: Benefits of EQA model implementation



7.3.1. Innovation management

As it has been illustrated earlier that, the interviewed sample emphasised their needs to focus their attention on an increase in their innovation. As one manager stated that:

To compete in fast changing markets with fast changing technology, we must make things happen, we must innovate. Innovation has always been at the centrepiece of competitiveness in SMEs, and has been considered as a key requirement for business survival and success. Without the introduction of new products, I will be out of business.

It is clear that innovation is becoming a crucial strategy for survival and sustaining competitive advantage, and if they do not innovate, some SMEs risk being overtaken by competitors. Therefore, it can be suggested that innovation is important to the survival and success of SMEs. This is supported further as the interviewed sample viewed innovation as important in their organisations and through the effective implementation of product, service and process innovation, they can achieve different benefits (see table 7.26).

Table 7.26: Perceived benefits of innovation in the interviewed sample

Perceived/recommended benefits	No. of citations
Increased sales	12
Profitability	12
Differentiation strategy	12
Increase customer base	10
Increase market share	10
Productivity & efficiency	9
Reliable innovative products/services	9
Higher level of product/service performance	9

Table 7.26 suggested that the interviewed sample perceived innovation to have positive impacts on their organisations if it is implemented correctly and effectively. Most of the perception weight was given to increased sales (12), profitability (12) and differentiation strategy (12). This suggests that these organisations will use

innovation to achieve profitability and differentiation. Overall through the entire perceived benefits can enable these organisations to achieve and improve competitiveness through differentiated and innovative products and/ or services. As one owner commented:

Innovations are important in the local, national, and international economy and there is a positive link between new product and/or service innovation and the growth of the business in the long-term.

Managing innovation effectively can be of critical importance for the interviewed sample operating in markets where competition is much stronger and more diverse than larger organisations. Therefore it is important to combine innovation management within the quality model, as innovation is found to be a contributing factor to organisational survival and competitive advantage.

7.3.2. Knowledge management

The interviewed sample suggested that their organisations are realising how important it is to know and sustain what they know and be able to make effective use of their knowledge. As one respondent commented:

Knowledge-based industries demand quick and accurate responses from employees to satisfy their consumers, therefore it is important for the development of a faster cycle of knowledge creation and action in organisations.

The recognition of knowledge in the interviewed sample is evident through the perceived benefits of knowledge by the interviewed sample. The interviewed sample suggested that knowledge is a contributory factor for achieving quality products and/or services, quality innovation products/services, quality outputs, employees effectiveness. Moreover most of the respondents suggested that managing knowledge effectively would have an effect on changing employee behaviour. This is true if

managers and owners of SMEs are willing to foster work and culture environment of sharing and openness. The interviewed sample stressed that managers who are able to obtain and improve their employees' knowledge are prepared to face the consistent rapid changes and the ability to innovate. As one respondent explained further that:

Managers should recognise that knowledgeable employees provide creative solutions, ideas and research activities to produce innovative products and/or services.

Many of the respondents in this study appeared to be critical of their organisations, feeling that knowledge is an important element in achieving success. They have also emphasised the importance of managing knowledge effectively to achieve the desired outcome. As one participant stated that:

Small and medium-sized organisations should be able to organise their knowledge in a systematic manner to achieve success, profitability, and competitive advantage. There is a need for them to implement systems to manage knowledge.

Another respondent provided a similar view:

Managing knowledge effectively may lead to increased customer satisfaction by providing consistent information. Without consistent information, customers may be disappointed and dissatisfied by the inconsistency of information provided by organisations. For example, if a customer phoned-up an organisation for an advice about a specific product and/or service on two occasions and received inconsistent answers. This will lead to customer dissatisfaction. To overcome this problem, managing knowledge effectively would ensure that all information received by the customers is consistent over time.

Clearly effective management of knowledge represented a significant opportunity to improve performance, management learning, increase the number of innovative products and/or services, increase sales, reduce costs and achieve competitive advantage. As one owner explained:

Knowledge in organisations is one of the few resources that enable organisations to achieve and sustain performance, success and competitive

advantage. Therefore, organisations' attention and decision making should focus on acquiring the appropriate knowledge and the ability to manage it.

It is clear that managing knowledge effectively can be of critical importance for the interviewed sample operating in markets where competition is much stronger and more diverse than larger organisations. Therefore it is important to combine knowledge management within the quality model, as knowledge is found to be a contributing factor to organisational survival and competitive advantage.

7.4. SUMMARY

This chapter has focused on analysing the qualitative data gathered, in order to assess the applicability of the EQA model to the needs of SMEs. This chapter has covered management attitudes/behaviours and actions to the EQA model in great detail by focusing on each construct of the model. The chapter focused further on identifying any other themes or concepts from the qualitative data which might be of relevance to the EQA model. The next chapter focuses on discussing the qualitative data further and the development of the model to suit the needs of SMEs with regard to innovation and knowledge management.

Chapter Eight

Discussion and conclusion

8. Introduction

From the qualitative and quantitative data analysis, it was clear that managers and owners of SMEs believed that the EQA model is an appropriate model to achieve success. However, they recommended the outlining of other constructs with the present EQA model, to make it more suitable to their needs. Therefore, in this chapter, the new constructs emerging from the qualitative data will be explained and analysed to identify whether these constructs are compatible or not. Moreover, the developed model based on the new constructs will be discussed and compared with other models and similar studies. Furthermore, this chapter will focus on providing a summary and conclusions of the major findings of the study, followed by recommendations, a final thought about the conclusions, research contributions to the field TQM, limitations of the study and directions for future research.

8.1. Organisational characteristics

Companies that are certified to ISO 9000 may reflect a commitment to TQM practices. The proportion of companies involved may be an indicator of quality development in a particular country. Therefore, with regards to ISO 9000 in Scottish SMEs, the researcher concluded that the low rate of ISO 9000 certification (45.6%) in Scotland was evident. This may have been due to the costs of implementation of ISO 9000 standards and these companies are small and do not have the resources that larger companies do. The costs of achieving ISO 9000 will tend to be higher per employee in smaller firms than in larger ones. Also, SMEs are less comfortable with the formal procedures involved in implementing the ISO 9000 standard. On the other hand, there is a progressive rate of certification (54.4%) for SMEs, as they are

reluctant to implement the standard, which suggest that SMEs are changing their attitudes towards the implementation of ISO 9000 standards and that full commitment to TQM practices is needed. ISO 9000 standards appeared to appeal more to manufacturing firms than other firms in Scotland. This may be because manufacturing firms have had a longer history of TQM systems and a long-term commitment to using TQM systems than services ones.

Developments in the management of quality in the 1980s led increasingly to the adoption of TQM initiatives¹ in different countries (Waddell and Mallen, 2001; Lee and Quazi, 2001; Huang and Lin, 2002). In the case of Scottish SMEs, SPC was found not to be popular. This was because most of the sample consisted of services firms, and they do tend not to implement SPC. This may be because SPC focuses on production processes and more specifically statistical thinking rather than consumers and consumers are regarded important in SMEs. Most SMEs did, however, use quality circles, customer satisfaction surveys and customer needs surveys. These techniques were popular and suggested that Scottish SMEs are customer-focused and this enables them to satisfy their customer needs to remain competitive in the market place (Witcher, 1994; Knights and McCabe, 1996).

8.2. Knowledge and understanding of TQM

Scottish SMEs had high levels of knowledge and understanding of TQM², with the certified firms having a slightly higher level of understanding than non-certified ones. The high levels of understanding suggested that these firms would be able to ensure the successful implementation of TQM (Yusof and Aspinwall, 2000; 2002; Rahman,

¹ Some of these TQM initiatives are quality circles, customer satisfaction surveys, customer needs surveys, statistical process control, quality awareness training, cultural change programme.

2001). Implementation of TQM is a major change that requires a transformation in any organisation's culture, for example, processes, strategic priorities and beliefs. The main critical success factors needed to support TQM implementation in SMEs were seen to do the following: management leadership, commitment and support determine the success of new change initiatives; business performance measurement (including product/service quality level, customer and employee satisfaction levels, delivery time) must be given the same priority as financial measures (profit/loss, etc.); teamwork and participation are important in achieving a continuous improvement culture; and supplier involvement is vital in supporting quality improvement. It seems that these four factors are fundamental for achieving quality and continuous improvement and would enable SMEs to achieve competitive advantage.

8.3. TQM constructs (EQA model): management attitudes and actions/behaviours

TQM constructs and techniques are now a well accepted part of almost every manager's 'tool kit' (Dow et al., 1999). This is because quality is a fundamental strategy for the support and improvement of competitiveness. According to Powell (1995) most large firms have adopted TQM in some form and quality awards are a badge of honour. It follows therefore, that implementing TQM constructs is a major change that requires management commitment, acceptance and positive attitudes towards TQM constructs for successful implementation. Scottish managers and owners of SMEs had positive attitudes towards the nine constructs underlying the EQA model, which implies that SMEs in Scotland are willing to implement and use them. However to shed more light on the high level of managers and owners positive

² Measured through the development of 15 statements and they are illustrated in appendix D, table D4.

attitudes and behaviours, the nine constructs were taken and explored in more detail to gain more understanding³, their positive attitudes with regards to the nine constructs are as follows:

8.3.1. Leadership

Most of the respondents suggested that those quality products and/or services cannot exist without strong top management leadership and commitment. It is evident that top management support for quality is a factor for achieving quality improvement. Further, they identified their main responsibilities from a leadership perspective in managing quality through management commitment and support, effective leaders and managers, customer focus and management involvement. In the eyes of the interviewed participants, leadership helps them to achieve and maintain quality products and services and, in turn will be able to achieve improved performance. The importance of leadership is supported further by some examples from the interviewed participants companies behaviours and actions with regard to leadership (Figure 8.1).

Figure 8.1: Examples of leadership practices

- Regular management/owners meetings on business improvement.
- Employee involvement in the development of policy & strategy via meetings and employee surveys.
- Ensuring that time and financial resources are available for employees to work on different improvement activities
- Showing employee recognition through different techniques such as letters of commendation, small rewards, and publicising performance on organisational noticeboards or in newsletters and magazines, and verbal thank you.
- Management involvement in improving customer/supplier relationships through the participation in improvement teams, presentations to customers and suppliers of company strategy and undertaking systematic reviews of customer needs.

³ The nine constructs were taken and explored through semi-structured interviews conducted with managers and owners of SMEs to identify the applicability of the constructs to their needs.

Clearly, the leadership construct was perceived as very important and crucial for stimulating quality consciousness, supporting the implementation of quality, and for achieving customer and employee satisfaction in the interviewed sample. Therefore, as a construct it can be considered applicable to the needs of these organisations. Easton and Jarrell (1998) examined the effect of TQM constructs on the performance of 108 firms. Their findings suggested that performance improved through the use of leadership, while in Hong Kong, Kanji and Wong (1999) revealed that leadership was related to achieving customer satisfaction, employee satisfaction and business results. The importance of leadership in the present study is overwhelming and strongly supported and consistent with those findings of previous studies as discussed in section 4.3.1. (For example, Yusof and Aspinwall, 2002; Antony et al., 2002; Ghosh et al., 2001; Solis et al., 1998; and Chen et al., 1997).

8.3.2. Policy and strategy

Policy and strategy is regarded to be an important construct in enabling SMEs to achieve quality through the development of clear quality goals and strategies, and in turn it will lead to organisational success. To support this further, policy and strategy practices are identified from the interviewed sample (Figure 8.2).

Figure 8.2: Examples of policy and strategy practices

- Linking business plans to the company's vision and ensuring that resources are allocated.
- Consideration of the views of customers, employees and the community at large when deciding on the development of policy & strategy.
- Publicising organisational policy & strategy statements by company/departmental meetings and noticeboards.

The policy and strategy construct was seen for its importance in SMEs for achieving and sustaining quality, through the integration of quality and customer requirements into short term strategic and operational plans. To develop these plans, the interviewed sample assess the current business situation through external environmental analysis and resource availability for identifying quality and customer needs that are important for their success. However the interviewed sample had a negative view of the development of long-term quality policies and strategies. This may be because of the ever-increasing market turbulence that SMEs face. Clearly the policy and strategy construct seems to be applicable to the needs of the interviewed sample. The present finding is broadly consistent with previous studies (For example, O'Regan and Ghobadian, 2002; Solis et al., 2000; Sureshchander et al., 2001) as discussed in section 4.4.8.

8.3.3. People management

To achieve quality in small and medium sized organisations, it is imperative that they focus on the talents and abilities of their staff. This is because employees at all levels are the essence of an organisation and their full involvement enables their abilities to be used for the organisation's benefit. Quality can be achieved in SMEs through the use of people management. The obtained data in section 7.2.3 suggested that people management in the interviewed sample consist of commitment to training, recruitment, reward and recognition, performance appraisal and employee involvement. These activities are recognised for their importance in the development of the workforce for achieving organisational objectives. The interviewed sample believed that there is a positive link between the use of people management, quality performance improvements and performance. That positive link is achieved through

managing people effectively, where employees perceive people management to be supporting. Therefore, employee commitment and trusting management are achieved and in turn this will lead to employee satisfaction. It is clear that managing people is regarded as a critical concept for the long-term survival of SMEs and for achieving and sustaining quality. In order to support this further, the researcher has selected some examples to demonstrate management practices of people management (see figure 8.3).

Figure 8.3: Examples of people management

- The use of employee surveys to assess the satisfaction of employees, and provide an indication of success or problems. The interviewed respondents indicated that they ensured that the findings were fed back to the employees and acted upon it.
- Allowing employees to make decisions and improvements in their own work and empower/encourage them to make decisions.
- The effective use of communication systems such as e-mail, newsletters, noticeboards, social events and meetings.

It is clear that managing people is regarded as a critical concept for the long-term survival of SMEs and for achieving and sustaining quality. Therefore, it can be suggested that the people management construct is applicable to the needs of the interviewed sample. In support of the importance of people management, Koys (2001); Wood and Menezes (1998) concluded that managing people effectively in organisations leads to an increase in organisational effectiveness by creating conditions where employees become highly involved in the organisation and work hard to accomplish the organisation's goals. The findings of the present study is clearly well supported by the above studies and other studies discussed in section 4.3.6. For example, Reid et al. (2002); Wyer and Mason (1999); and Quazi et al. (1998).

8.3.4. Resources

Most of the interviewed respondents agreed strongly that resources management, including finance, information, customers and suppliers was an important element in supporting policy & strategy. Through resources management, SMEs can provide the resources needed for implementing strategies and policies and in turn achieve quality products and/ or services. In order to support this further, the researcher has selected some examples to demonstrate management practices and their positive attitudes and behaviours of resource management (see Figure 8.4).

Figure 8.4: Examples of resource management practices

- The use of systems to identify and continually review the information needs of the company/employees and present it in an understandable format. For example noticeboards used to notify students about orders, achievements, health & safety information, and internal audit schedules.
- Post-investment evaluations was taken to monitor the effect on the cost base and output, and to ensure that pre-investment expectations are attained.
- Individuals are responsible for planning, managing and controlling resources such as materials, final goods and consumables.

It can be suggested that this construct is applicable to the needs of SMEs. Anderson and Sohal (1999) investigated TQM practices in Australian SMEs and they reported that information availability provided the greatest positive influence on the quality of output. While Shaukat et al. (2000) focused on TQM and business outcomes in Singapore. They stressed the importance of managing suppliers and customers effectively, and correlated positively with quality performance. Moreover, Yusof and Aspinwall (2000) examined critical success factors for TQM in SMEs. They reported that these organisations recognised the importance of resources management as a critical success factor for TQM. This study (Yusof and Aspinwall, 2000) and others (for example, Waldman, 1994a/b; Solis et al., 2000; Dean and Terziovski, 2001) as

discussed in sections 4.3.2 and 4.3.5 are consistent with the findings reached in this present study.

8.3.5. Processes

Processes in SMEs are seen as the foundation for developing and providing quality products and/or services, because processes transform inputs into outputs. Process management is viewed as a core activity in the interviewed sample for managing quality and inputs in order to satisfy the needs of customers. Some common issues were that identified among the interviewed sample concerning managing processes. They were management identifies and defines critical processes that are important, management monitors all production processes and introduces continuous improvement whenever possible, prevention and correction details are always included in daily business operations, processes are reviewed regularly and discussed with team members to improve them, improvement strategies are implemented, and improvements in the process are measured.

Clearly the interviewed sample supports the notion of managing processes effectively to achieve positive effects on internal and external quality. They suggested that there is positive effects on internal and external quality, where internal quality has a positive effect on external quality, and that achieving internal and external quality in SMEs will lead to achieving quality. Moreover, the interviewed respondents stressed that effective process management leads to better quality, and higher levels of customer satisfaction and of financial performance. In the light of this, the researcher has selected some examples to demonstrate management practices (Figure 8.5) to suggest their positive attitudes towards the construct.

Figure 8.5: Examples of process management practices

- Setting up specific teams to deal with process problems. For example, to identify internal and external customers and suppliers, set service level and process measurements, monitor, and then improve effectiveness.
- Involvement of every employee in the design and development of process change.
- Use of standards to educate, motivate and achieve process gains. The interviewed sample implemented the ISO 9000 standards.

This construct is clearly viewed as important in enabling SMEs to achieve quality and performance, and in addition it can be illustrated as a useful construct to the needs of SMEs. In support of this, Ahire and Dreyfus (2000) examined the effect of design and process management on quality. They demonstrated a positive correlation between managing processes effectively and achieving quality. While, Anderson and Sohal (1999) examined relationships between TQM practices and performance in 62 Australian SMEs. They agreed that the influence of process management was greater on the quality products and/or services than on any other outcomes. The findings of these studies are consistent with those of the present study and others (Pritchard and Armistead, 1999; Rahman, 2001; Behara and Gundersen, 2001) which are discussed in section 4.3.3.

8.3.6. Customer satisfaction

The identified benefits of customer satisfactions (Table 7.19) among the interviewed sample seem to suggest the importance of achieving and maintaining customer satisfaction. The interviewed participants regarded customer satisfaction for determining the quality that is provided to external customers, and it's very crucial for achieving organisational survival, growth and financial performance. Financial performance is achieved by these organisations through satisfying their customers to

gain higher market share, and repeat business and referral business. To sustain customer satisfaction in SMEs, the interviewed sample believed in measuring the extent of customer satisfaction and applying any relevant improvement. Qualitative measures such as customer satisfaction surveys and interviews, were used to continue satisfying customers.

To support the importance of customer satisfaction in the interviewed sample, some examples have been adopted to demonstrate management practices and positive attitudes of the construct (Figure 8.6). Therefore the construct can be seen to be applicable and useful to the needs of SMEs. In support of this, Galbreath and Rogers (1999) investigated customer satisfaction and purchasing power. They found that 98% of dissatisfied customers switched to competitors without complaining, while satisfied customers were more likely to purchase a company's products regularly. The finding of this study and the present study were consistent with similar results of other studies (for example, Hallowell, 1996; Kandampully and Suhartanto, 2000; Gale, 1994; Roberts, 1999) discussed in section 4.3.7.

Figure 8.6: Examples of customer satisfaction practices

- Assessing customer perceptions directly using techniques such as customer surveys.
- Assessing customer perceptions indirectly by the use of internal measures such as customer complaints, response times, rework, repeat business measures and market share.
- Working with customers to ensure that their needs are understood and coordinated within products and services. This is achieved through regular visiting customers, making courtesy phone calls and establishing one-to-one relationships with the customer.
- The use of effective complaints system, which cover verbal and written complaints and also to inform customers about the progress of their complaints.

8.3.7. People satisfaction

As the behaviours and actions of the interviewed sample illustrated in section 7.2.7 suggest that people satisfaction is very important for achieving quality and performance. To support the importance of people satisfaction in the interviewed participants, some examples have been adopted to demonstrate management practices (Figure 8.7) and positive attitudes of people satisfaction.

Figure 8.7: Examples of people satisfaction practices

- The effective use of employee surveys to measure people satisfaction directly. Questions normally cover personal issues such as career development, training, empowerment, incentives and general issues such as organisational business performance, company goals and strategies, leadership, motivation and company-wide involvement.
- The effective use of indirect people satisfaction measures such as staff turnover, absenteeism, employee complaints, performance appraisal, and level of communication via number of suggestions and willingness to participate in improvement activities.

These examples suggest further that the interviewed sample recognised the importance of using performance indicators to measure people satisfaction as a process, and in turn, this will enable SMEs to develop a continuous improvement framework for achieving people satisfaction. It is clear that people satisfaction is very important for achieving quality and performance and can be considered vital for SMEs. In support of this, Mendonsa (1998) concluded that the management of human resources would lead to employee satisfaction and consequently, employee satisfaction would lead to improvements to quality and performance. In addition, in the context of SMEs, Chandler and McEvoy (2000) reported that small and medium sized manufacturing firms achieved employee satisfaction, improvements to quality and performance from the effective management of human resources. These studies

support the present study and are broadly consistent with other studies (Koys, 2001; Wimalasiri and Kouzmin, 2000) discussed in section 4.3.6.

8.3.8. Impact on society

The interviewed sample recognised the importance of society's perception of their organisation's activities to reduce and prevent nuisance and harm from its operations, while, some suggested that being a good employer is a way of contributing to SMEs community, citing training as an example. Impact on society was perceived as an important construct in the interviewed sample. This is because the interviewed participants believed that if they ignore the importance of the public in judging the activities of their organisations in their community, they can expect to have negative commercial consequences.

The interviewed respondents seem to think that people prefer to work for companies with social consciences, while, customers are looking for evidence of social responsibility among their suppliers of goods and services. Even investors and banks will consider company images before investment decisions are made. Clearly the interviewed sample considered the importance of this construct in their own organisations in achieving quality and performance and some examples have been adopted from the respondents to present their positive attitudes and behaviours (Figure 8.8). Therefore, this construct can be suggested to be applicable to the needs of SMEs. Dennis et al. (1998) found that managers of large organisations in the UK recognised the importance of community values and society's perceptions of the organisational activities, while Sureshchandar et al. (2001) developed a conceptual model for TQM in services. They identified 12 dimensions of TQM critical for its

implementation of TQM in services. Impact on society was one of them. In the USA and Mexico, Solis et al. (2000) investigated TQM infrastructures in 372 manufacturing companies. They reported a positive correlation between impact on society and organisational performance. These studies and other studies (Rao et al., 1999; Miller and Besser, 2000; Zairi, 2000) are consistent with the present study findings.

Figure 8.8: Examples of impact on society practices

- Some of the interviewed participants complied with the standard ISO 14001. This standard requires an environmental policy to be in existence within the company, fully supported by top management, and outlining the policies of the company, not only to the staff but also to the public.
- Invite families of employees and the public from the local community to visit the participants organisations. This seeks to develop a good relationship between the company and the local community and helps workers to feel a sense of pride, showing their families their place of work.
- The introduction of e-mail has reduced the use of paper in most internal communication.
- The use of e-mail reduced the amount of fuel consumed, as managers did not need to go to work daily.

8.3.9. Business results

Blending together the various TQM constructs are important for any organisation to perform well. As this construct considers what the organisation is achieving in relation to its planned objectives and in satisfying the needs and expectations of everyone. To support the importance of the business results construct, the interviewed sample use of the following practices of business results (Figure 8.9), which suggest the importance of this construct to the needs of the interviewed sample. Managing the EQA constructs effectively is regarded by the interviewed respondents to be necessary for achieving success. Therefore achieving high quality products and services are the essence of a company's survival and competitiveness, while continual

improvements in quality are critical for achieving and sustaining financial and operational performance (Figure 7.3). The interviewed participants emphasised the importance of this construct, where this category enables the interviewed participants to collect data on customer satisfaction, company finances and company operations and supplier performance. These data are analysed so that improvement strategies can be identified and incorporated into decision-making.

Figure 8.9: Examples of business results practices

- The interviewed participants use different financial and non-financial measures to measure business success. These measures are compared with past performance and similar measures within other organisations (competitors).
- Financial targets are set on annual basis, with a trend to improve over a number of years. For example the use of profit growth, return on capital employed, net profit before tax, and market share.
- Non-financial measures focus on the needs of employees, customers, suppliers and the community

Clearly the business result construct can be used to support continuous improvement and to gain competitive advantage through customer satisfaction, quality products/services, and people satisfaction. The importance of this construct is supported further by the quantitative data, which suggested positive correlations among the EQA constructs, more-specifically, the nine constructs of the model were correlated significantly with customer satisfaction, quality results and business results.

It is clear to suggest here that the EQA model is an appropriate model to be used for the interviewed participants to achieve success and the desired outcomes as evident in the business result construct. However the interviewed respondents suggested other constructs which could be incorporated into the present model to make it more suitable and applicable to their needs and they are discussed below.

8.3.10. Innovation management

Innovation was regarded an important element which influences the growth of small and medium sized companies by providing differentiated products/services and improvements in quality and reliability and cost and competitiveness at the national and regional level. To support this further, chapter 2 illustrated that the sole existence of SMEs is based on their ability to provide innovative products/services. Among the interviewed respondents, they recognized and emphasised the importance of innovation as a crucial strategy for survival and sustaining competitive advantage, and recommended that innovation should be managed effectively in order to produce quality innovative products and services. This is confirmed further by the perceived benefits of effective innovation management within SMEs (see table 7.26), for example, increased sales, profitability and a differentiation strategy.

Clearly it can be suggested that managing innovation effectively can be of critical importance for SMEs operating in markets where competition is much stronger and more diverse than for larger organizations. This is supported through the literature where Leonard and McAdam (2002a) and Tether investigated co-operative arrangements for innovation in SMEs. They reported findings about the importance of innovation in SMEs, which has led to an increase in market share, growth and profitability. Hine and Ryan (1999) explored innovation by small service firms in Australia, and found that innovation in them was necessary for their survival and growth, while Brown and Eisenhardt (1995) supported that there is a growing recognition that innovation is important for creating and sustaining competitive advantage. These studies are consistent with those of the present study in supporting the importance of innovation for achieving organizational success, survival and

competitive advantage. Thus, innovation is important for the interviewed respondents and should be managed effectively. But the question here is that, *IS INNOVATION MANAGEMENT COMPATIBLE WITH A TQM ENVIRONMENT OR TQM MODEL (EQA)?*.

8.3.10.1. Innovation management and TQM: Compatible or not

Innovation is one of the reasons why companies have embraced TQM and companies tend to tackle innovation in two different ways: by copying or developing their own innovations. The first approach is suitable for organisations, which enjoy competitive advantages, such as low wages and easy access to raw materials. However, in order to obtain competitive advantage, developing innovation is a better approach. This argument is not only valid for innovation in products, services, processes, but also for innovation in management thinking. The TQM approach can be applied to both strategies, due to the fact that companies which are using TQM can more easily assimilate innovations imported from other situations or invented due to the willingness of its employees to accept new ideas as a result of the continuous improvement ethos promoted by TQM. They can also develop their own innovations by building on the work of both continuous and breakthrough improvements.

As illustrated earlier one of the main elements of TQM is the need for adequate customer focus. Organisations have to identify current and future consumers' needs and their level of satisfaction and loyalty. However any changes which are made have to be undertaken with customer's needs being given full consideration, therefore customer focus constitutes or promotes a stimulus to innovation. Therefore it can be suggested that innovation is needed to better respond to customer needs, particularly

the “exciters/delighters” that customers cannot articulate, and to develop the products and services that will position an organisation strategically ahead of its competitors.

Another issue related to TQM is the importance of training and education. The availability of well-trained employees facilitates innovation and in a TQM environment it is argued that new ways of operating are more readily accepted by employees. This is not only important in relation to training for the work which the employee is required to perform but also for the development of the employees basic knowledge and skills. An employee with good knowledge is usually prepared to understand and accept new systems of operating. This is vital as future jobs become more intellectually demanding and less mechanical in nature.

Empowerment and teamwork contribute to the generation of improvements and innovations proposed by employees. These business improvements and innovations which penetrate upwards from the bottom of the organisational hierarchy, have the enormous advantage of generating a dynamic force which assist with changing the attitudes of those employees who are more resistant to change. In order to get improvements and innovations flowing from the bottom of the organisation, good training is essential which is promoted by TQM tools and awards. As Wimalasiri and Kouzmin (2000) argue that empowered employees who take part in the change process are more willing to get fully involved in making continuous improvement and innovative products, services and processes for which they have the responsibility.

Clearly TQM can be seen as laying the foundation of a cultural environment that encourages innovation. Success depends on skills and the ability to select and

implement at the right time – the most important factors that comprise the innovation process. The ability to adapt to change and capitalise on the opportunities presented by change is central to competitiveness (McAdam et al., 1998; Zairi, 1994). The process of TQM instils a culture that is a pre-requisite for the adoption of an innovation process. The organisational culture that exists in a TQM environment is a tool for innovation (Zairi, 1994). Therefore a TQM environment seems to be sufficient for producing innovative products, services and processes. This is supported further as the EQA model promotes and encourages innovation through:

- Focusing on customer-driven quality, which places major emphasis on the positive side of quality, and stresses enhancement, new services, and customer relationship management. Enhancing quality relies heavily on creativity and innovation;
- Continuous improvement and cycles of learning, which are stressed as integral parts of the EQA activities encourage analysis and problem solving everywhere within the company, where innovative products, services and processes are introduced;
- Strong emphasis on cycle time reduction in all organisation operations, which encourages companies to analyse work processes, work organisations, and the value-added contributions of all process steps. This fosters change, innovation and creative thinking in how work is organised and conducted;
- Focus on future requirements of customers, which encourages companies to seek innovative and creative ways to serve customer needs.

Due to the recognition of the importance of innovation in SMEs, and also its role within the EQA model, it is important to manage it effectively in SMEs. Therefore a set of criteria should be developed to enable managers and owners to assess their progress about innovation success. The criteria needed for innovation would be developed based on the available literature on the subjects. Innovation represents a contributory factor to the competitiveness of organisations and the economy (Beaver and Prince,

2002; Voss, 1992; Johne, 1999). Innovation provides the means for safeguarding and improving quality, saving costs, increasing organisational growth and profitability, and achieving competitive advantage (Wang and Ahmed, 2002; Leonard and McAdam, 2002; Ghobadian and Woo, 1996; Tether, 2000; Cumming, 1998; Hart, 1996). The identified key concepts required in order to assess and enable managers and owners to manage innovation effectively are briefly explained next.

Clarity of goals: Clarity of goals and targets of organisations is predicted to be positively related to innovation (Brown and Eisenhardt, 1995). Clarity of goals can be developed using time-based objectives. It is axiomatic to organisational theory that managers and employees, when faced with several performance criteria will seek to attain the most visible of them (Brown and Karagozoglu, 1993; Gilbert, 1993). However, recognition of the importance of time is not enough to ensure innovation, organisations need to recognise the importance of achieving goals and targets within the allocation of timetables (Brown and Eisenhardt, 1995). Indeed, research on goal setting in organisations suggests that telling people to work faster should have some effect on innovation development and speed, it also suggests that this will probably have less effect than well-conveyed, specific timetables (Locke and Latham, 1990). Moreover, Cooper and Kleinschmidt (1994) and Gilbert (1993) suggested that there has been much research to suggest that clearly defined time-based objectives are necessary for achieving and managing innovation.

Generating process innovation: Process innovation is seen as important for the survival and success of SMEs (Hine and Ryan, 1999). Voss (1992) suggested that the development of process innovation was a major contributor to the successful

performance of the automotive industry in Japan. However, Wheelwright and Clark (1992) argued that product, service and process innovation should interact due to the competitive power that results from combining proprietary processes with proprietary products or services. Hayes et al. (1998) supported Wheelwright and Clark's (1992) argument and stated that *one can build a competitive advantage through superior manufacturing, but sustaining it over time requires comparable skills in creating a continual stream of new products and processes. The effective combination of product and process development increases the returns from each* (Hayes et al., 1988, cited in Voss et al., 1994, p. 88). To achieve innovation or process innovation, Flynn (1994) recommended the use of Quality Function Deployment to help innovation and process innovation without delay by translating the voice of the customer into detailed requirements.

Implementation of process, product and service innovation: The importance of the implementation stage is supported through the work of Tidd (1991) who found that a mismatch between process state of knowledge and capability to adopt can result in implementation failure. While Winch and Voss (1991) identified that the involvement of relevant functions and/or department and suppliers are important in the implementation of process, product and service innovation.

Continuous improvement: Continuous improvement is identified to be very important for the adaptation and implementation of innovation. Voss et al. (1994) suggested that many problems that occur in implementing innovation arise from a poor match between the innovation, the organisation concerned, and its strategy and its objectives. Leonard-Barton (1998) developed a model, which combined these

issues, to help managers in ensuring that the implementation of innovations becomes a continuous process.

To manage innovation effectively, the above key areas should be used as a basis for developing tools for SMEs and may be used as a self-assessment and benchmarking tools. Therefore, based on the above concepts, Voss et al. (1994), Chiesa et al. (1993) and Brown and Eisenhardt (1995) recommended the following model to be used to manage innovation effectively:

- **Clarity of goals** (Describe the process for developing and achieving clarity of goals concerning innovations)
 - Setting goals and targets of innovations
 - The use of appropriate communication channels
 - The use of project timetables to monitor implementation
- **Generating process, product and service innovations** (Describe the process for developing new and innovative processes, products and services)
 - Evaluation of the capabilities of existing processes
 - Matching process capabilities to the requirements of customers
 - The use of quality function deployment
 - Linking process, product and service innovation
 - Developing new ideas
- **Implementation stage** (Describe the process for ensuring effective implementation of new and innovative processes, products and services)
 - Matching process, product and service requirements to the capability to adopt
 - Managing supplier involvement in the development and implementation
 - Making the appropriate changes to the organisation
- **Continuous improvement** (Describe how processes, products and services are continually improved to maintain and produce new and innovative process, products, and services)
 - Identifying opportunities for improvement
 - Integrating improvement with quality control
 - Benchmarking performance
 - Involving staff in improvement after installation

Innovation and quality are vital components of organisational effectiveness and those two issues are complementary. They both relate to customer satisfaction and are enhanced by the effective implementation of processes. When innovation and quality processes are linked to business strategy, they have much to offer the public and private organisations. Therefore, it is important for innovation management to be combined with the EQA model.

8.3.10.2. Innovation performance

To ensure the success of innovation, relevant performance measures should be developed. The identification of innovation performance measures is important, because of the assumption that what gets measured gets managed and improved. Therefore Von Bonsdoff and Anderson (1995), Voss et al. (1994), Flamholtz (1996) and Chapman et al. (2000) suggested several innovation performance measures, and they are combined here to provide a set of criteria for enabling managers to assess the effectiveness of innovation.

Keys to innovation performance measures

- **Process, product, and service parameters (cost, quality, lead-time, speed)**
 - Process, product, and service parameters performance versus competitors
 - Percentage improvement over 12 months
- **Installation lead time**
 - Time taken from start to finish
 - Percentage of new and successful process, product and service
- **Costs**
 - Total of R&D expenditure
 - Planned versus actual project spending

- **New process, product and service**
 - Number of new processes, products and services
- **Continuous improvement**
 - Number of improvement suggestions per employee per year
 - Number of improvement suggestions per employee implemented per year
 - Average annual improvement in process, product and service parameters
- **Review of progress**
 - Review of achievements
 - Set targets with clear goals

For managing innovation in SMEs, a model of innovation management has been developed, which comprises of innovation management and innovation performance. The innovation management construct is considered to be an enabling one for achieving innovation. Innovation performance will be considered as part of the results category of the new improved EQA, where it measures what has been achieved.

8.3.11. Knowledge management

The world is moving from an industrial to a technological era, from natural resource-based industries to man-made brainpower industries, and in the process, technology is making human skills and knowledge the only source of sustainable competitive advantage. To become or remain locally or globally competitive, SMEs will have to rapidly adjust their thinking and change their way of operating if they wish to play a role and survive in the new environment. Moreover these organizations will need to gain the ability to focus and manage knowledge to achieve competitive advantage. This is clearly evident through the interviewed sample, as they considered knowledge

as a contributory factor for achieving quality products and/or services, innovative products/services, quality outputs and employee effectiveness. In addition, they have emphasized the effective management of knowledge in markets where competition is much stronger and more diverse than for large organizations. As one owner stated *knowledge in organizations is one of the few resources that enables organizations to achieve and sustain performance, success and competitive advantage. Therefore, organizational attention and decision making should focus on acquiring the appropriate knowledge and the ability to manage it.* In comparing the perceived importance of knowledge management in the interviewed sample to those of other studies, Jarrar (2002), Lim et al. (1999), and Duffy (2000) considered knowledge management as an important factor for achieving and sustaining quality through an increase in employee productivity by making knowledge accessible and this in turn leads to employee satisfaction. Martensson (2000) and Binney (2001) stressed that the management of knowledge is recognized as an important and necessary factor for organizational survival and maintenance of competitive strength. It can be concluded that the results of the present study are overwhelming and highly supported by and consistent with those of previous studies in large organizations. These studies appear to be consistent with those of the present study in supporting the notion of the importance of knowledge management for achieving competitive advantage, survival and success. Thus it follows that it is an important construct for the interviewed sample and they recommended that this construct should be included in the EQA model. However, before considering this construct and developing the required criteria for it, there is a question that should be addressed. ***IS KNOWLEDGE MANAGEMENT COMPATIBLE IN TQM OR EQA MODEL?***

8.3.11.1. Knowledge management and quality: Compatible or not

Knowledge management is beginning to make the transition from an intellectual area of study to a more pragmatic approach that can be implemented in organisations to drive business results and quality products/services. It is becoming recognised that an effective knowledge management system must be based on the following:

- *A way of capturing and organising explicit as well as tacit knowledge of how the business operates including an understanding of how current business processes function;*
- *A system approach to management that facilitates assimilation of new knowledge into the business system and is oriented towards continuous improvement/innovation/quality;*
- *A common framework for managing knowledge and some way of validating and synthesising new knowledge as it is acquired;*
- *A culture and values that supports collaborative sharing of knowledge across functions and encourages full participation of all employees in the process.*

Without the above-mentioned elements as a foundation, it is unlikely that any knowledge management effort would succeed. However, these elements, in fact, are the same elements that are at the heart of an effective quality model /system which can be illustrated as follow:

- *The idea of explicitly defining how a business operates and the processes associated with it is one of the most fundamental requirements of quality models/systems;*
- *An underlying principle of quality model/system is the emphasis on the overall management system. Quality is based not just on having effective process controls, but on having an effective overall management system that provides a framework for continuous improvement;*
- *Companies using any quality models/systems need to define their organisational processes for ensuring that any critical information that is required for the performance of a business process is accurate, up-to-date, and effective for its intended purpose.*

Based on the above context, it is clear that knowledge management is like quality, has to be defined in the context of the business it serves and, in fact, it can take on very different meanings in different organisations that have different goals of what they want to achieve with it. Both should be aligned with driving business results and that requires an understanding of how the cause-and-effect relationships of how the business operates as a system. Therefore it is important to understand some of the strategies associated with knowledge management and apply them to a quality model/system.

Achieving customer value: Customer value is broader than customer satisfaction – customer value is the sum of the attributes of a product or service as well as broader intangible factors that are important and make a difference to a customer. Customer satisfaction is a measurement of how well a company meets those particular needs.

Many organisations use a two-step approach to determine customer satisfaction:

- *A qualitative approach to identify the drivers of their customer's purchase behavior (Customer value;*
- *Quantitative measurements to assess how well the company has met those expectations (customer satisfaction)*

Quality in this context is seen as an alignment between the value proposition a company offers and the values of the customer it is focused on serving. As Treacy and Wiersena (1995) suggested that no company can succeed today by trying to be all things to all people, it must instead find the unique value that it alone can deliver to a chosen market. The value discipline that the company chooses to pursue should be a critical element in defining its culture, business systems, and processes. They (1995, p. xiv-xv) have identified three distinct value disciplines – the principle is that

companies need to at least be sufficient in all three of them but choose one to excel in as it's competitive differentiation:

Organisational excellence: operational perspective

Companies that pursue this (discipline) are not primarily product or service innovators, nor do they cultivate deep, one-on-one relationships with their customers. Instead operationally excellent companies provide middle-of-the-market products at the best price with the least inconvenience. Their proposition to customers is simple: low price and hassle-free service. Wal-Mart epitomises this kind of company, with its no-frills approach to mass-market retailing.

Product leadership

The second value discipline we call product leadership. Its practitioners concentrate on offering products that push performance boundaries. Their proposition to customers is an offer of the best product, period. Moreover product leaders don't build their positions with just one innovation; they continue to innovate year after year, product cycle after product cycle. Intel, for instance, is a product leader in computer chips. Nike is a leader in athletic footwear. For these and other product leaders, competition is not about price; it's about product performance.

Customer intimacy

The third value discipline we have named customer intimacy. Its adherents focus on delivering not what the market wants but what specific customers want. Customer intimate companies do not pursue one-time transactions; they cultivate relationships. They specialise in satisfying unique needs, which often they, by virtue of their close relationship with – and intimate knowledge of – the customer, recognize. Their proposition to the customer: We have the best solution for you – and we provide all the support you need to achieve optimum results and/or value from whatever products you buy. Ritz Carlton Hotels is an example of a company that excels at customer intimacy.

The above mentioned three strategies that are important for organisational success and survival and organisations need to focus on them, but should choose one to excel in it.

This is supported further by Treacy and Wierseña (1995, p. xiv-xv) who stated that *one point deserves emphasis: choosing to pursue a value discipline is a central act that shapes every subsequent plan and decision a company makes, colouring the*

entire organisation, from its competencies to its culture. The choice of value discipline, in effect, defines what a company does and therefore what it is.

The above section identified different strategies associated with knowledge management in achieving and improving customer value in organisations. However these strategies can be used and organised by knowledge management and quality model/system to support improving customer value (see Table 8.1 for illustration). Clearly table 8.1 suggests that a well-designed quality model/system and a knowledge management approach are almost inseparable and each supports the other. Both have common goals of creating an environment that supports learning and continuous improvement. This can be supported further as TQM models and tools are established and critically developed over the past decade (Wilkinson and Willmott, 1994), which can be used to nurture the development of knowledge management. This in turn will further shape TQM in a reflective manner. As knowledge creation is part of knowledge management, Chiles and Choi (2000) state that knowledge creation is linked to the theoretical underpinning of TQM through customer focus, continuous improvement, teamwork and adaptation in dynamic markets. Thus these sources of knowledge creation are synonymous with the direction of organisational TQM efforts. Lave and Wenger's (1991) communities of practice are not exact replicas of TQM teams, however, a TQM team can be a cultural starting point on which to build a community of practice. Matusik and Hill (1998) refer to contingent work as a means of creating knowledge in an organisation. Wilkinson and Willmott (1994) suggested that the input of new people into organisations as a means of stimulating knowledge. Thus a critical TQM based culture can quickly and effectively use contingent workers as sources of new knowledge.

Supplier development and customer focus in increasingly fragmented markets have led to virtual organisations as sources of new knowledge from different geographical locations (Nonaka and Takeuchi, 1995). Critical TQM adopts a business process management approach to these areas using multifunctional and co-located teams to use such knowledge in organisational process and product development. Benchmarking is a key element of TQM (Dale, 2000), where knowledge resident in other organisations is considered for embedding in the organisation. Therefore, it is clear that TQM supports knowledge management as they complement each other and they are inseparable. Moreover, as it has been discussed earlier (section 4.6.2, table 4.8 and figure 4.7) that TQM and KM processes are suggested to complement each other. While, Zhao and Bryer (2002) argued that the effectiveness of TQM process to achieve quality improvement and increased productivity will be enhanced if KM concepts are effectively integrated into the TQM process. This seems to be important in today's ambiguous and uncertain environment, organisations face critical issues of adaptation, survival and competence. It is through creating, acquiring, embedding and using knowledge that organisations can address the critical issues as well as obtain competitive advantage. Combination of TQM and KM forms a cycle of improvement and development, leading to organisational excellence through understanding customer needs and requirements, and knowledge embedded quality products and services, which are vital to the achievement of customer satisfaction. It is clear that both concepts are complementary and should be integrated to achieve organisational desired outcomes.

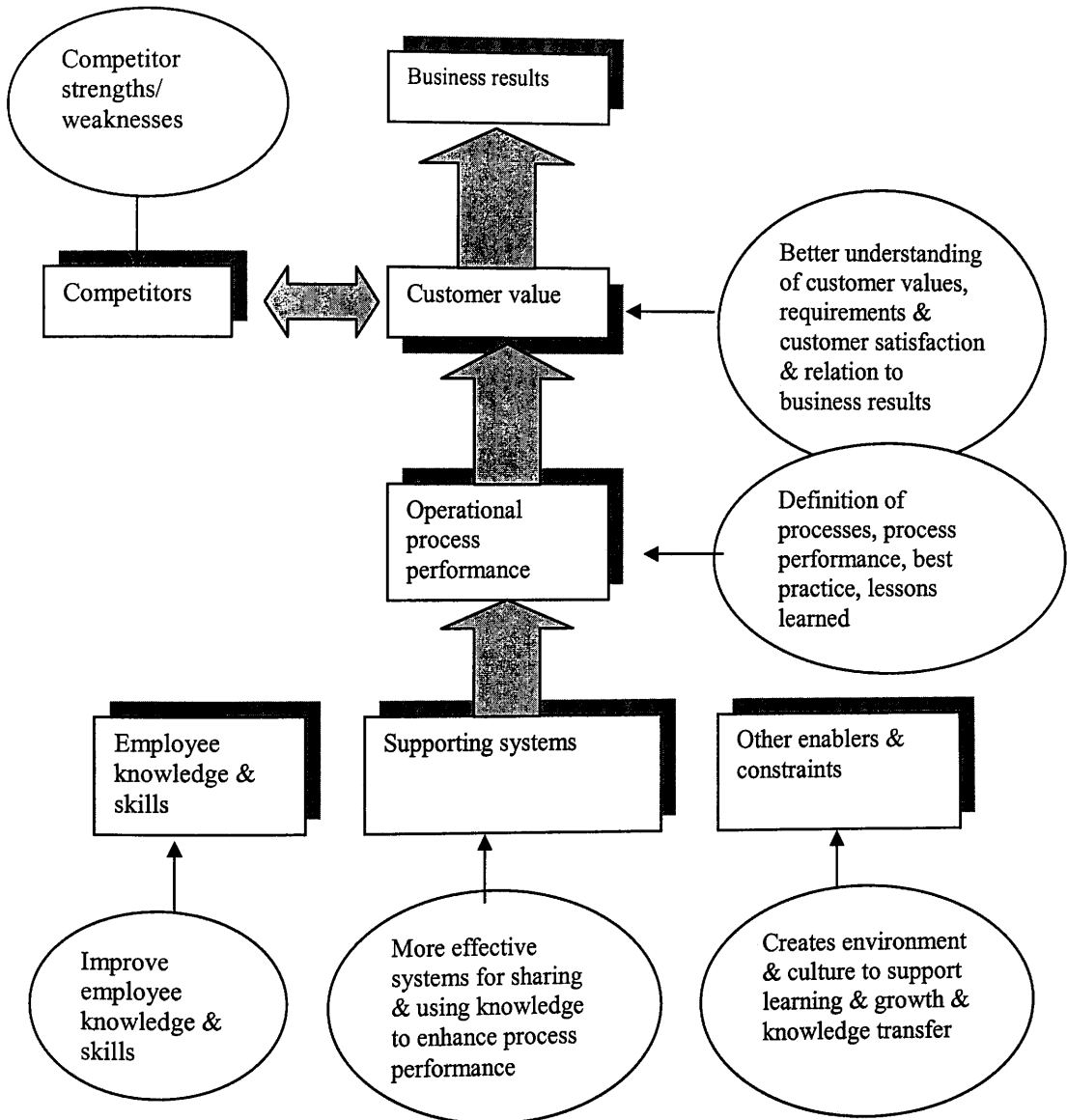
It is clear that knowledge management and quality fit together to achieve the desired outcomes. In order to see this clearly, it is important to combine knowledge

management with the business system model discussed earlier in chapter 4. Figure 8.10 shows how knowledge management efforts might fit into the business system model, where quality is already part of an organisational process or system (EQA model).

Table 8.1: Illustrations of few examples of quality and knowledge management strategies

Customer value	Internal company goal	Quality model strategy	Knowledge management approach
Operational excellence	<ul style="list-style-type: none"> ▪ Maximize efficiency and effectiveness of internal processes to reduce costs. ▪ Improve reliability and consistency of products and services. 	<ul style="list-style-type: none"> ▪ Well-defined processes, standardisation, and good process control. ▪ Strong emphasis on continuous process improvement ▪ Cross-functional teams to optimise overall process performance. 	<ul style="list-style-type: none"> ▪ Detailed knowledge of processes and performance. ▪ Sharing of best practices across the organisation & benchmarking with other companies.
Product leadership	<ul style="list-style-type: none"> ▪ Improve time-to-market for few product development. ▪ Develop leadership products & services to capture maximum market share. 	<ul style="list-style-type: none"> ▪ Proven and reliable methods for developing products and services. ▪ Effectively managing the risks of product development efforts. ▪ Collaboration among all functions to improve time-to-market. 	<ul style="list-style-type: none"> ▪ Capturing of lessons learned from previous projects. ▪ Knowledge sharing among functions and with customers and suppliers.
Customer intimacy	<ul style="list-style-type: none"> ▪ Emphasis on customer service as a driver of business performance. ▪ Products and services customised as needed to fit particular customer needs. 	<ul style="list-style-type: none"> ▪ Empowerment of front-line employees to resolve problems and satisfy customers. ▪ Effective and responsive management of customer satisfaction. 	<ul style="list-style-type: none"> ▪ Use knowledge of unique customer needs and requirements to customize products and services as needed.

Figure 8.10: Knowledge management and business system



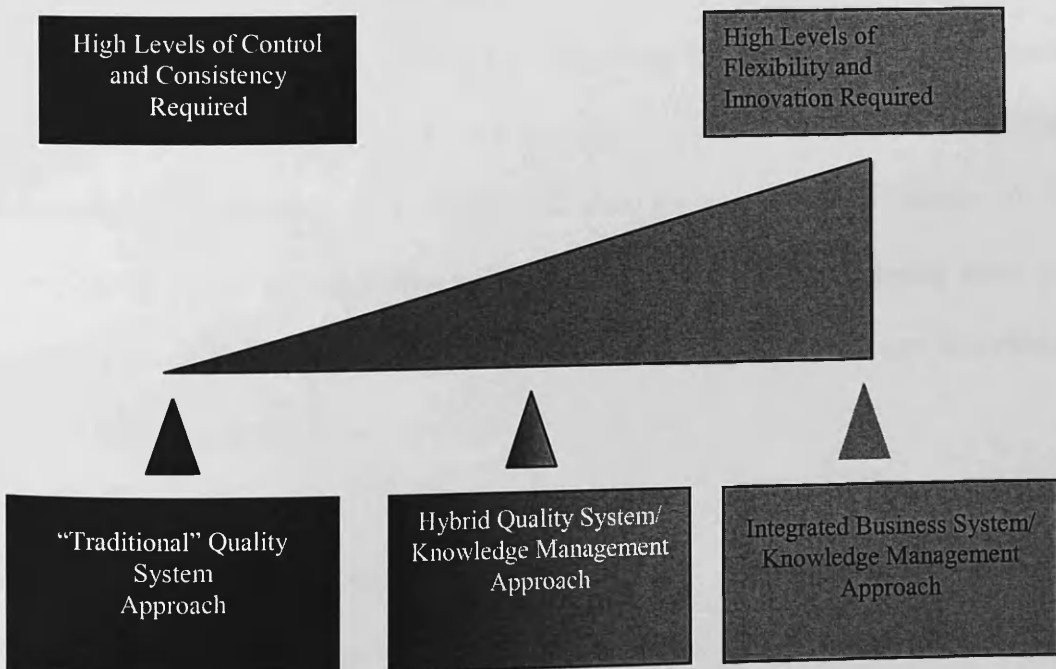
8.3.11.2. Knowledge Management and quality systems/models: Inter-relationship

Knowledge management and quality systems/models are tools designed to help achieve business objectives and goals. Many companies have fallen into the trap of pursuing the latest management fad and both knowledge management and quality systems/models have also been misapplied, the following explains this further:

- *There are many instances where there has been a superficial implementation of a quality model by the book without tailoring it to meet the needs of the business. Typically that type of effort results in very little real improvement and only added bureaucracy and costs.*
- *It is also very easy to misapply knowledge management if it is not closely coupled with real business needs.*

Therefore it is important to firstly define the goals needed to be achieved in the business system and then as a second step, examine how both quality systems/models and knowledge management as an integrated system can help achieve those goals. A very simple example is shown in figure 8.11. Some businesses, by their very nature require high levels of control and consistency and have less need for innovation. Some are at the other extreme and have higher knowledge content and a greater need for ongoing innovation.

Figure 8.11: Quality systems/models and knowledge management as an integrated business system



The optimum point would probably be at different points on this spectrum for different types of businesses. A nuclear power plant, for example has a need for a very high level of control and consistency, and any “innovation” must be carefully controlled because of the associated risks and issues. A software services company that requires rapid adaptation to new products in a very complex and dynamic marketplace would probably be nearer the other end of the spectrum.

Even within the same business, some areas might benefit from higher levels of control than others. and the needs of the business might change over time. It’s very easy to see that trying to make a business that is already weak in control and consistency in a very high risk environment more innovative as a first step might very easily lead to disastrous results. Achieving some level of control and consistency seems that it might be a logical first step.

To manage knowledge effectively in the interviewed sample, a set of criteria should be developed to enable managers and owners to assess their progress concerning knowledge management. The criteria will once more be developed based on the available literature on knowledge management. The concepts emerging from the literature needed assessed to enable managers and owners to manage knowledge effectively. This will be illustrated and explained next.

Current knowledge: Organisations need to use adequate knowledge to check the status of business activities as well as to make business decisions (Carneiro, 2000; Martin et al., 1998). Therefore, management must have the adequate information and the ability to analyse and evaluate alternatives in the light of the goal sought.

Moreover, organisations would benefit from a full review of information flows between component parts to ensure that the full potential of existing information is being exploited (Gore and Gore, 1999).

Capturing or creating new knowledge: Organisational knowledge comes from different internal and external sources and the credibility of these sources is crucial to provide adequate knowledge (Joyce, 1993; Martensson, 2000). Jarrar and Zairi (2001), Davenport et al. (1998) and Lim et al. (1999) suggested that there were different ways to capture knowledge from external sources (e.g, competitive intelligence, vendor comparison and analyses), from structured internal sources (e.g, research reports, customer profiles, marketing reports) and from unstructured internal sources (e.g, group discussion, lessons learnt from past experiences).

Sharing knowledge: The ability to share knowledge is important in organisations (Mayo, 1998). Employees tend to be reluctant to share their expertise and knowledge (Cole-Gomolski, 1997). Forbes (1997) noted that the reason for employees reluctant to share their knowledge is that employees are competitive by nature and may be more inclined to hoard than share the knowledge they possess. Ostro (1997) reported the results of an extensive multi-firm study by the American Productivity and Quality Centre. He found that the main reason why knowledge was not being shared was that employees did not consider that their experiences would be valuable to others. Alter (1997) concluded that a better process of sharing knowledge benefits organisations in general. Lim et al. (1999) suggested that the use of electronic mail, as well as hard copies as forms of communication within organisations could aid the process of knowledge sharing. Moreover, informal and formal discussion groups are encouraged

to exchange ideas and share information and knowledge (Lim et al., 1999; Martensson, 2000).

Knowledge analysis: At the tactical level, concern is with the identification and use of current and new knowledge and with ways of sharing it. After the identification of current and new knowledge, managers need to be able to analyse how knowledge can add value, what are required to introduce added value and reviewing the use of the knowledge to ensure added value (McAdam and Kelly, 2002; Van Der Spek and De Hoog, 1995; Duffy, 2000). Combining these aspects of the identification of current and new knowledge and making effective analysis of them will help organisations to achieve the desired outcomes. Based on these ideas, the following knowledge management framework can be developed based on the work of Van Der Spek and De Hoog (1995), Gore and Gore (1999), Lim et al. (1999) and Jarrer and Zairi (2001).

- **Identification and use of the knowledge a company has**
 - Do you review your current knowledge base?
 - How do you identify new knowledge?
 - What form is your current and new knowledge?
 - How accessible is it?
- **Identification of sharing knowledge methods**
 - What methods are used to manage knowledge sharing?
- **Analysis of how knowledge can add value**
 - What are the opportunities for using the knowledge?
 - What would be the effect of its use?
 - What are the current obstacles to its use?
 - What would be its increased value to the company?
- **Identification of actions that are important in achieving added value**
 - How to plan the actions to use the knowledge?
 - How to conduct actions?
 - How to monitor actions?

- **Reviewing the use of the knowledge to ensure added value**
 - Did the use of it produce the desired added value?
 - Did this use create new opportunities?

To manage knowledge effectively in SMEs, a model of knowledge management has been developed based on the available literature, which comprises different criteria to enable SMEs to assess the effectiveness of their knowledge. The knowledge management construct is considered to be an enabler one, where it can help organisations to use their knowledge effectively for achieving quality outputs, customer satisfaction, employee satisfaction, organisational survival and profitability.

8.4. Organisational performance and maturity

8.4.1. Quality performance

The surveyed sample are achieving on the whole a moderate level of product and/or service quality. This suggests that SMEs are not doing enough to achieve superior product and/or service quality to enable them to compete in the market and survive in the longer-term. This is evident whereby certified firms performed well in terms of achieving superior product and/or service quality, which may be because managers are aware of the effect of quality measures on customer satisfaction and financial performance. Even with certification firms, there is a need to go a step further than merely achieving ISO 9000 because they only achieve an above average level in their score. The six quality measures used in this study were considered to be critical factors in measuring quality in SMEs. These six quality measures are product and/or service performance; product and/or service conformity; product and/or service reliability; product and/or service durability; product and/or service defect rate; and product and/or service internal failure costs.

8.4.2. TQM maturity

The quantitative and qualitative data suggested that the surveyed sample recognise the importance of management commitment and quality improvement in the implementation of TQM and of achieving competitive advantage and financial gains. This is supported further as most of the participants were located in the enlightenment phase of the TQM maturity grid⁴ recommended by Crosby (1979). In terms of the extent of TQM maturity among certified and non-certified firms, the findings suggested that most of the certified firms were in the enlightenment and wisdom phases of TQM maturity. On the other hand, most of the non-certified firms were in the awaking and enlightenment phases. These findings suggest that certified firms are more advanced than non-certified firms in their levels of TQM maturity and more likely to take the TQM journey forward. It would seem that ISO certification has had an effect on the levels of TQM maturity that SMEs can achieve.

TQM maturity correlated significantly with organisational performance measures. The surveyed sample which are pursuing TQM seem more likely to achieve customer satisfaction, quality products and/or services, and financial performance. This finding also implies that SMEs are aware of the potential relevance of TQM to organisational survival and success. It can be concluded that TQM maturity results in better business performance.

8.5. Proposed EQA model: Integrated business excellence model

The 12 constructs based on the data are the final results of the elements for the new improved EQA (the integrated business excellence³ model) for SMEs. To help

⁴ The TQM maturity phases used were uncertainty, awaking, enlightenment, wisdom and certainty.

prevent unnecessary mistakes in the development of the new improved EQA (the integrated business excellence model), the researcher intends to provide comparisons between the 12 constructs of the integrated business excellence model and those of previous studies of TQM and those resulting from an analysis of existing quality awards.

8.5.1. The integrated business excellence model and previous studies:

Comparative analysis

Table 8.2 reveals the comparison between the integrated business excellence model and the empirical findings of Saraph et al. (1989), Black and Porter (1996), and Ahire et al. (1996). The comparison between the critical factors identified by Black and Porter (1996) and the integrated business excellence model is much closer than the comparison with the Saraph et al. (1989) and Ahire et al. (1996). Black and Porter's (1996) critical factors of TQM relate to seven constructs of the integrated business excellence model. It is, however, remarkable that Black and Porter did not find a construct for measuring employee satisfaction. However, Saraph et al.'s (1989) critical factors only relate to four constructs of the integrated business excellence model. Their study did not identify policy and strategy, customer focus, employee satisfaction, impact on society and business results as critical elements of TQM. This suggests that these constructs were considered to be less important at the time of their studies than in today's business environment. Ahire et al.'s (1996) critical factors relate to only five factors of the new improved EQA. Their study did not identify policy and strategy, employee satisfaction, society results and business results to be vital elements in TQM.

These previous studies focused on the identification of critical factors of TQM to enable organisations to achieve quality, and did not focus on identifying factors to measure the results of implementing these TQM constructs. Whereby in today's environment, most organisations tend to focus on performance measurement to ensure the targets and results are achieved. Therefore, performance measurement are evident in the integrated business excellence model, for example, customer satisfaction, people satisfaction, impact on society, business results and innovation performance.

Table 8.2: The integrated business excellence model and other studies

The integrated business excellence model	Saraph et al. (1989)	Black & Porter (1996)	Ahire et al. (1996)
Leadership	Top management support Role of the quality department	Corporate quality culture	Top management commitment
Policy and Strategy		Strategic management quality	
People	Employee relations Training	People and customer management Teamwork structure	Employee training Employee involvement Employee empowerment
Resources	Quality data and reporting	Communication of improvement information	Internal quality information Benchmarking
Processes	Process management Product/service design Supplier quality management	Operational quality planning External interface management Supplier partnerships	Design quality management Supplier quality management Statistical process control
Knowledge Management*			
Innovation Management*			
Customer satisfaction		Customer satisfaction	Customer focus
People satisfaction			
Impact on society			
Business results		Quality improvement systems measurement	
Innovation Performance*			

*new construct development based on the qualitative data

The integrated business excellence instrument would seem relevant to SMEs in manufacturing and services in Scotland. For testing and validating this instrument, the researcher used data from SMEs in manufacturing and services, and also interviewed 15 managers/owners to provide a deep understanding and to complement the data gained from the questionnaires. Saraph et al. (1989) used data from 162 general and quality managers in 89 divisions of 20 manufacturing and services. An important strength of Saraph et al.'s instrument is its high level of external validity for manufacturing and services (Ahire et al., 1996). Ahire et al. (1996) used data from 371 manufacturing organisations in a single sector, namely, motor vehicle parts and accessories. Their instrument has the highest internal consistency, but its external validity is the lowest. By combining these two instruments, a valid and reliable instrument can be produced, but it is unlikely to be as effective as the integrated business excellence instrument. The latter is considered to be relevant on the basis of the research conducted and also because it includes all the TQM constructs needed for achieving success and competitive advantage. The integrated business excellence model is more integrated TQM one, including useful elements in the model to suit the needs of SMEs.

8.5.2. Comparison with other quality awards

In this section, the researcher intends to compare the proposed instrument with other quality awards. Quality awards have been selected because of the important role that they can play in promoting and rewarding quality and business excellence. Quality awards represent a country's efforts to enhance organisational reputation in this increasingly competitive business environment. Tables 8.3 and 8.4 reveal the

comparison between the integrated business excellence model and four other quality awards.

Based on tables 8.3 and 8.4, the integrated business excellence model constitutes an apparently quite comprehensive listing of quality management constructs, covering almost all elements of the existing six quality awards. However, the integrated business excellence model adds three elements to the model: innovation management, knowledge management and innovation performance. Most of the quality awards presented in Table 8.4 seem to agree on the use of information and making analysis of it, but non of them focused on managing the knowledge which is gained from this information. Therefore, knowledge management is regarded an important construct as recommended in the integrated business excellence model.

Table 8.3: Quick review comparing the integrated business excellence model and other quality awards

The integrated business excellence model	Baldrige Award	Australian Award	Danish Award	Singapore Award	Deming Prize	South African Award
Leadership	◆	◆	◆	◆	◆	◆
Policy & strategy	◆	◆	◆	◆	◆	◆
People management	◆	◆	◆	◆	◆	◆
Resources	◆	◆	◆	◆	◆	◆
Processes	◆	◆	◆	◆	◆	◆
Knowledge management						
Innovation management						
Customer satisfaction	◆	◆	◆	◆	◆	◆
People satisfaction			◆			◆
Impact on society			◆			◆
Business results	◆	◆	◆	◆	◆	◆
Innovation performance						
◆ Indicates common criterion						

The new elements in the integrated business excellence model have arisen based on the recommendations of managers and owners of SMEs. They suggested that these

new constructs are important for the survival and success of their organisations. Therefore these new constructs are based on the need for these constructs in the model to suit SMEs in Scotland. The integrated business excellence model resembles the South African model and the Danish award, with the exception of the three new constructs.

Other quality awards focused on leadership; policy and strategy; people management; resources; processes; customer focus and results; and business results. These quality awards seem to be less comprehensive than the integrated business excellence model. For example, the Danish Quality and the South African award contain no clear interest and focus on some of the important aspects of today's organisations, such as employee satisfaction and society results. An exception is made here concerning the MBNQA because the business results construct in this model consists of five sub-elements covering customer satisfaction results, human resource results, financial and market results, supplier and partner results and company results. Therefore, the MBNQA can be regarded as comprehensive in this respect.

There are seven constructs (leadership; policy and strategy; people management; resources; processes; customer satisfaction; and business results) that are represented in all the awards. These seven constructs are regarded important in TQM, and they have been stable over the last twenty years and among quality awards. However, the variation among the quality awards are evident and they are because of the different cultures in these countries, for example, South Africa and Denmark consider satisfying their employees to be more important than in Australia. Another reason for

the variation among these awards is the structure of an economy representing the particular sector and the different sizes of organisations in these countries.

Table 8.4: Comparison between the integrated business excellence model and other quality awards

The integrated business excellence model	Baldrige Award	Australian Award	Danish Award	Singapore Award	Deming Prize	South Africa Award
Leadership	Leadership	Leadership	Leadership	Leadership and quality culture	Leadership	Leadership
Policy and Strategy	Strategic planning	Strategic planning	Policy and strategy	Strategic planning	Development and deployment of strategy	Policy and strategy
People management	Human resource development and management	People	Personnel management	Human resource development and management	Development of human resource and learning	People management
Resources	Information and analysis	Information and analysis	Resources	Information and analysis	Sharing and utilisation of information	Resources and information management. Supplier and partnerships
Processes	Process management	Process management	Processes	Management of process quality	Process management	Processes
Knowledge management						
Innovation management						
Customer satisfaction	Customer and market focus	Customer focus	Customer satisfaction	Customer focus and satisfaction	Customer satisfaction and customer focus	Customer satisfaction and customer focus
People satisfaction			Employee satisfaction			People satisfaction
Impact on society			Society results			Society results
Business results	Business results	Organisational focus	Company results	Quality and operational results	Business results	Business results
Innovation performance						

8.6. THE NEW IMPROVED EQA⁵: The integrated business excellence model

The researcher intends to propose a new structure for the new improved EQA to suit the needs of SMEs in Scotland. The integrated business excellence model consists of 12 constructs (see Figure 8.12). The model is divided into enablers, enabling organisations to achieve their objectives concerning quality, and results, focusing on the results achieved from the enabler criteria, where measurement, feedback and learning are part of the process. In other words, the right hand criteria describe what the organisation is trying to achieve.

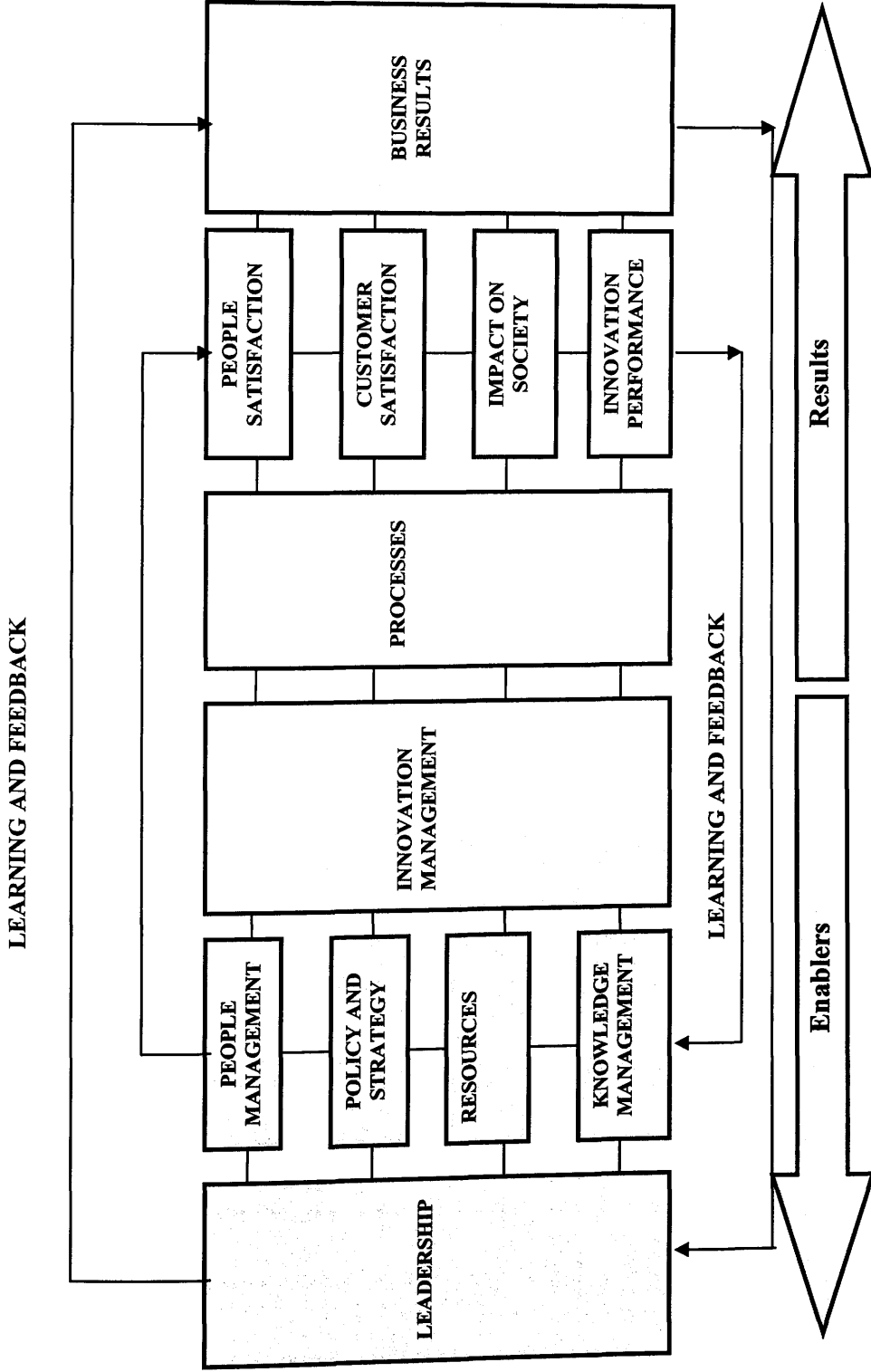
The enablers section consists of leadership, policy and strategy, resources, people management, processes, knowledge management, and innovation management. The result section consists of customer satisfaction, people satisfaction, impact on society, innovation performance, and business results. Arrows have been introduced to demonstrate the process of learning and feedback between the criteria of the model. Some issues were found to be vital in model development and implementation based on the researcher's understanding of the quality management field. Many organisations are focusing on supplier management as a way of achieving long term competitive advantage (Carter et al., 1998, Gonzalez-Benito and Dale, 2001; Tan et al., 1999). In the context of SMEs, supplier management is of critical importance because of its effect on SMEs and large organisation's long-term performance (Park and Krishnan, 2001).

⁵ This model is developed based on the collected data from the quantitative and qualitative data from small and medium sized firms in Scotland.

Therefore to obtain the best quality parts at a given price, supplies in SMEs should be managed effectively, and suppliers' performance should be evaluated regularly where improvement can be applied. The importance of supplier management has been recognised by SMEs in Scotland. Scottish SMEs manage their suppliers effectively, evaluate supplier performance on different criteria where improvement can be identified or other suppliers can be selected to provide quality materials. Supplier management construct has been stressed through the EQA model in resources and processes and the researcher recognises the vital importance of supplier management to SME success. The researcher suggests that supplier management and performance should be separated from resources and become independent issues, where supplier management will be on the enablers side and supplier performance will be in the results section.

Customer focus and understanding are considered to be vital for organisational success and to be building blocks of TQM, and this is evident from the qualitative data from 15 Scottish SMEs. In most of the award models considerable weight is devoted to customer focus and customer satisfaction (Lagrosen, 2001). The Canadian Framework for Business Excellence, the Quality Award of Brazil, the MBNQA and the Australian quality award all have single criteria devoted to customer focus (Miguel, 2001).

Figure 8.12: The integrated business excellence model



However, the researcher has concerns as to whether the integrated business excellence model should have a single criterion for customer focus. Looking at the model closely, it is evident that the issue of customer focus presents through the enablers whereby the entire organisation will be focused on the customer and understanding how to deliver products and/or services to satisfy their needs.

The implementation of TQM will be affected by the external and internal environment. Internal environment factors, which affect the implementation of TQM, are recognised as the enablers in the EQA. Adam et al. (1981, cited in Zhang et al., 2000)⁶ and Zhang (2001) referred to the importance of the external environment in the success of implementing TQM. These external factors are as follows:

- (1) **Social environment**: personal value system, ethical consideration, social responsibility, taste and behaviour patterns, immediate community influence, and greater community influence;
- (2) **Legal-political environment**: regulatory agencies, national laws, local ordinances, restrictions, international considerations, tax considerations, customer legislation, union agreement;
- (3) **Technological environment**: basic and applied research results, engineering knowledge, management knowledge, material-equipment innovation, process innovation, product innovation;
- (4) **Economic environment**: general economic conditions, labour market conditions, vendor market conditions, (international competitive) market conditions, inflation.

Based on the researcher's thoughts and ideas discussed above about the development of the integrated business excellence model to suit the needs of SMEs in Scotland, a new version of the integrated business excellence model is proposed based on the findings from the quantitative and qualitative data and the researcher's thoughts. This

emerged model is embedded the concepts of the external and internal environment to help organisations to achieve total quality (see Figure 8.13). To make this model easier for SMEs to implement, the researcher has compiled the integrated business excellence model criteria for self-assessment and benchmarking and their constituent parts in Table 8.5. As the integrated business excellence model has been developed to suit the needs of SMEs, the researcher suggests that the model would be useful to the needs to large organisations too, but further investigation is needed to confirm it. The new constructs identified in the model can be regarded as important in larger organisations as well as in small and medium-sized firms.

The integrated business excellence model encapsulated very comprehensive listings of TQM constructs, covering almost all elements of TQM. The weightings of the new produced model needs extra/adjustment as new constructs have been added to it based on the needs of SMEs. However, the researcher recommends that the model should retain the existing generic weightings and not generate weightings that are sector specific because comparison opportunities may be lost. In other words the older constructs can carry the same the weightings and the new constructs can carry new weightings for comparisons purposes till a new version of the model is produced.

⁶ Adam et al. (1981) are the first authors to recognise the importance of these factors in the success of TQM implementation.

Figure 8.13: The integrated business excellence model with its external environment

External environment:

Social environment: personal value system, ethical consideration, social responsibility, taste and behaviour patterns, immediate community influence, and greater community influence; **Legal-political environment:** regulatory agencies, national laws, local ordinances, restrictions, international considerations, tax considerations, customer legislation, union agreement; **Technological environment:** basic and applied research results, engineering knowledge, management knowledge, material-equipment innovation, process innovation, product innovation; **Economic environment:** general economic conditions, labour market conditions, vendor market conditions (international competitive) market conditions, inflation.

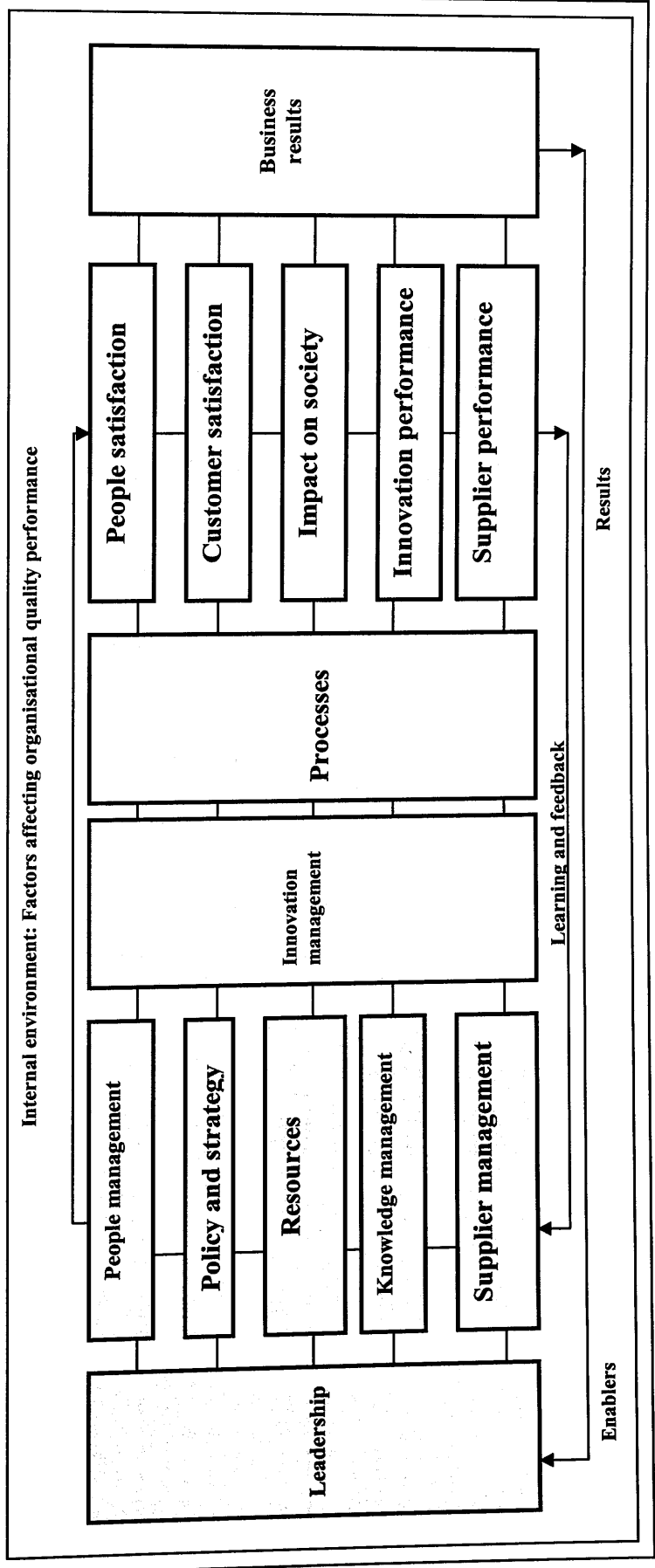


Table 8.5: The integrated business excellence model – the criteria and their parts for self-assessment and benchmarking

ENABLER CRITERIA

1 LEADERSHIP

How leaders develop and facilitate the achievement of the mission and vision, develop values required for long term success and implement these via appropriate actions and behaviours, and are personally involved in ensuring that the organisation's management system is developed and implemented. How leaders:

- 1a Develop the mission, vision and values and are role models of a culture of excellence.
- 1b Are personally involved in ensuring the organisation's management system is developed, implemented and continuously improved.
- 1c Are involved with customers, partners and representative of society.
- 1d Motivate, support and recognise the organisation's people.

2 PEOPLE MANAGEMENT

How the organisation manages, develops and releases the knowledge and full potential of its people at an individual, team-based and organisation-wide level, and plans these activities in order to support its policy and strategy and the effective operation of its processes. How:

- 2a Resources are planned, managed and improved.
- 2b People knowledge and competencies are identified, developed and sustained.
- 2c Are involved and empowered.
- 2d People are rewarded, recognised and cared for.

3 POLICY AND STRATEGY

How the organisation implements its mission and vision via a clear stakeholder focused strategy, supported by relevant policies, plans, objectives, targets and processes. How policy and strategy are:

- 3a Based on the present and future needs and expectations of stakeholders.
- 3b Based on information from performance measurement, research, learning and creativity related activities.
- 3c Developed, reviewed and updated.
- 3d Deployed through a framework of key processes.
- 3e Communicated and implemented.

4 RESOURCES

How the organisation plans and manages its internal resources in order to support its policy and strategy and the effective operation of its processes. How:

- 4a Organisational finances are managed.
- 4b Organisational technology is managed.
- 4c Organisational information is managed.

5 KNOWLEDGE MANAGEMENT⁷

How the organisation plans and manages its external and internal knowledge in order to support its policy and strategy and the effective operations of its processes. How organisations:

- 5a Identify and utilise knowledge.
- 5b Identify knowledge sharing methods.
- 5c Analyse knowledge to add value.
- 5d Identify actions that are important in achieving added value.
- 5e Review the use of the knowledge to ensure added value.

6 SUPPLIER MANAGEMENT

How the organisation plans and manages their suppliers to support organisational policy and strategy and the effective operation of its processes. How:

- 6a Suppliers are managed.
- 6b Suppliers relationships are developed and sustained.
- 6c Suppliers are selected and evaluated.

7 INNOVATION MANAGEMENT¹⁵

How the organisation manages and improves its innovation processes in order to support its policy and strategy and fully satisfy its customers and stakeholders. How organisations:

- 7a Achieve clarity of goals.
- 7b Generate process innovations.
- 7c Implement new processes.
- 7d Achieve continuous improvement.

8 PROCESSES

How the organisation designs, manages and improves its processes in order to support its policy and strategy and fully satisfy, and generate increasing value for, its customers and other stakeholders. How:

- 8a Processes are systematically designed and managed.
- 8b All processes are improved as needed.
- 8c Products and services are designed and developed based on customer needs and expectations.
- 8d Products and services are produced, delivered and serviced.
- 8e Customer relationships are managed and enhanced.

RESULTS CRITERIA

9 PEOPLE SATISFACTION

What the organisation is achieving in relation to the satisfaction of its people.

10 CUSTOMER SATISFACTION

What the organisation is achieving in relation to the satisfaction of its external customers.

⁷ For more description on the criteria for self-assessment and benchmarking (enablers) see appendix E.

11 IMPACT ON SOCIETY

What the organisation is achieving in relation to the satisfaction of its social responsibility towards the community

12 INNOVATION PERFORMANCE⁸

What the organisation is achieving in relation to the effective management of process innovation.

13 SUPPLIER PERFORMANCE

What the organisation is achieving in relation to the satisfaction of its suppliers.

14 BUSINESS RESULTS

What the organisation is achieving in relation to its planned business objectives and in satisfying the needs and expectations of everyone with a financial interest or stake in the organisation.

8.7. Existing theory and the integrated business excellence model: Limits or strengthens

8.7.1. Firms' size and the new integrated business excellence model

Implementation of TQM effectively requires that firms move away from inspection toward approaches that are based on prevention and customer focus (Deming, 1986; Crosby, 1984). The elements to achieve this include top management commitment, training and education of employees, employee involvement, continuous process improvement, developing long-term relationships with suppliers, and a real focus on quality throughout the organisation. These issues or elements are evident and developed within the integrated business excellence model. These steps are difficult to implement because they involve drastic changes in management philosophy and management/labour relations, such as breaking down functional barriers, encouraging and rewarding team effort, changing the nature of information provided to employees, empowerment, and changing performance measurement and reward systems.

⁸ For more description on the criteria for self-assessment and benchmarking (results) see appendix F.

Since large organisations are more likely to have more layers of management, be organised across functional lines, have long standing barriers between functional departments, and have a bigger and entrenched bureaucracy and more inertia to change when compared to smaller organisations, it can be expected that larger organisations would experience greater resistance to change and would require higher expenditure to implement and maintain TQM. Furthermore, many of the key elements of TQM such as teamwork, empowerment, spirit of co-operation across functional departments are already present to some extent in smaller firms, which support the applicability of the new integrated business excellence model, thereby lowering their costs of implementing and maintaining TQM model.

Large organisations may also find it more difficult to maintain an atmosphere of continuous improvement than smaller firms. Hence, maintaining an effective TQM implementation is likely to be more difficult for larger than smaller ones. Based on the above discussion, it is clear that the literature on small firms is supportive and strengthen the new integrated business excellence model.

8.7.2. Organisational change and the integrated business excellence model

As illustrated before in section 4.6.1 that the key points in TQM literature is that the implementation of quality requires that change at the whole organisation. This involves recognition that there is a chain of customer supplier relationships, which are mediated by processes. This involves a whole new way of thinking, crucial for the success of TQM implementation. While the four pillars of TQM and the integrated business excellence, which incorporate this thinking:

- *The organisation must focus first and foremost on its suppliers and customers;*
- *Everyone in the organisation must be devoted to continuous improvement, personally and collectively;*
- *The organisation is viewed as a system and the work of those in it, seen as ongoing processes;*
- *The success of TQM is the responsibility of the deep culture of quality focus. TQM is a long-term commitment, which they must demonstrate.*

In applying the above principles to an organisational context, the organisation's culture and sub-culture form the context for such changes, and it is this, to a large degree, which shapes staffs involvement in the change posed by the integrated business excellence model as a tool of TQM, and determines the degree to which proposed changes are successful.

One of the most important concepts associated with TQM to be applied to organisations is the notion of a chain of customers and suppliers, which are evident within the new integrated business excellence model and the way these concepts influence the understanding of quality improvement and change. As Morgan and Murgatroyd (1993, p. 52) stated that *each person is dependent on both the last and the next in the chain for the successful completion of an important transaction.*

In continuing with this issue at hand, organisations need the kind of leadership that supports employees, implies an understanding of the detail of customer supplier practices, and the ability of building a shared vision in organisations, as these elements are important for managing change and they are evident in the new integrated business excellence. Therefore, other two pillars can be added to TQM, which are already part of the new integrated business excellence model:

- *The best people able to make the process improvements are those nearest to the customer;*
- *The strategy an organisation operates from involves a choice. The response of the market place to this is important to an organisation's success*

In ensuring effective change within organisations, organisations need to set appropriate goals toward which the implementation is directed; keeping people informed about progress; ensuring staff are involved in the decisions regarding how the change is to be implemented; highlighting opportunities; re-emphasising the organisation's values and taking careful consideration over the timing of events. In achieving this, organisations need the utilisation of effective leadership where they have the ability of building a shared vision in organisations. When there is a strong and common vision and not only in the top management, individuals are developing. The new integrated business excellence model facilitates a prioritisation process and supports the ethos of team working and continuous improvement, which are important for managing change. This is supported further as the new model focuses on:

- *People provide competitive advantages, valued for creativity and intelligence;*
- *Leadership provides people with the opportunity to grow;*
- *Achieving quality and managing change are achieved through shared vision and belief.*

It is clear that TQM and organisational change seem to suggest some elements, which are important for TQM and change management, and these elements are complemented and evident in the new integrated business excellence model. Therefore it can be suggested that the model is applicable and supportive of organisational change and can be used as a tool to achieve quality and manage change.

8.7.3. *Organisational culture and the integrated business excellence model*

As it has been discussed in section 4.6.1 that the effective implementation of TQM requires organisational culture in different aspects such as the working relationships of the staff, communication channels and empowerment of workers (Amsden et al., 1996; Clover, 1993; Powell, 1995). Moreover, TQM was described as the culture of an organisation committed to customer satisfaction through continuous improvement. Furthermore, organisations need to change the way in which employees behave at work in order to maintain and sustain an organisational culture. There are different behavioural and attitudinal processes that are important to achieve effective implementation of TQM and culture: work motivation; work satisfaction and organisational commitment (Cao et al., 2000).

In order to achieve and maintain a successful organisational culture, organisations need to adapt a systematic nature. The systematic nature is characterised by full integration of all aspects of the organisation's activities into focused action on continuous improvement and customer needs. Systematic quality approaches are more likely to be successful because they impact on everything that managers do and they become the culture of the organisation. Moreover, systematic approaches need to have a valid system in which to operate and systems need a framework on which to put the flesh of TQM activities. Therefore, the new integrated business excellence model seems appropriate and consists of all the TQM activities, which can be used to develop a culture of excellence.

8.7.4. *Innovation and the integrated business excellence model*

Innovation management is confronting more challenges than its intra-organisational counterpart if success is to be achieved in the innovation process and its management.

The critical factors of innovation management include:

- *Shared vision, culture and values;*
- *Organisational and individual commitment;*
- *Human and financial resources contributed by organisations;*
- *Information management and sharing knowledge;*
- *Customer focus and feedback;*
- *Collaboration and creative teamwork;*
- *People management;*
- *Top management commitment and support;*
- *Continuous improvement to achieve excellence;*
- *Education and training.*

The above critical factors of successful innovation management embody and are interrelated with the key concepts associated with TQM and the new integrated business excellence model. The challenge for all organisations to gain competitive advantage in the market is to exploit innovative opportunities and deliver what the customer wants in the fastest and most effective and economically viable way. Innovation in the current economy is related to everything that impacts on customer satisfaction and needs and adds value to technologies, products and services offered to customers. Research studies show that innovation in a modern business context is about organisation's ability to provide the highest quality that will differentiate a product or service through newness and originality (Zairi, 1996). Like TQM, managing innovation is a strategic process management that requires the establishment of an organisational culture and procedures that promote innovation, and the commitment of top management as well as all the other levels of staff to innovation. Continuous improvement is based upon continuous learning and acquiring innovative skills, technologies and knowledge to meet and exceed customer

needs. Therefore, the achievement of TQM is attributed to innovation management, which enhances quality of products and services.

Based on the above discussion, it is clear that the elements of TQM or the new integrated business excellence model complement the critical factors of innovation management. Therefore the model seems to be supportive of innovation management and to support this further, an example will be illustrated to demonstrate the role of leadership in creativity and organisational quality innovative products and services, as leadership is an element used by both TQM and innovation management literature.

Top managers of an organisation can affect employee creativity and organisational quality innovative products and services in several different ways. First, they define and shape the work contexts within which employees interact to define goals, problems, and solutions (Amabile, 1996). By articulating a vision that emphasises long-term over short-term business outcomes, leaders can direct employees' individual and joint efforts towards innovative work processes and outcomes (Amabile, 1996). More broadly, organisational leaders are a key source of influence on organisational culture (Schein, 1992). By creating and sustaining an organisational climate and culture that nurtures creative efforts and facilitates diffusion of leading, leaders can significantly boost organisational creativity (Yukl, 2001). Finally, leaders can develop and maintain a system that values and rewards creative performance through compensation and other human resource-related policies. When a company provides intrinsic and extrinsic rewards for efforts to acquire new skills and to experiment with creative work approaches, employees' desire to engage in creative endeavors will be constantly reinforced (Jung, 2001).

8.8. The integrated business excellence model: Further evaluation and testing are needed

8.8.1. Role of top management commitment in the integrated business excellence model

As it has been discussed earlier (section 4.3) that effective TQM practices can not be complete without examining the often stated pivotal role of top management plays in implementing TQM. The quality literature (Saraph et al., 1989; Flynn et al., 1994; Powell, 1995; Ahire et al., 1996; Rao et al., 1997) and the present study emphasized the importance of top management commitment in envisioning, planning, and implementing TQM in organisations. It has been suggested that top management commitment is one of the major determinants of successful implementation of TQM initiatives, because it improves performance by influencing other TQM practices (Easton and Jarrell, 1998; Kanji and Wong, 1999). Successful implementation of TQM requires effective change in an organisation's culture, and it is almost impossible to change an organisation without a concentrated effort by management aimed at continuous improvement, open communication and co-operation throughout the value chain (Yusof and Aspinwall, 2002).

The literature (e.g, Rahman, 2001; Tang and Antony, 2001) suggested further that the clarity of quality goals for an organisation determines the effectiveness of the TQM efforts. Setting these clear goals is the responsibility of top management. When top management is committed to quality it conveys the philosophy that quality matters through several actions:

- Assigning a higher priority to quality over cost;
- Providing adequate resources to the implementation of TQM efforts;
- Investing in human and financial resources; and

- Making quality a dimension in performance evaluations for every one in the organisation.

The importance of top management commitment in TQM has been extensively discussed, where top management commitment encourages subordinates to invest more fully in the particular elements for which they are responsible, thereby increasing the impact of these elements on the quality of products/services. Therefore, one could expect the extent of top management commitment to TQM to influence the amount of effort that employees devote to TQM of material from suppliers, designing good products/services and processes, benchmarking the firm's processes and products/services, empowering employees, acquiring and providing quality training, and implementing involvement and participation strategies. The importance of top management commitment is recognised within the integrated business excellence model. However due to the new development of the model, top management commitment has not been investigated to demonstrate whether top management commitment has any impact of the effective implementation of the integrated business excellence model and achieving superior product and service quality. Therefore, in a firm with a high level of top management commitment to TQM, one would expect not only a higher level of execution of the new integrated business excellence model, but also a higher quality of products/services.

From the above discussion, one would expect a much better implementation of the integrated business excellence model in firms with high top management commitment and a superior product/service quality attained in these firms as compared to the firms with low top management commitment to quality. The discussion concerning top management commitment led to the development of the following hypotheses:

- Firms with high level of top management commitment demonstrate more effective implementation of the new integrated business excellence model.
- Firms with high level of top management commitment produce higher quality products/services than firms with low top management commitment.

In order to prove whether the hypotheses are correct or incorrect, the researcher suggests a longitude qualitative study through the use of interviews and with top management and employees and case studies to provide sufficient data on top management commitment on the implementation of the integrated business excellence model, as the present study was weak on the qualitative data with regard to the sample chosen.

8.8.2. The relationship between the integrated business excellence model and organisational performance

The literature (e.g, Choi and Eboch, 1998; Hendricks and Singhal, 1997; Dow et al., 1999; Dean and Snell, 1996) discussed in section 4.5 suggested that TQM practices and tools have a significant and strong impact on quality and organisational performance, and this relationship between TQM implementation and organisational performance has been empirically validated. However the 14 TQM constructs within the integrated business excellence model represent dimensions along which integrated quality efforts manifest themselves. The integrated business excellence model represents a broad framework for assessing the quality efforts in organisations. From an implementation standpoint, organisations need specific factors, which can be used to compare quality efforts across organisations.

Organisations that aim at being world-class focus on instilling a few core values such as good leadership, customer focus, respect for employees and continuous improvement. The new integrated business excellence model criteria are formulated around such core values. The core concepts are embodied in the integrated business excellence model that consists of 14 categories. The framework has two basic elements: Enablers and results. Enablers are leadership; people management; policy & strategy; resources management; supplier management; knowledge management; innovation management and processes. Results are people satisfaction; customer satisfaction; impact on society; supplier performance; innovation performance; business performance.

The available literature on TQM suggests that each of these constructs are linked to organisational quality and performance. As these 14 constructs represent the new integrated business excellence model, which has not been empirically investigated and tested with regard to organisational performance. Therefore it is highly recommended that the model should be investigated to ensure the applicability of the model. In order to achieve this, a quantitative study is needed to investigate the relationship of the 13 constructs and organisational performance. This can be done from two perspectives, which are short and long term perspectives. Short-term view will consist of an investigation of the opinions of managers of the relationship between the 13 constructs and organisational performance in TQM organisations. Long-term view will consist of the impact of implementing the model within TQM organisations, the effects will be reported before and after implementation of a long period of time to illustrate the actual impact. The long time period was chosen because it is important to choose when to begin in measuring the performance and

over what time period should the performance be measured are critical issues in linking TQM to organisational performance.

Ideally, one should focus on measuring performance from the point in time when the firm started implementing TQM. The measurement period should also include the time after the firm has effectively implemented its TQM model. Furthermore, as many authors (Hendricks & Singhal, 1997; Dow et al., 1999; Samson & Terziovski, 1999; Adam et al., 1997) have emphasised that TQM takes a long time to be fully absorbed and integrated in the normal operating mode of doing things at a firm. Therefore any attempt to establish the relationship between TQM model and organisational performance must examine performance over a long-time period as suggested above.

It is important to choose the appropriate criteria for measuring organisational performance. Based on the strategic management, marketing and operations management literature, Kaynak (1997); Prajogo & Sohal (2003); Karagozoglu and Brown (1998) identified and validated different dimensions of organisational performance relevant to TQM. Financial and market performance indicators include return on investment (ROI), sales growth, profit growth, market share, market share growth, the indicators for quality performance are product/service quality, productivity, cost of scrap and rework, delivery lead-time of purchased materials, and delivery lead-time of finished products/services to customers. Innovation performance indicators are number of innovations, speed of innovation and level of innovativeness.

8.9. The integrated business excellence model: Effective implementation issues

Having a defined system for managing quality and process improvement should be a foundation for achieving organisational business objectives. The key to that synergy is a well-designed business management system that provides an overall framework for managing knowledge, innovation and quality. The full benefits of the framework will not be realised unless it is implemented as part of an overall systems approach to management.

The implementation of such a fully integrated business excellence model that provides all the benefits of a modern quality system as well as knowledge and innovation management capabilities can be quite complex and requires a considerable amount of planning and skills to implement effectively.

As it has been illustrated before that the integrated business excellence model is used as a model for self-assessment, where you (manager) conduct a self-assessment by comparing your organisation to the model. The model presents a plausible logic. **Results** – financial, customer satisfaction, people satisfaction, impact on society, innovation performance and suppliers performance are achieved through acting on **enablers** – leadership, policy & strategy, people management, resources, processes, knowledge management, and innovation processes. By improving the how, it is argued, improved results – the what – will follow. The model enables organisations to use a balanced set of measures to track progress and inform future improvement. This balanced view, encompassing the requirements and expectations of the key stakeholders (customers, suppliers, employees, shareholders, community), is fundamental to working ‘outside in’. It provides the focus for both effort and the

measure of achievement, as the EFQM (1997, p. 14) stated that *what the organisation is achieving in meeting the needs and expectations of all those with an interest or other stake in the organisation*. Based on this discussion concerning the outside in view, organisations can use the model to address the inside through a several stages translation and action process. For Example, the enabler criteria with their associated areas to address can, at their most simple, create a framework for a SWOT, gap or other analysis, to establish what is done, its purpose and contribution, and to identify any areas not addressed. It also provides a clear planning framework around which actions can be implemented, reviewed and improved.

In order to achieve the desired outcomes from implementing the model, it is important to recognise that change should not start with comparison to a model, but it should start with a thorough understanding of the what and why of current performance. Moreover, this is supported further as self-assessment by comparison to the model is an unreliable method for starting change. It does not lead to a good understanding of what is going on in an organisation – how the work works – and hence leads managers to decisions and actions that have little or no basis in knowledge. Therefore, it is recommended that managers should start the process of self-assessment in a different place. For example, whether managers seek to improve performance or simply score their organisation, the best starting place is a thorough understanding of the what and why of current performance – to understand their current organisation as a system, as this is recommended through the use of the vanguard approach to self assessment (see Figure 4.12) which is illustrated earlier in chapter 4. When managers follow the vanguard approach to self-assessment, they have more confidence in actions for improvement producing results.

To continue with effective implementation of the model, the self-assessment process is based on TQM principles and evidence of such should be clear within organisations as illustrated before (see section 5.7). Therefore organisations should possess a certain level of TQM experience and development before adopting a self-assessment model (e.g., the integrated business excellence model). For example in adopting the integrated business excellence model, organisations should possess some of the following TQM characteristics

- Specific aims, goals, and vision
- Visibility of direction
- Holistic approach to strategy, planning, processes and human resources
- Awareness and acceptance of quality ethos
- Support of top management
- Direct and open channels of communication
- Employee empowerment
- Multi-faceted, innovative management
- Motivated managers and staff
- Continuous development and training development
- Active continuous improvement strategy
- Continuous review of processes and systems
- Effective communications within departments
- Effective working relationships with external parties
- Customer needs and expectations focus
- Integration of quality activities into routine activities

As the integrated business excellence model is based on TQM principles, it is essential that these characteristics (listed above) are practised within an organisation, otherwise it defeats the purpose of adopting the model. One factor which is recognised for its importance in the implementation of any quality model/system is the motivation behind the deployment of a specific approach. For example, an organisation may be using an approach, such as an A3 matrix, merely as an educational tool to raise awareness of self-assessment practices amongst the staff. If this is the case, the manager responsible does not necessarily need to have a hands-on working knowledge of the operations of the organisation. If, however, the aim of the

approach is to identify and drive core areas for improvement, then knowledge of both the self-assessment process, and of the key operations of the organisation is essential. Therefore, for effective implementation of the integrated business excellence model, it is important that organisations should consider the above issues before implementation in order to achieve the desired outcomes without failure.

8.10. RECOMMENDATIONS

The study findings suggested that Scottish SMEs are achieving an overall moderate level of product and/or service quality. This suggests that they are not doing enough to achieve superior product and/or service quality to enable them to compete and survive. It is therefore important for SMEs to understand the need for achieving better quality products and/or services. Good quality practice resulting in the improvement of internal quality performance will lead to the improvement of external performance, such as competitive advantage, profitability and customer satisfaction (Rao et al., 1999; Zhang et al., 2000). To understand the value of quality, the researcher recommends that SMEs should embrace the importance of quality education for TQM success and that quality education should be considered an integral and essential part of any TQM initiative.

SMEs should establish quality systems to control their quality activities and to organise their operations. ISO 9000 is the minimum requirement that firms are recommended to implement. However, SMEs are often reluctant to implement the ISO 9000 standard (Bryde and Slocock, 1998), and because it may not be suitable for SMEs (Gome, 1995). Therefore the researcher recommends that they should consider other models of TQM and quality awards that are more appropriate to their individual

needs so as to help ensure that their products and/or services satisfies and continues to satisfy customers'. The characteristics of SMEs emphasise the need for integrative TQM models in managing the functional areas to achieve quality excellence. Therefore, the researcher recommends the use of the improved EQA model (see Figure 8.15). This model has been developed and designed to suit the needs of SMEs in Scotland.

The integrated business excellence model should be used in SMEs to monitor the effect and progress of their efforts to improve their business. This will allow them to identify what has gone well and what needs to be improved. The model can be used to assess SME strengths and weaknesses and measure the progress of the improvements. The effective use of the model in SMEs will lead to an improvement in corporate performance, employee satisfaction, customer satisfaction, profitability, competitive advantage and generate organisational survival.

SMEs that are willing to implement the integrated business excellence model are encouraged to educate their employees about the model's benefits before the implementation process. This would be beneficial for SMEs to ensure that employees' commitment and participation are gained and also to reduce their fear and resistance and to help ensure the realisation of those potential benefits.

It appears essential that research into quality in SMEs should be promoted, not only by researchers but also by managers. Unless owners and managers of SMEs can view the model as a strategic tool for achieving quality and they feel confident that, in the long-term, the effect on business performance will be a positive one, organisations

will continually find it difficult to compete in markets that are increasingly competitive.

8.11. FINAL THOUGHTS ON THE CONCLUSIONS

Quality helps organisations to achieve competitive advantage by delivering goods and services that meet customer needs, operate in their intended manner and that are improved continuously along all quality dimensions to please the customers. Quality has been recognised as important in the development of competitive advantage and organisational long-term survival. Moreover, improving quality is a key driver for better economic performance from a macroeconomic perspective as well as for individual firms.

Through the literature there is clear evidence as to how quality should be managed to implement and sustain competitive advantage and improvements in quality performance and financial performance. TQM models have been recognised for their strategic importance. However, it seems that the existing TQM models of large firms are not enough to guarantee quality in SMEs, except for the EQA model which is considered to be an appropriate model for managing quality in them.

The researcher has reported the results of analysis conducted on data collected from 180 of SMEs in Scotland, followed by 15 semi-structured interviews. Specifically, the researcher has examined the applicability of the EQA model for business excellence among SMEs in Scotland. The questionnaires and the interview questions used for the study were based on the criteria specified in the EQA framework. Using these criteria, survey instruments were developed and applied to examine the

applicability of the model to the needs of Scottish SMEs. The instruments were evaluated for reliability and validity. The results showed that the instruments based on the EQA framework are valid and reliable instruments.

The study findings suggested that Scottish SMEs were changing their attitudes towards the implementation of ISO 9000 standards and implied that a fuller commitment to TQM practices for achieving better performance. Certified firms in Scotland performed well in terms of their level of knowledge and understanding of TQM, with this apparently helping them to ensure successful implementation of TQM and to achieve superior quality of products and/or services. Managers are aware of the effect of quality measures on customer satisfaction and financial performance. However, they need to go a step further than just achieving the ISO 9000 standard to sustain quality and competitive advantage.

Scottish SMEs tend to be willing to implement and practice the nine constructs underlying the EQA model. This is evident from the fact that Scottish managers and owners of SMEs had positive attitudes towards the EQA model. However, firm size in Scotland appears to have an effect on management attitudes towards the implementation of the constructs underlying the EQA framework. Medium-sized firms had more positive attitudes towards the model and there were significant differences in the mean score for policy and strategy, people management, impact on society and business results, which implies that small firms tend to be weaker in terms of these four constructs. Moreover, the EQA model was correlated significantly to performance in terms of customer satisfaction, quality, productivity and financial performance. The EQA model seems to be an appropriate model to be used in

Scottish SMEs for achieving organisational success. Additionally, the findings also noted how SMEs in Scotland had recommended other constructs, which could be incorporated into the EQA framework to make it more applicable to their needs. The integrated business excellence model encapsulated very comprehensive listings of TQM constructs, covering almost all elements of TQM. The additional contents of the model were knowledge management, innovation management and innovation performance. The researcher recommended further the use of supplier management, supplier performance and external environment constructs in the integrated business excellence model based on comparisons of the literature.

Consequently, the implementation of the integrated business excellence model in Scottish SMEs may be used to help assess their strengths and weaknesses and to measure the progress of the improvement process. The use of the integrated business excellence model in SMEs should, it has been argued, lead to an improvement in corporate performance, employee satisfaction, customer satisfaction, profitability, competitive advantage and organisational survival.

Finally, the researcher hopes that the findings presented here will not only help SMEs to understand and implement a more relevant model of TQM through the integrated business excellence model, but will also be helpful to researchers in the future.

8.12. RESEARCH CONTRIBUTION

The provision of high quality products and services are the essence of competitiveness and survival. To meet the increasing expectations and demands of customers, organisations can usefully strive to provide them with the highest quality products

and/or services. Most importantly, there has been a growing realisation that continual improvements in quality are often necessary to achieve and sustain good performance. Thus, continuous quality improvement has become an important strategic tool in business.

Organisations use different TQM models, such as the EQA, to meet these requirements. However, most of the research to date has been carried out into the format of the EQA model and its effects based on large European companies. None of the research has been based on SMEs and designed to identify the applicability of the model to their needs, which was the focus of the present study. Since this is the first effort in Scotland, to the best of the researcher's knowledge, to investigate the applicability of the EQA to the needs of SMEs, this study can hopefully contribute to the enrichment of TQM in Scottish SMEs and elsewhere. The findings are relevant to understanding the most critical factors of the EQA model in SMEs, namely, leadership, business performance measurement, teamwork and participation and supplier management, their effects on business results, and more generally whether the model is applicable and useful to the need of such firms to achieve quality excellence. Ideas from different perspectives on perceptions and uses of TQM and EQA in certified and non-certified SMEs have also been discussed along with relevant evidence from the study.

One of the most important contributions of this research was the development of a potentially valid and reliable model for Scottish SMEs. This is evidenced through the criteria specified in the EQA framework used to develop a conceptualisation of TQM. A survey instrument was developed to create and use self-assessment measures of the

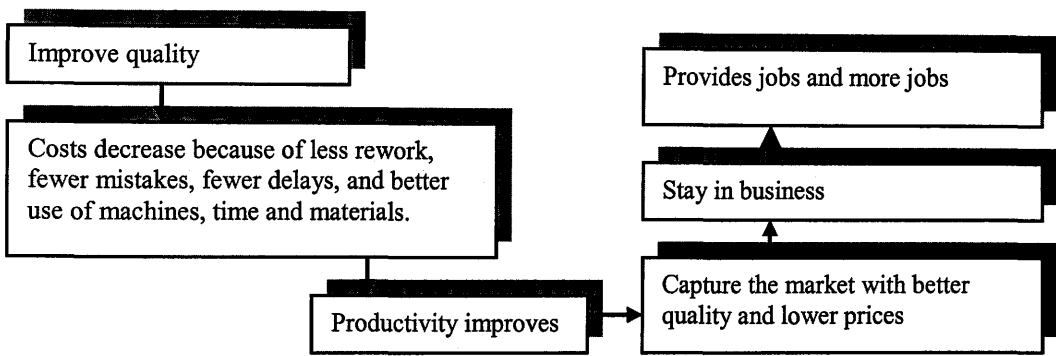
EQA model. The items assigned to each of the nine criteria were submitted to principal component factor analysis. The EQA model was evaluated for potential reliability and validity through different techniques such as Cronbach alpha, item analysis, test-retest, content validity, construct validity and criterion-related validity. All these techniques showed that the EQA instrument is potentially valid, reliable and theoretically sound and therefore of potential value to the needs of SMEs. SMEs can use the model for measuring, benchmarking quality practices and achieving quality products/services, which in turn results in organizational success. The existence of a potentially valid and reliable model based on the EQA means that researchers can use it in theory development and can test the model and refine its future applicability for the evaluation of quality practices in SMEs.

Another point to be made is that, since Scotland is a developed European country, many similar European and other countries might benefit from the findings of this study for their own SMEs. However, the similarity of the Scottish economy to those of other European countries might be of great benefit to quality practitioners and scholars in the field of TQM.

Another vital contribution of the findings of the present study was the improvements identified which can be incorporated into the EQA framework where an integrative TQM framework can be produced to suit the needs of SMEs. To clarify this, the use of quantitative and qualitative methods for the study enabled the researcher to reflect the applicability of the EQA model and to explore different opinions, attitudes and perceptions of the EQA model and the identification of other related items to the EQA model, such as knowledge management, supplier management, innovation management and key performance in innovation and suppliers. Based on quantitative

and qualitative data analysis, the researcher was able to apply the findings to the EQA model and to produce an integrative TQM model, which could be suitable to the needs of SMEs. The integrative TQM model produced based on the EQA model and the improvements applied to the model should help SMEs to manage quality more effectively and to achieve quality improvements leading to different benefits demonstrated in the Deming (1986) chain reaction (see Figure 8.14).

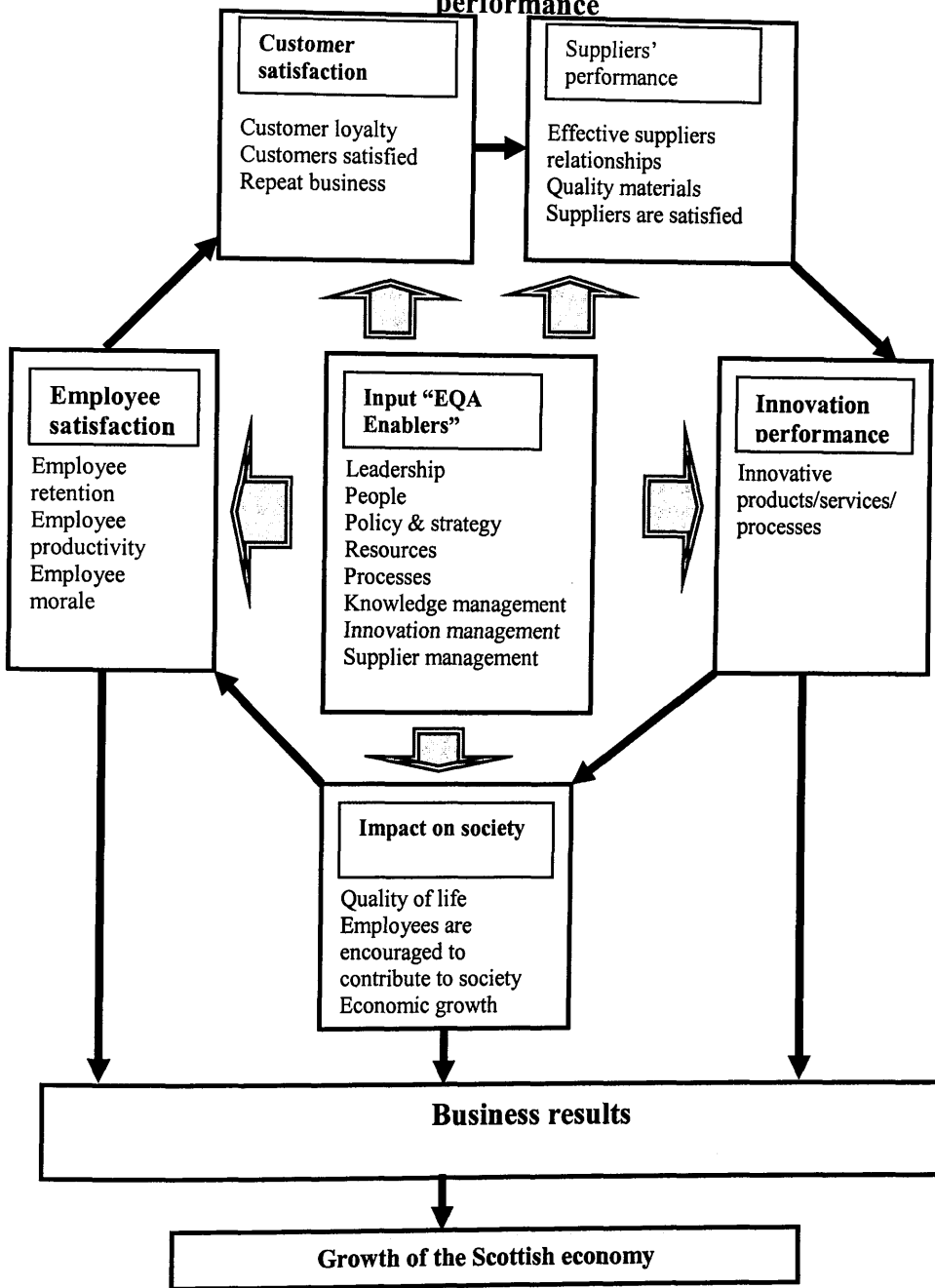
Figure 8.14: Deming chain reaction



(Source: Deming, 1986)

Effective implementation of the new improved EQA model in SMEs could have a positive effect on company performance and the success and growth of SMEs could lead to growth of the Scottish economy (see Figure 8.15). The integrated business excellence model based on Scottish data may make a useful contribution to the effort to move TQM based on EQA research forward by incorporating knowledge management, supplier management, innovation management and key performance in innovation and suppliers to the EQA model to make it more applicable to the needs of SMEs. The findings are also expected to enhance and deepen the understanding of issues relating to quality management in SMEs, which are useful to building theory for and in future quality studies.

Figure 8.15: The integrated business excellence model and small firms' performance



(Source: Based on Kaplan and Norton's balanced scorecard, 1996, p. 182)

Quality agencies operating in the UK and EU can benefit from the attitudes and perceptions of their clients about the model they promote, rather than developing a model based on the assumption that whatever suits large organizations would also suit

SMEs. Moreover, as the present study recommended a new version of the model based on the needs of SMEs in Scotland, the EFQM might consider this study as a starting point to illustrate that the model in its present format is not suitable to the needs of SMEs and the complex business environment, as we do not live in a stable environment where model should adapt to the changing environment. They might consider undertaking various studies in different European countries to identify their needs and design a model to suit SMEs in Europe. As this is evident from the present study, as the model needs modifications, and these modifications can be used in large organizations too. Finally, this research will contribute to the literature on quality management by describing the Scottish SMEs' perspectives on the subject.

8.13. SOME LIMITATIONS OF THE RESEARCH

Despite the encouraging results of the study, several limitations of this study should be noted. Limitations of time and financial resources are important constraints on much academic and other research and the present study was not exception to this. Such constraints caused the study to be focused on Scottish SMEs, whereas the sample could have usefully included SMEs from England, Wales and the Republic of Ireland. Moreover, the study used quantitative data (n=180) more than qualitative data (15 interviews). More depth of understanding would probably have been generated by more interviews.

The study suggested positive attitudes and behaviours towards the EQA model, however, the level of these attitudes could of have been more clearer if the term construct been used in the questionnaire under another terminology to ensure

appropriate understanding. As the researcher recognised the nature of SMEs managers and their lack of understanding of specific terminology concerning TQM.

Another limitation of the study was the length of the interview questionnaire as it was devised to include all the nine constructs of the EQA model, along with other constructs and items, which might be encountered while implementing the model. This, in turn, made it difficult for participants to answer the last question on problems encountered while implementing the EQA, due to the limited time.

This study was conducted during the year of 2001. The sample data used in the study is therefore a snapshot at one specific point in time. It does not account for changes over a long period of time. All studies of such nature suffer from this limitation

This study has benefited from using multi-methods (quantitative and qualitative), adopting triangulation proved to be time-consuming and costly. However, in future research, these issues of time and financial difficulties might prevent more effective use of triangulation and even more productive research output.

Qualitative data analysis is primarily an inductive process of comparison in which the categories and patterns emerge from the data from specific questions that the researcher asks about the data. The researcher codes the data into categories, and then identifies (sorts) similarities and distinctions between categories to discover patterns or relationships among the categories. Synthesis or analysis is the key to identify patterns. Within the present study, the researcher considered the use of grounded theory in presenting the qualitative data. However the qualitative data followed

another line of analysis which did not use the grounded theory approach due to various reasons outlined below.

Several authors (e.g., Coffey and Atkinson, 1996; Goulding, 1999) suggested that the rigid analytic procedures (coding and categorising) of grounded theory may lead to a fragmented and de-contextualized qualitative data analysis. Employing an additional analytic strategy, for instance that of Wolcott (1994), who suggests that a qualitative analysis process should, in addition to coding and categorising, also include a description and an interpretation phase which together will produce reliable and dependable research findings. There is also a debate going on in the literature with regard to grounded theory's approach to coding and categorising. This debate can be summarised under two main headings: coding and coding paradigm. The critique put forward against the former is that it takes place in a mechanistic manner. Some (see Seale, 1999, p. 104) go further to claim that coding in grounded theory is simply indexing. However, to what degree coding can be defined as indexing depends highly on the methodological talent and knowledge of the qualitative analyst, which is limited within the present study. One significant technique suggested by Glaser (1992) and Strauss and Corbin (1990) is the use of theoretical memos, which transforms pure coding or indexing to an analytic interpretation. However, in both cases the researcher is limited by the lack of resources and time.

The other criticism is lodged against the idea of coding paradigm (i.e., connecting categories) in grounded theory analysis, more specifically, that of Strauss and Corbin (1998). Briefly, they suggest that relations between emerging categories can be established following their coding paradigm consisting of six major coding families or categories: conditions, phenomena, context, intervening conditions, strategies and

consequences. This is the issue to which several scholars (e.g., Goulding, 1997; 1999; 2002) object. They accordingly suggest that the codes used and, in fact, the actual labels placed on the codes should be driven by conceptual interests that have emerged a posteriori from the data and not “forced” into any particular a priori scheme, such as the coding paradigm model of Strauss and Corbin. They maintain that by not imposing any predetermined paradigm, analysis and interpretation are assured of being grounded in the data, thereby allowing the researcher to see beyond only what will fit into a predetermined conceptual plan.

Based on the above discussed points, it was realized that employment of this approach involves a great deal of complexity and ambiguity, which is difficult for an inexperienced researcher to handle with limited resources. More specifically, since an enormous amount of data was collected from both primary sources and they needed to be interpreted in a limited period of time, they might introduce bias. Also considering the quality of qualitative analysis of coding procedures, will always depend on the experience, creativity and theoretical awareness of the investigator. Moreover, the unstructured grounded theory, to a certain extent contradicted the personality of the researcher, who aspired to instigate a more structured way of conducting research. The grounded theory approach could be better employed by a team of researchers or by a more experienced researcher who could deal with the complexities and contradictions of this approach. Utilising such an unstructured approach to research would limit the researcher’s ability to identify some of the important themes and aspects in the research findings which emerged from the use of a ‘tight’, more theoretically driven approach. Furthermore, a final significant issue that acted as a deterrent to using grounded theory is that theoretical saturation of the data and the

interpretation of that data can make it difficult to anticipate an accurate time scale for the research. This, while problematic in the general sense of planning research strategies, creates even greater difficulties when having a limited time to do research.

The qualitative data obtained was limited as it focused only on ISO 9000 accredited firms as the survey sample, which made generalization about SMEs difficult and also it might have provided a potentially biased viewpoint, as they are aware of quality issues and therefore 'the right answer'. Moreover, the interview questions were limited to the different constructs represented within the EQA as it was evidenced within the survey questionnaire, which might have incurred repetition of the available data without gaining an insight into the situation, and also biased attitudes towards the model, as there are no other models to compare it with.

The EQA was described to the survey sample before the actual interviews. However within the interviews the researcher omitted an explicit discussion of the EQA as it might provide a biased viewpoint, as organizations believe that any models/approaches produced by an awarding body must be effective. Therefore, the researcher focused on the constructs within the model as a separate entity, in order to identify their attitudes without any bias towards the model.

Measuring perceptions of TQM on a five-point Likert scale captures the perceived extent of quality practices in SMEs. The researcher believes that owner-managers in each organisation is usually the individual who is best suited to answer a survey that covers both quality and business results. However, Gerthart et al. (2000) raised the question of using only one informant per organisation. Such an approach makes it

impossible to estimate the measurement error due to the sample of informants used. The researcher acknowledges this limitation, although He believes that it is not a serious one. In Gerthart et al's. (2000) study, the average number of employees in the organisations studied was 46,396. For such large organisations, it is almost impossible for one informant to have enough knowledge of their organisation's quality practices. However, Nilsson et al. (2001) felt that this information problem was less of a concern in SMEs. In the present sample, the participant organisations had fewer than 250 employees.

The integrated business excellence model developed by the researcher has implied certain positive causal relationships (see figure 8.15 and 8.17). Figures 8.15 and 8.17 suggest that using the integrated business excellence model will ultimately lead to better quality and operating and financial performance. The causality could not be confirmed and validated with the present study. Therefore, a longitudinal study would be beneficial for exploring the directionality of the relationships among the constructs.

Now after the study has been done, the researcher feels it would have been of better idea if the study had utilised a qualitative study through the use of focus groups and interviews first and then the use of questionnaires secondly to support the emerged data from the qualitative phase.

Due to the intensified nature of small and medium sized enterprises and their management limited time, which do not allow researchers to obtain sufficient qualitative data through interviews or focus groups. This is highlighted through the

present study, as the researcher can only obtain the help of 15 managers to participate in the interviews.

8.14. DIRECTIONS FOR FUTURE RESEARCH

This study was conducted with certain limitations of time and money. Nevertheless it is hoped that this study will encourage interest in further research on this and related subjects areas, as more research is needed, and not only in Scotland. Suggestions for further work are now offered.

The present study is assumed to be the first to investigate the applicability of the EQA to the needs of SMEs in Scotland. The first suggestion is that future research should explore the relevance of the integrated business excellence model. This should be useful for the development of a valid instrument for TQM practices. To investigate the importance/relevance of the model, future researchers should consider the use of scale refinement and validation, due to the fact that, the new model includes new constructs which have not been refined and validated.

The sample in the study took its data from owner-managers and managers of SMEs in Scotland. A future study might usefully focus on employees' perceptions of the applicability of the EQA model to organisational needs, where a comparative analysis can examine the differences and similarities of the present study and future study and develop a model to suit both needs.

Because this study is the first of its kind to investigate the applicability of the EQA model to the needs of SMEs in Scotland, any future study might focus on identifying

the applicability of the model in England, Wales and Ireland, or indeed elsewhere. Furthermore, any research focusing on the applicability of the EQA model in Scotland might be in the form of a comparative study, between Scotland, and other countries.

Companies around the world have increasingly focused on quality, where quality is defined as meaning lower cost, improved products and services, better turnaround time, reduced waste and more satisfied customers, off all which help to increases in market share and profitability. This suggests that using the integrated business excellence model will ultimately lead to better quality and operating and financial performance. Therefore, in any future research, the relationship between the implementation of the integrated business excellence model and business performance in SMEs should be investigated, to try to determine if firms that implement the integrated business excellence model have superior business performance compared to those that do not.

Another study could explore the differences that may exist between organisations which implement the integrated business excellence model and against firms in terms of their business strategies and organisational performance. Such a study could be based on the premises that business strategies adopted differ significantly between the two groups of firms; and that these differences affect operations and performance significantly.

The integrated business excellence model describes the processes and the people, including the leadership, people management, policy and strategy, resources, processes, supplier management, innovation management and knowledge management categories, as the enablers that will help organisation to achieve the

results, which include customer satisfaction, supplier performance, people satisfaction, impact on society, innovation performance and business results. Achievements within each of these categories tend to be correlated with achievements in the others. These correlations suggest that quality improvement efforts concentrated on only one or a few of these categories would be less effective than if they are simultaneously concentrated on all of them. Managers need to plan and execute a concerted effort to improve all or several aspects of quality to achieve very high levels of quality overall. Researchers should also investigate whether one or more of these categories affect performance more than the others. Further, they should ask whether each TQM construct influences firm performance directly, or whether the influence is indirect through the effects on other constructs. Another study can be related undertaken to examine the relationship between the integrated business excellence model enablers constructs and quality performance as well as innovation performance.

A maximum total of up to 1000 points is allocated to the nine criteria in the EQA model, each criterion carrying a different number of points in accordance with its relative value within the award. However these criterion points have to be changed due to the new constructs being added to the integrated business excellence model. Future research needs to find ways to estimate the weighting to be used in the integrated business excellence model. The integrated business excellence model weightings estimation could be performed through the use of a factor scores regression based on confirmatory factor analysis of a number of bootstrapped samples.

After the integrated business excellence model has been allocated criterion points, there might be arguments surrounding the actual values associated with the individual element weightings. This may be the case when examining and comparing organisations from different economic activity sectors. For example, impact on society element might attract considerably greater importance, and weighting, for public sector organisations than for small and medium sized enterprises. Therefore, the researcher recommends the use of Data Envelopment Analysis (DEA) where meaningful additional analysis and comparisons to be made between different kinds of organisations which have been assessed using the integrated business excellence model. Also the DEA outlines a new way of identifying appropriate benchmarking partners in each element of the model and describes how realistic targets can be set for individual element scores with reference to other organisations, which have been assessed by the new model. Therefore, the researcher suggests the investigation of the use of Data Envelopment Analysis (DEA) and its applicability, as it would seem to be appropriate than the weighting scores

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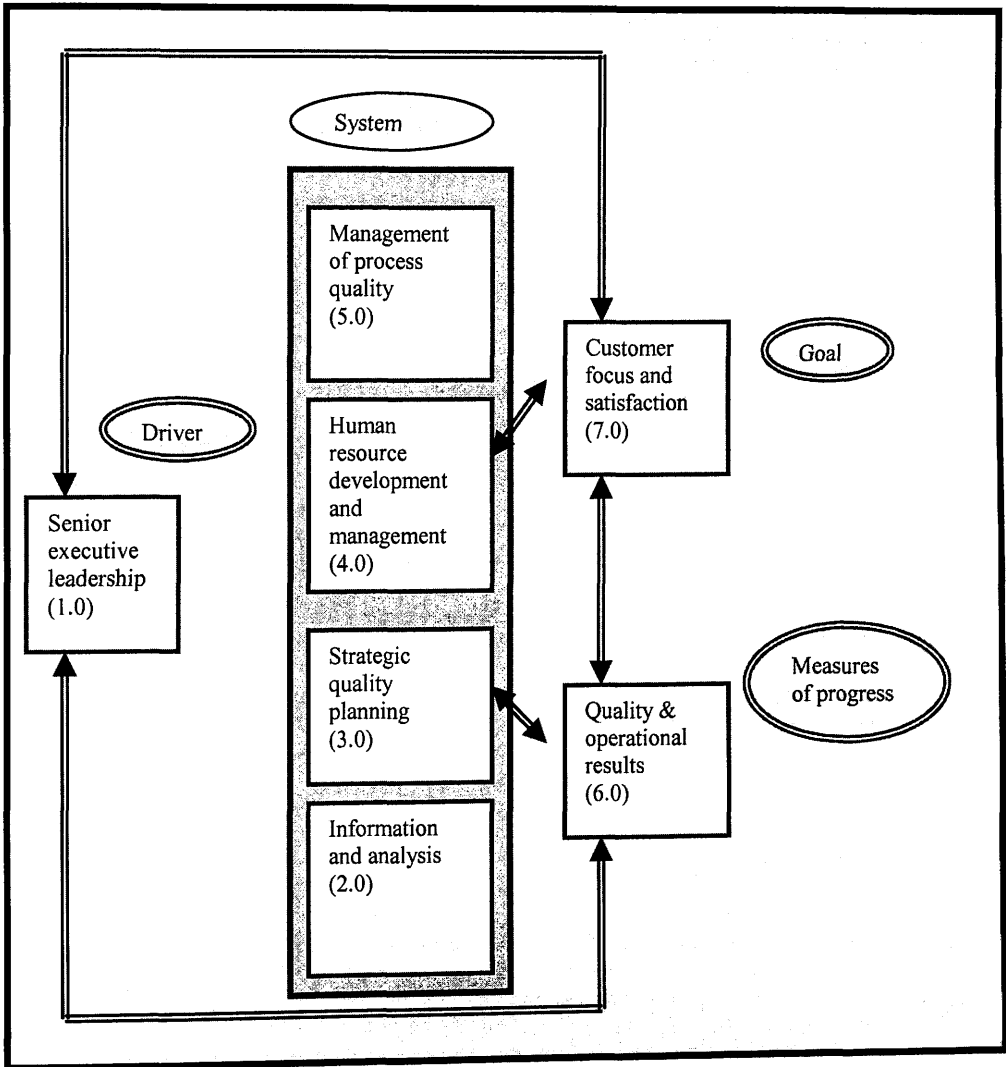
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APPENDIX A

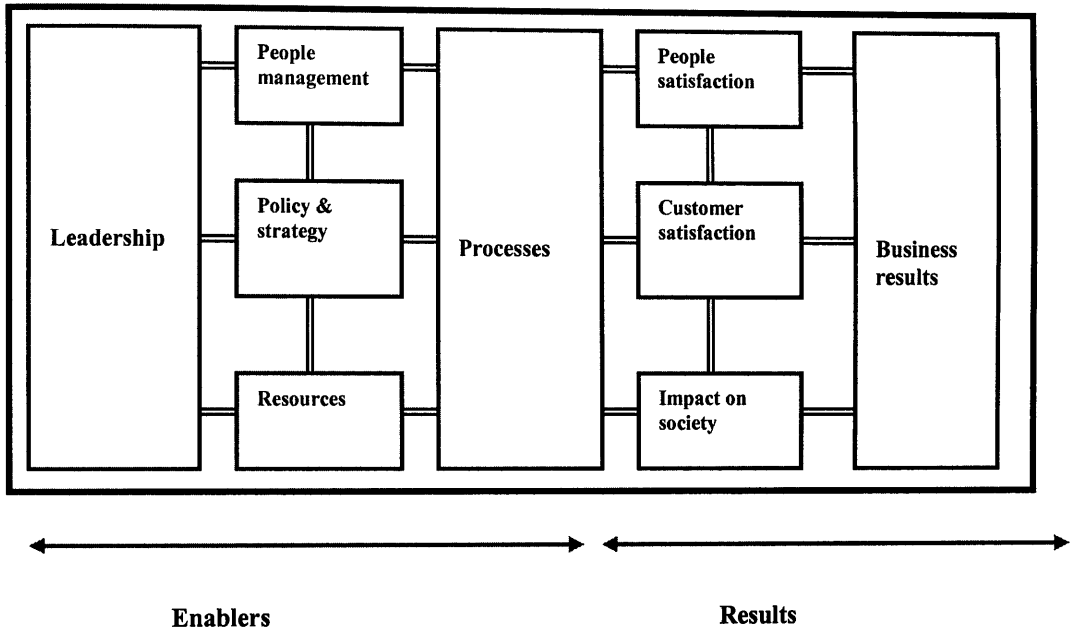
QUALITY MODELS

A1: The Malcolm Baldrige National Quality Award (MBNQA)



(Source: Tummala and Tang, 1996, p.23)

A2: The European Quality Award (EQA)



(Source: Wiele et al., 1997, p.237)

APPENDIX B

ISO 9000: 2000 AND THE COMPONENTS OF THE EQA MODEL

B 1: TOP MANAGEMENT FUNCTIONS WITHIN ISO 9000:2000

Top management functions	Explanations
Clear direction	Top management must determine the direction for the organisation. To do so, top management must establish quality policy as well as quality objectives.
Communication	After the establishment of the quality policy and objectives, they must be well communicated and understood at appropriate levels in the organisation. Besides, in order to make sure the commitment from employees, top management is required to communicate to them the importance of meeting customer as well as regulatory and legal requirements.
Requirements of top management	In order to establish the appropriate quality policy and objectives and obtain the commitment from employees, top management must have a wide range of knowledge and information including that of customers needs and expectations, and the regulatory and legal requirements related to their products or services.
Review of company's performance	After the establishment of quality policy and objectives, top management must conduct management review, at planned intervals, to review the continuity, suitability, adequacy, and effectiveness of the quality management system, including the quality policy and objectives, against company's performance. To do so, top management could identify the need for changes of the quality management system to match the company growth, the change of business environment as well as customers' perceptions.
Review of company's resources	Finally, top management must ensure the availability of necessary resources to achieve quality objectives

(Source: Tsim et al., 2001, p.96)

**B 2: PROCESS APPROACH MANAGEMENT FUNCTIONS WITHIN ISO
9000:S000**

Process approach management functions	Explanations
Inter-linked processes	Organisations must establish and determine the processes together with their sequence and interaction within their organisations.
Effective communication	Organisations must ensure the effective communication in the inter-linked processes and the customers.
Necessary inputs	The necessary inputs, including information, are available for the processes used.
Adequate resources	Adequate resources are allocated to support the operations of the process.
Appropriate use of criteria, methods and documents	The operations of the process must be effective and in a controlled manner through the appropriate use of documents, criteria and methods.
Planned results of the process	The planned results must be defined for the process.
Monitoring and analysing process performance	The performance of the process must be monitored and analysed.
Appropriate records	Appropriate records must be established and maintained to demonstrate the performance of the process and facilitate the work of analysis.

(Source: Tsim et al., 2001, p.97)

B 3: CUSTOMER SATISFACTION FUNCTIONS WITHIN ISO 9000:2000

Customer satisfaction functions	Explanations
Determinations of customer needs and expectations	Top management must determine customer needs and expectations and converted them into requirements.
Customer awareness	It is the responsibility of top management to communicate the importance of meeting customer requirements throughout the organisation, and the awareness of customer requirements must be promoted by management representative throughout the organisation.
Communication with customers	Communication with customers must be arranged to discuss about : <ul style="list-style-type: none"> ■ Product/service details for orders, contracts or requirements; ■ Feedback
Use of information of customer satisfaction	Information on customer satisfaction must be monitored for the determination of quality management systems. In particular, the customer feedback must be used in the management review to review current performance and improvement opportunities of the organisation.
Adequate resources	Resources must be determined and provided to address customer satisfaction.

(Source: Tsim et al., 2001, p.98)

B 4: CONTINUAL IMPROVEMENT FUNCTIONS WITHIN 9000:2000

Continual improvement functions	Explanations
Commitment	The quality policy must include a commitment to continual improvement.
Quality policy and objectives	The quality policy must include a commitment to continual improvement. Quality objectives must be measurable and consistent with it.
Management review	One of the purposes of management review is to identify improvement opportunities. It leads to the outputs of the management review will include actions related to improvement of quality management system, it processes and product related to customer requirements.
Identification of areas for improvement	The areas of continual improvement could be identified through: <ul style="list-style-type: none"> ■ Internal audit; ■ Analysis of data on customer satisfaction, product/service conformity, processes; ■ Corrective and preventive actions; ■ Management review
Planning for continual improvement	The organisation must plan and manage the activity for continual improvement.

(Source: Tsim et al., 2001, p.99)

B5: Components of EQA model

EQA Construct	Description
Leadership	How the behaviour and actions of executive teams and all other leaders inspire, support and promote a culture of business excellence as the best way to achieve the organisation's objectives.
Policy & Strategy	How the organisation formulates, deploys, reviews and turns policy and strategy into plans and actions.
People management	How the organisation releases the full potential of its people.
Resources	How the organisation manages resources effectively and efficiently.
Processes	How the organisation identifies, reviews and improves its processes.
People satisfaction	What the organisation is achieving in relation to the satisfaction to its people.
Customer satisfaction	What the organisation is achieving in relation to the satisfaction of its external customers.
Impact on society	What the organisation is achieving in satisfying the needs and the expectations of the community at large.
Business results	What the organisation is achieving in relation to its planned objectives and in satisfying the needs and expectations of everyone with an interest or other stake in the organisation.

(Source: Azhashemi and Ho, 1999, p.43)

APPENDIX C
LETTERS OF INTEREST AND STUDY QUESTIONNAIRES

C 1: PRE-NOTIFICATION LETTER

Hesham Magd
Doctoral candidate
University of Stirling,
Faculty of Management,
Department of Organization &
Management
Stirling, FK9 4LA
Scotland

Sample name and address

Dear sample member:

My name is Hesham Magd. I'm a researcher within the University of Stirling, an independent, non – profit making educational institution. I would like your help in an important research project investigating management attitudes towards quality management. I would therefore like to consult owners-managers like yourself to identify the appropriate quality management constructs for future quality system development.

Your views and opinions are very important to the study, and in a few days, I will be sending you a short 'quality management' questionnaire. Please help me by filling in the questionnaire.

Great care will be taken to safeguard the information you provide. Nothing you provide will be passed on in any way which would identify you personally. Absolutely no – one apart from myself will know who has completed the questionnaire and I will not, in any circumstances give names and addresses to any other organisations or anyone else. No – one will try to sell you anything as a result of taking part; the study is for research purposes only. **Therefore, all the answers you give will be treated in the strictest confidence.**

Please look out for your quality management questionnaire in the post.

I do hope that you will be able to help me with my survey on this interesting and important topic. The results will be of great value, and I hope that you will find it enjoyable to take part. However, in the meantime, if you have any queries or concerns about the survey, please do not hesitate to contact myself on 01786 473171 (ext. 7325).

Many thanks in anticipation of your help.

Yours sincerely

Hesham Magd

C 2: COVERING LETTER

Hesham Magd
Doctoral candidate
University of Stirling,
Faculty of Management,
Department of Organization &
Management
Stirling, FK9 4LA
Scotland

Sample name and address

Dear sample member:

My name is Hesham Magd. I'm a researcher within the University of Stirling, an independent, non – profit making educational institution. I would like your help in an important research project investigating management attitudes towards quality management. I would therefore like to consult owners-managers like yourself to identify the appropriate quality management constructs for future quality system development.

Why should you take part in this survey?. Because, with your help, I can identify the appropriate quality management constructs and future quality system development for the needs of small firms.

The questionnaire should take you about 20 – 30 minutes to complete. Please answer the questions in the space provided. Try and complete the questions at a time when you are unlikely to be disturbed. Please do not spend too long on any one question. Your first thoughts are usually your best. Even if you feel the items covered may not apply directly to you, please do not ignore them. Your answers are essential in building an accurate picture of management attitudes towards quality management constructs.

Please answer the questionnaire I've enclosed then send it back to me in the envelope provided. The envelope is reply paid, so there is no need to put a stamp on it. **How were you chosen for the survey?.** I took your name at random from the small firms directory. However, **all your answers will be treated in the strictest confidence.** The number on the questionnaire and envelope is merely to enable me to cross your name off when you send the questionnaire back. This makes sure I don't send you a reminder.

Thank you for your help. I look forward to getting your questionnaire as soon as possible.

Kind regards

Hesham Magd

PS. If you have any questions about the survey, or would like to talk about it, please do not hesitate to contact me on 01786 473 171 (ext. 7325). An incentive will be offered to the first ten participants who respond within two weeks of mailing.

C 3: PRE TESTING QUESTIONNAIRE COPY

UNIVERSITY OF STIRLING

Faculty Of Management Department Of Organization & Management

7

Instruction

I would appreciate you taking time to complete the following questionnaire. Please read each question carefully and then circle/tick the appropriate responses for the following questions. The questionnaire is designed to be completed within 15 – 20 minutes; it is, therefore, very subjective and is seeking your immediate perceptions and attitudes.

SSECTION A

Company Background Information

1. **Name of Firm**

2. **Annual sales, average of past 3 years**

- 2.1. £0 0 - £01 million
- 2.2. £ 01 - £05 million
- 2.3. £ 05 - £10 million
- 2.4. £ 10 - £20 million
- 2.5. other, please specify

3. **Number of employees**

- 3.1. 1 – 49 employees
- 3.2. 50 – 99 employees
- 3.3. 100 – 149 employees
- 3.4. 150 – 199 employees
- 3.5. 200 – 249 employees

4. **Type of industry:**

- 4.1. Agriculture, forestry
- 4.2. Manufacturing
- 4.3. Construction

- 4.4. Services
- 4.5. Other, please specify

5. Ownership:

- 5.1. Sole proprietorship
- 5.2. Partnership
- 5.3. Private Limited
- 5.4. Subsidiary
- 5.5. Other, please specify

6. Are you ISO 9001 or ISO 9002 certified?

- 6.1. Yes
- 6.2. No

7. Which of the following do you use in your organisation?

- 7.1. Quality circles
- 7.2. Customer satisfaction surveys
- 7.3. Customer needs survey
- 7.4. Statistical process control
- 7.5. Quality awareness training
- 7.6. Cultural change programme
- 7.7. Other, please specify
- 7.8. None

SECTION B

Knowledge & Understanding of Total Quality Management (TQM)

Please tick the appropriate option in the right hand column

Legend: 1 = Strongly Disagree, 2 = Disagree, 3 = Not Sure, 4 = Agree, 5 = Strongly Agree, NA = Not Applicable

8. TOTAL QUALITY MANAGEMENT	1	2	3	4	5	NA
8.1. TQM is a management philosophy and practice to ensure effective and efficient use of all available resources.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.2. TQM aims to make customers the focus of a business.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.3. Teamwork and participation are important for achieving a	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

continuous improvement culture.

- | | | | | | | | |
|-------|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 8.4. | TQM helps ensure problems are prevented through effective management decisions and operating systems. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8.5. | Customers drive the improvement efforts in all affected business processes. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8.6. | Business performance measurement (including product/service quality level, customer and employee satisfaction levels, delivery time) must be given the same priority as financial measures (profit/loss, etc.). | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8.7. | Training and education are vital elements when adopting TQM. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8.8. | Quality systems standards such as ISO 9000 will not on their own ensure high quality of products and services. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8.9. | Statistical techniques (such as statistical process control, design of experiments, etc.) are important to ensure consistency of products and process quality. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8.10. | Quality improvement can only be conducted when proper policies are in place. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8.11. | Supplier involvement is vital in supporting quality improvement. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8.12. | Management leadership, commitment and support determine the success of new change initiatives. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8.13. | Management must provide adequate resources in every aspect of the business. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8.14. | A work environment which is conducive to improvement is created through management worker partnerships. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8.15. | Initiatives such as Kaizen, suggestion schemes, quality circles, etc. will motivate employees to participate in quality improvement. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

SECTION C

Quality Management Constructs

Please tick the appropriate option in the right hand column

Legend: 1 = Strongly Disagree, 2 = Disagree, 3 = Not Sure, 4 = Agree, 5 = Strongly Agree.

- | 9. | LEADERSHIP | 1 | 2 | 3 | 4 | 5 | NA |
|------|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 9.1. | Regular reviews of quality performance on products/services are important. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9.2. | Quality issues are given top priority as criteria when making decisions. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9.3. | The principles of total quality are reinforced to all members | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

of the organisation.

9.4.	Close contact with customers and suppliers is maintained on a regular basis.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.5.	Recognition and rewards are important among individuals and teams.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.6.	Appropriate resources and assistance are available to support quality improvement activities.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.	POLICY AND STRATEGY	1	2	3	4	5	NA
10.1.	Strategic planning is linked to quality values.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.2.	The planning process includes continuous quality improvement.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.3.	Organisations have clear quality goals.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.4.	Relevant information is used as an input to organisational policies, strategies and plans.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.5.	Strategic plans are updated regularly and aligned to the achievement of business goals, policies and strategies.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.6.	Regular updating and improvement of policy and strategy are reviewed with senior managers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.7.	New policies, strategies and plans are communicated to staff.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.	PEOPLE MANAGEMENT	1	2	3	4	5	NA
11.1.	It is important for your staff to understand how their tasks fit into an overall plan of things.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.2.	Staff are encouraged to develop new ways of doing their job better through empowerment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.3.	The training , recruitment, and career progression processes are important to develop skills and capabilities.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.4.	Team and individual targets and objectives are set and reviewed regularly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.5.	Staff focused on continuous improvement are rewarded.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.6.	Long term business goals are clearly communicated.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.7.	Training needs are identified through personal appraisal.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.	RESOURCES	1	2	3	4	5	NA
12.1.	Resources management is important in supporting organisational policy and strategy.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

12.2.	Organisational information is analysed systematically on a regular basis to support organisational policy and strategy.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.3.	Financial data is reviewed regularly to support and determine the required financial resources.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.4.	A list of current and potential suppliers is available and they are contacted on a regular basis to ensure quality and to determine costs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13.	PROCESS	1	2	3	4	5	NA
13.1.	Innovation and creativity in process improvement is important.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13.2.	Identifying and defining critical processes are important within your organisation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13.3.	Statistical process control and other methods are used to control and monitor your production processes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13.4.	Managers monitor all production processes and introduce continuous improvement whenever possible.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13.5.	Prevention and correction details are always included in daily business operations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13.6.	Processes are reviewed regularly and discussed with team members.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14.	PEOPLE SATISFACTION	1	2	3	4	5	NA
14.1.	Employee motivation, training, participation and involvement are important issues.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14.2.	Employees are asked for their views .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14.3.	Employee recognition and rewards are important.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14.4.	Responsible managers are aware of factors likely to influence employee satisfaction.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.	CUSTOMER SATISFACTION	1	2	3	4	5	NA
15.1.	Judgement by the customers of the organisation's products, services and customer relationships is important.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.2.	Customers are asked if they are satisfied with the product/service they purchased from your organisation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.3.	All customer complaints are recorded.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.4.	Close contact with customers is maintained by warranties/policies, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- 15.5. Judgement by the organisation manager of customer satisfaction is important.
- 15.6. Data collection to monitor changes in customer satisfaction is important (i.e. what customers expect in products/services).
- 15.7. Customer complaints are analysed to improve products/services.
- 15.8. Comparisons of customer satisfaction with competitors and internal indicators are carried out.

16. IMPACT ON SOCIETY **1 2 3 4 5 NA**

- 16.1. The views of the community at large of the organisation's impact on society are important.
- 16.2. It is important for responsible managers to monitor the organisation's impact on society.

17. RESULTS **1 2 3 4 5 NA**

- 17.1. Organisational profitability will increase due to quality consciousness.
- 17.2. Quality improvement efforts are important in increasing sales revenue and profitability.
- 17.3. The effective management of resources and processes will lead to an increase in efficiency and effectiveness of your organisation.
- 17.4. People management will lead to employee and customer satisfaction.
- 17.5. Management of all the above issues will lead to organisational success and continuing success.

SECTION D

Performance and Organisational Maturity

Please state the situation of your primary products/services.

Legend: 1=worst in the industry; 2= below average; 3= average; 4= above average; 5= best in the industry

18. MEASUREMENT FOR PRODUCT/SERVICE QUALITY **1 2 3 4 5**

- 18.1. The performance of your primary products/services.

- 18.2. The conformity rates of your primary products/services.
- 18.3. The reliability of your primary products/services.
- 18.4. The durability of your primary products/services.
- 18.5. The defect rates of your primary products/services.
- 18.6. The internal failure costs as a percentage of annual sales.

19. Which of the following statements best reflects quality management maturity of your organisation:

- Uncertainty We don't know why we have problems with quality.
- Awaking Is it absolutely necessary always to have problems with quality.
- Enlightenment Through management commitment and quality improvement we are identifying and resolving our problems.
- Wisdom Defect prevention is a routine part of our operation.
- Certainty We know why we do not have problems with quality.

SECTION E

Questionnaire design

20. How long the questionnaire took to complete.....
21. Was the questionnaire clear and understandable.....
22. which, if any, questions were unclear or ambiguous.....
23. Which, if any, questions the respondents felt uneasy about answering.....
24. Was the questionnaire layout clear and attractive.....
25. Any other comments.....

I sincerely appreciate your time and co-operation

Please check to make sure that you have not skipped any questions, and then return the questionnaire in the enclosed pre-paid envelope.

Thank you once again for taking the time to fill out the questionnaire

**C 4: MODIFIED VERSION OF THE QUESTIONNAIRE SENT TO THE
SAMPLE PARTICIPANTS**

UNIVERSITY OF STIRLING

**Faculty Of Management
Department Of Organization & Management**

Instruction

I would appreciate you taking time to complete the following questionnaire. Please read each question carefully and then circle/tick the appropriate responses for the following questions. The questionnaire is designed to be completed within 20 – 30 minutes; it is, therefore, very subjective and is seeking your immediate perceptions and attitudes.

SECTION A

Company Background Information

1. Name of Firm

2. Annual sales, average of past 3 years

- 2.1. £0 0 - £01 million
- 2.2. £ 01 - £05 million
- 2.3. £ 05 - £10 million
- 2.4. £ 10 - £20 million
- 2.5. other, please specify

3. Number of employees

- 3.1. 1 – 49 employees
- 3.2. 50 – 99 employees
- 3.3. 100 – 149 employees
- 3.4. 150 – 199 employees
- 3.5. 200 – 249 employees

4. Type of industry:

- 4.1. Agriculture, forestry
- 4.2. Manufacturing
- 4.3. Construction
- 4.4. Services
- 4.5. Other, please specify

5. Ownership:

- 5.1. Sole proprietorship
- 5.2. Partnership
- 5.3. Private Limited
- 5.4. Subsidiary
- 5.5. Other, please specify

6. Are you ISO 9001 or ISO 9002 certified?

- 6.2. Yes
- 6.2. No

7. Which of the following do you use in your organisation?

- 7.2. Quality circles
- 7.2. Customer satisfaction surveys
- 7.9. Customer needs survey
- 7.10. Statistical process control
- 7.11. Quality awareness training
- 7.12. Cultural change programme
- 7.13. Other, please specify
- 7.14. None

SECTION B

Knowledge & Understanding of Total Quality Management (TQM)

Please tick the appropriate option in the right hand column

Legend: 1 = Strongly Disagree, 2 = Disagree, 3 = Not Sure, 4 = Agree, 5 = Strongly Agree.

8. TOTAL QUALITY MANAGEMENT **1 2 3 4 5**

- 8.1. TQM is a management philosophy and practice to ensure effective and efficient use of all available resources.
- 8.2. TQM aims to make customers the focus of a business.
- 8.3. Teamwork and participation are important for achieving a continuous improvement culture.
- 8.4. TQM helps ensure problems are prevented through effective management decisions and operating systems.
- 8.5. Customers drive the improvement efforts in all affected business processes.
- 8.6. Business performance measurement (including product/service quality level, customer and employee satisfaction levels, delivery time) must be given the same priority as financial measures (profit/loss, etc.).
- 8.7. Training and education are vital elements when adopting TQM.
- 8.8. Quality systems standards such as ISO 9000 will not on their own ensure high quality of products and services.
- 8.9. Statistical techniques (such as statistical process control, design of experiments, etc.) are important to ensure consistency of products and process quality.
- 8.10. Quality improvement can only be conducted when proper policies are in place.
- 8.11. Supplier involvement is vital in supporting quality improvement.
- 8.12. Management leadership, commitment and support determine the success of new change initiatives.
- 8.13. Management must provide adequate resources in every aspect of the business.
- 8.14. A work environment which is conducive to improvement is created through management worker partnerships.
- 8.15. Initiatives such as Kaizen, suggestion schemes, quality circles, etc. will motivate employees to participate in quality improvement.

SECTION C

Quality Management Constructs

Please tick the appropriate option in the right hand column

Legend: 1 = Strongly Disagree, 2 = Disagree, 3 = Not Sure, 4 = Agree, 5 = Strongly Agree.

- 9. LEADERSHIP** 1 2 3 4 5
- 9.1. Regular reviews of quality performance on products/services are important.

- 9.2. Quality issues are given top priority as criteria when making decisions.
- 9.3. The principles of total quality are reinforced to all members of the organisation.
- 9.4. Close contact with customers and suppliers is maintained on a regular basis.
- 9.5. Recognition and rewards are important among individuals and teams.
- 9.6. Appropriate resources and assistance are available to support quality improvement activities.

10. POLICY AND STRATEGY **1 2 3 4 5**

- 10.1. Strategic planning is linked to quality values.
- 10.2. The planning process includes continuous quality improvement.
- 10.3. Organisations have clear quality goals.
- 10.4. Relevant information is used as an input to organisational policies, strategies and plans.
- 10.5. Strategic plans are updated regularly and aligned to the achievement of business goals, policies and strategies.
- 10.6. Regular updating and improvement of policy and strategy are reviewed with senior managers.
- 10.7. New policies, strategies and plans are communicated to staff.

11. PEOPLE MANAGEMENT **1 2 3 4 5**

- 11.1. It is important for your staff to understand how their tasks fit into an overall plan of things.
- 11.2. Staff are encouraged to develop new ways of doing their job better through empowerment.
- 11.3. The training , recruitment, and career progression processes are important to develop skills and capabilities.
- 11.4. Team and individual targets and objectives are set and reviewed regularly.
- 11.5. Staff focused on continuous improvement are rewarded.
- 11.6. Long term business goals are clearly communicated.
- 11.7. Training needs are identified through personal appraisal.

12. RESOURCES	1	2	3	4	5
12.1. Resources management is important in supporting organisational policy and strategy.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.2. Organisational information is analysed systematically on a regular basis to support organisational policy and strategy.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.3. Financial data is reviewed regularly to support and determine the required financial resources.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.4. A list of current and potential suppliers is available and they are contacted on a regular basis to ensure quality and to determine costs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

13. PROCESS	1	2	3	4	5
13.1. Innovation and creativity in process improvement is important.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13.2. Identifying and defining critical processes are important within your organisation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13.3. Statistical process control and other methods are used to control and monitor your production processes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13.4. Managers monitor all production processes and introduce continuous improvement whenever possible.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13.5. Prevention and correction details are always included in daily business operations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13.6. Processes are reviewed regularly and discussed with team members.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

14. PEOPLE SATISFACTION	1	2	3	4	5
14.1. Employee motivation, training, participation and involvement are important issues.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14.2. Employees are asked for their views .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14.3. Employee recognition and rewards are important.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14.4. Responsible managers are aware of factors likely to influence employee satisfaction.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

15. CUSTOMER SATISFACTION	1	2	3	4	5
15.1. Judgement by the customers of the organisation's products, services and customer relationships is important.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- 15.2. Customers are asked if they are satisfied with the product/service they purchased from your organisation.
- 15.3. All customer complaints are recorded.
- 15.4. Close contact with customers is maintained by warranties/policies, etc.
- 15.5. Judgement by the organisation manager of customer satisfaction is important.
- 15.6. Data collection to monitor changes in customer satisfaction is important (i.e. what customers expect in products/services).
- 15.7. Customer complaints are analysed to improve products/services.
- 15.8. Comparisons of customer satisfaction with competitors and internal indicators are carried out.

16. IMPACT ON SOCIETY **1 2 3 4 5**

- 16.1. The views of the community at large of the organisation's impact on society are important.
- 16.2. It is important for responsible managers to monitor the organisation's impact on society.

17. RESULTS **1 2 3 4 5**

- 17.1. Organisational profitability will increase due to quality consciousness.
- 17.2. Quality improvement efforts are important in increasing sales revenue and profitability.
- 17.3. The effective management of resources and processes will lead to an increase in efficiency and effectiveness of your organisation.
- 17.4. People management will lead to employee and customer satisfaction.
- 17.5. Management of all the above issues will lead to organisational success and continuing success.

SECTION D

Performance and Organisational Maturity

Please state the situation of your primary products/services.

Legend: 1=worst in the industry; 2= below average; 3= average; 4= above average; 5= best in the industry

18. MEASUREMENT FOR PRODUCT/SERVICE QUALITY

	1	2	3	4	5
18.1. The performance of your primary products/services.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18.2. The conformity rates of your primary products/services.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18.3. The reliability of your primary products/services.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18.4. The durability of your primary products/services.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18.5. The defect rates of your primary products/services.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18.6. The internal failure costs as a percentage of annual sales.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

19. Which of the following statements best reflects quality management maturity of your organisation:

Uncertainty	We don't know why we have problems with quality.	<input type="checkbox"/>
Awaking	Is it absolutely necessary always to have problems with quality.	<input type="checkbox"/>
Enlightenment	Through management commitment and quality improvement we are identifying and resolving our problems.	<input type="checkbox"/>
Wisdom	Defect prevention is a routine part of our operation.	<input type="checkbox"/>
Certainty	We know why we do not have problems with quality.	<input type="checkbox"/>

I sincerely appreciate your time and co-operation

Please check to make sure that you have not skipped any questions, and then return the questionnaire in the enclosed pre-paid envelope.

Thank you once again for taking the time to fill out the questionnaire

C5: REMINDER LETTER

Hesham Magd
Doctoral candidate
University of Stirling,
Faculty of Management,
Department of Organization &
Management
Stirling, FK9 4LA
Scotland

Sample name and address

Dear sample member:

At the end of February I sent you a questionnaire as part of a large project on management attitudes towards quality management. Unfortunately I still haven't had a reply.

Perhaps you haven't got around to answering, the questionnaire yet. Or maybe you do not have strong views on quality management. Whatever the reason, your ideas and opinions are as important as anyone else's. Without them, this survey won't properly represent the attitudes of small firms' owner-managers in Scotland.

Please take a few minutes to help me by answering the questionnaire and sending it back within the pre – paid envelope provided.

Kind regards

Hesham Magd

Ps. Thank you, if you have already returned your questionnaire.

C6: INTERVIEW SCHEDULE AND QUESTIONS

INTERVIEW SCHEDULE

- The name of your organisation:
 -
- Your name:
 -
- Interview time and date:
 -
- Thanking the respondent for agreeing to be interviewed.
- Project introduction.
- Strict confidentiality and anonymity.
- The nature of the project output.
- Permission to tape the interview.
- Inform the respondents to feel free in answering questions and to use their own dialect.
- There are no correct answers.
- Indicate the way the interview should be conducted and the themes to be covered.

1. Leadership

- 1.1. In your view, what are your main responsibilities in achieving organisational quality?
- 1.2. How do you manage these responsibilities?
- 1.3. How would you rate the importance of leadership in ensuring quality products/services? And why?

2. Policy and Strategy

- 2.1. What has been done in your organisation to implement policy & strategy concerning quality?
- 2.2. Do you consider policy & strategy to be important in achieving and sustaining quality? If so, why and how would you rate it?
- 2.3. What are the key issues you consider in implementing policy & strategy in your organisation concerning quality?

3. People management

- 3.1. What has been done in your organisation to manage people effectively?
- 3.2. Are there any other important issues you consider to be important in managing people effectively?
- 3.3. Do you consider managing people an important issue for the long-term survival of your organisation and achieving quality? If so, can you explain the impact of managing people effectively?
- 3.4. How would you rate people management in terms of employee and customer satisfaction?

4. Resources management

- 4.1. Do you consider resources management to be an important element in supporting policy & strategy? And why?
- 4.2. How do you think resources should be managed? Do you practice any of them in your organisation?
- 4.3. How would you rate resources management in achieving quality?

5. Process management

- 5.1. What methods are used to control and monitor your production processes?
- 5.2. How do you improve process in your organisation?
- 5.3. Do you consider process management important? If so, can you explain why?
- 5.4. How would you rate the importance of process management?

6. People satisfaction

- 6.1. Do you consider satisfying your employees important? If so, what impact would it have on your organisation?
- 6.2. What do you do to satisfy your employees?
- 6.3. How would you rate the importance of people satisfaction in achieving quality?

7. Customer satisfaction

- 7.1. Do you consider judgement by the customers of the organisation's products/services and customer relationships are important? And why?
- 7.2. Do you consider judgement by the organisation manager of customer satisfaction is important? And why?
- 7.3. What methods can be used to measure customer satisfaction?
- 7.4. How would you rate the importance of customer satisfaction?

8. Impact on society

- 8.1. Do you consider society's perception of the organisation's activities to reduce and prevent nuisance and harm from its production and / or within the life cycle of its products/services is important? And why?
- 8.2. What activities do you think are available to assist in the preservation and sustainability of resources?
- 8.3. How would you rate the importance of impact on society in achieving quality?

9. Business results

- 9.1. Do you consider managing the above eight constructs effectively will lead to organisational success and continuing success? If so, can you explain the impact of these constructs on your organisational success?
- 9.2. Do you consider business results to be an important measure of quality improvement? And why?
- 9.3. How would you rate the importance of business results?

10. Others

- 10.1. What other constructs you consider important in managing, achieving and sustaining quality?
- 10.2. Why are they important?
- 10.3. What difficulties might arise in your organisation in relation to implementing a model which contains all the above constructs?

APPENDIX D
TABLES RELATED TO DATA ANALYSIS IN CHAPTER 7

Table D1: Gross domestic product in 1995

Industry sector	Scotland % of total	UK % of total
Agriculture, Forestry and Fishing	3.2	2.0
Mining, quarrying including oil and gas extraction	2.3	0.7
Manufacturing	20.1	22.2
Electricity, gas and water supply	3.7	2.7
Construction	6.5	5.4
Services	64.1	67.1
Total	100.0	100.0

(Source: The Scottish Office, 2001, pp.3-4)

Table D2: The employment structure of Scotland: March 1997

	Total (Thousands)	Scotland (%)
Employees in employment by sex and status	1950	88.7
Male full-time	874	44.8
Male part-time	89	4.6
Female full-time	547	28.1
Female part-time	440	22.6
<u>By industry</u>		
Manufacturing	312	16.0
Services	1456	74.7
Agriculture, Forestry and Fishing	38	1.9
Energy and water supply	35	1.8
Construction	109	5.6
Self-employment	222	10.1
Work-related government training	27	1.2
Civilian workforce in employment	2199	100.0

(Source: The Scottish Office, 2001, pp.7-8)

Table D3: TQM 15 statements

No.	TQM statements
1	TQM is a management philosophy and practice to ensure effective and efficient use of all available resources.
2	TQM aims to make customers the focus of a business.
3	Teamwork and participation are important for achieving a continuous improvement culture.
4	TQM helps ensure problems are prevented through effective management decisions and operating systems.
5	Customers drive the improvement efforts in all affected business processes.
6	Business performance measurement (including product/service quality level, customer and employee satisfaction levels, delivery time) must be given the same priority as financial measures (profit/loss, etc.).
7	Training and education are vital elements when adopting TQM.
8	Quality systems standards such as ISO 9000 will not, on their own ensure high quality of products and services.
9	Statistical techniques (such as statistical process control, design of experiments, etc.) are important to ensure consistency of products and process quality.
10	Quality improvement can only be conducted when proper policies are in place.
11	Supplier involvement is vital in supporting quality improvement.
12	Management leadership, commitment and support determine the success of new change initiatives.
13	Management must provide adequate resources in every aspect of the business.
14	A work environment, which is conducive to improvement is created through management worker partnership.
15	Initiatives such as Kaizen, suggestion schemes, quality circles, etc. will motivate employees to participate in quality improvement.

D4: Mean score for each statement among sector activities (n=180)

TQM statements*	Agriculture		Manufacturing		Services		Construction	
	Mean**	SD	Mean	SD	Mean	SD	Mean	SD
1	4.40	0.55	4.48	0.50	4.25	0.45	4.44	0.65
2	4.40	0.55	4.44	0.50	4.37	0.50	4.64	0.48
3	5.00	0.00	4.63	0.49	4.63	0.50	4.67	0.47
4	4.40	0.55	4.29	0.46	4.19	0.75	4.34	0.47
5	4.40	0.55	4.33	0.47	4.69	0.48	4.50	0.50
6	5.00	0.00	4.69	0.47	4.75	0.45	4.64	0.48
7	2.60	1.34	4.19	0.77	5.00	0.47	4.09	0.52
8	4.40	0.55	4.75	0.56	4.63	0.62	4.52	0.70
9	4.40	0.55	4.81	0.40	4.69	0.48	4.13	0.48
10	4.40	0.55	4.31	0.47	3.87	1.02	4.21	0.48
11	5.00	0.00	4.42	0.50	4.38	0.50	4.74	0.44
12	5.00	0.00	4.83	0.38	4.69	0.48	4.98	0.14
13	4.40	0.55	4.50	0.50	4.44	0.51	4.68	0.47
14	4.00	0.64	4.35	0.48	4.19	0.98	4.11	0.31
15	4.40	0.55	4.62	0.49	4.69	0.48	4.59	0.49
Total	66.2	6.29	67.6	7.44	67.4	8.67	67.2	7.08
Overall score	4.41	0.42	4.51	0.50	4.50	0.58	4.48	0.47

*TQM statements are detailed in table D3.

**The mean score is based on participants level of agreement with each statement on a scale of 1 (strongly disagree) to 5 (Strongly agree).

D5: Mean score for each statement among ISO 9000 firms and non-ISO 9000 firms in Scotland

TQM statements*	ISO Certification			
	ISO 9000 Firms		Non-ISO 9000 Firms	
	Mean**	SD	Mean	SD
1	4.51	0.50	4.38	0.65
2	4.61	0.49	4.51	0.50
3	4.78	0.42	4.58	0.50
4	4.51	0.50	4.16	0.45
5	4.67	0.47	4.31	0.46
6	4.76	0.43	4.62	0.49
7	4.11	0.63	4.17	1.98
8	4.68	0.61	4.52	0.68
9	4.60	0.49	4.22	0.55
10	4.50	0.50	3.99	0.49
11	4.70	0.46	4.56	0.50
12	4.85	0.36	4.96	0.20
13	4.55	0.50	4.62	0.49
14	4.41	0.50	3.98	0.32
15	4.72	0.45	4.50	0.50
Total	68.95	7.31	66.08	8.76
Overall score	4.60	0.49	4.40	0.58
*TQM statements are detailed in table D3.				
**The mean score is based on participants level of agreement with each statement on a scale of 1 (strongly disagree) to 5 (Strongly agree).				

D6: EQA constructs and sub criteria

1 LEADERSHIP

- 1.1. Regular reviews of quality performance on products/services are important.
- 1.2. Quality issues are given top priority as criteria when making decisions.
- 1.3. The principles of total quality are reinforced to all members of the organisation.
- 1.4. Close contact with customers and suppliers is maintained on a regular basis.
- 1.5. Recognition and rewards are important among individuals and teams.

- 1.6. Appropriate resources and assistance are available to support quality improvement activities.

2. POLICY AND STRATEGY

- 2.1. Strategic planning is linked to quality values.
- 2.2. The planning process includes continuous quality improvement.
- 2.3. Organisations have clear quality goals.
- 2.4. Relevant information is used as an input to organisational policies, strategies and plans.
- 2.5. Strategic plans are updated regularly and aligned to the achievement of business goals, policies and strategies.
- 2.6. Regular updating and improvement of policy and strategy are reviewed with senior managers.
- 2.7. New policies, strategies and plans are communicated to staff.

3. PEOPLE MANAGEMENT

- 3.1. It is important for your staff to understand how their tasks fit into an overall plan of things.
- 3.2. Staff are encouraged to develop new ways of doing their job better through empowerment.
- 3.3. The training , recruitment, and career progression processes are important to develop skills and capabilities.
- 3.4. Team and individual targets and objectives are set and reviewed regularly.
- 3.5. Staff focused on continuous improvement are rewarded.
- 3.6. Long term business goals are clearly communicated.
- 3.7. Training needs are identified through personal appraisal.

4. RESOURCES

- 4.1. Resources management is important in supporting organisational policy and strategy.
- 4.2. Organisational information is analysed systematically on a regular basis to support organisational policy and strategy.
- 4.3. Financial data is reviewed regularly to support and determine the required financial resources.
- 4.4. A list of current and potential suppliers is available and they are contacted on a regular basis to ensure quality and to determine costs.

5. PROCESS

- 5.1. Innovation and creativity in process improvement is important.
- 5.2. Identifying and defining critical processes are important within your organisation.
- 5.3. Statistical process control and other methods are used to control and monitor your production processes.
- 5.4. Managers monitor all production processes and introduce continuous improvement whenever possible.
- 5.5. Prevention and correction details are always included in daily business operations.
- 5.6. Processes are reviewed regularly and discussed with team members.

6. PEOPLE SATISFACTION

- 6.1. Employee motivation, training, participation and involvement are important issues.
- 6.2. Employees are asked for their views .
- 6.3. Employee recognition and rewards are important.
- 6.4. Responsible managers are aware of factors likely to influence employee satisfaction.

7. CUSTOMER SATISFACTION

- 7.1. Judgement by the customers of the organisation's products, services and customer relationships is important.
- 7.2. Customers are asked if they are satisfied with the product/service they purchased from your organisation.
- 7.3. All customer complaints are recorded.
- 7.4. Close contact with customers is maintained by warranties/policies, etc.
- 7.5. Judgement by the organisation manager of customer satisfaction is important.
- 7.6. Data collection to monitor changes in customer satisfaction is important (i.e. what customers expect in products/services).
- 7.7. Customer complaints are analysed to improve products/services.
- 7.8. Comparisons of customer satisfaction with competitors and internal indicators are carried out.

8. IMPACT ON SOCIETY

- 8.1. The views of the community at large of the organisation's impact on society are important.
- 8.2. It is important for responsible managers to monitor the organisation's impact on society.

9. RESULTS

- 9.1. Organisational profitability will increase due to quality consciousness.
- 9.2. Quality improvement efforts are important in increasing sales revenue and profitability.
- 9.3. The effective management of resources and processes will lead to an increase in efficiency and effectiveness of your organisation.
- 9.4. People management will lead to employee and customer satisfaction.
- 9.5. Management of all the above issues will lead to organisational success and continuing success.

D7: Mean rating of the leadership construct and its sub-criteria

Leadership construct and its sub-criteria	Mean score*	SD
Leadership construct	4.56	0.21
Leadership construct sub-criteria		
Regular reviews of quality performance on products/services are important.	4.65	0.48
Quality issues are given top priority as criteria when making decisions.	4.53	0.70
The principles of total quality are reinforced to all members of the organisation.	4.59	0.56
Close contact with customers and suppliers is maintained on a regular basis.	4.77	0.42
Recognition and rewards are important among individuals and teams.	4.18	0.59
Appropriate resources and assistance are available to support quality improvement activities.	4.17	0.60
*The mean score is based on participants level of agreement with each statement on a scale of 1 (strongly disagree) to 5 (strongly agree).		

D8: Mean rating of policy and strategy construct and its sub-criteria

Policy and strategy construct and its sub-criteria	Mean score*	SD
Policy and strategy	3.94	0.64
Policy and strategy construct sub-criteria		
Strategic planning is linked to quality values.	3.71	1.11
The planning process includes continuous quality improvement.	3.84	1.01
Organisations have clear quality goals.	4.71	0.46
Relevant information is used as an input to organisational policies, strategies and plans.	4.31	0.68
Strategic plans are updated regularly and aligned to the achievement of business goals, policies and strategies.	3.81	0.99
Regular updating and improvement of policy and strategy are reviewed with senior managers.	3.64	1.02
New policies, strategies and plans are communicated to staff.	3.60	1.09
*The mean score is based on participants level of agreement with each statement on a scale of 1 (strongly disagree) to 5 (strongly agree).		

D9: Mean rating of people management construct and its sub-criteria

People management construct and its sub-criteria	Mean score*	SD
People management	3.94	0.64
People management construct sub-criteria		
It is important for your staff to understand how their tasks fit into an overall plan of things.	4.57	0.59
Staff encouraged to develop new ways of doing their job better through empowerment.	4.73	0.44
The training, recruitment, and career progression processes are important to develop skills and capabilities.	3.86	0.82
Team and individual targets and objectives are set and reviewed regularly.	3.53	1.12
Staff focused on continuous improvement are rewarded.	4.48	0.65
Long term business goals are clearly communicated.	3.27	1.21
Training needs are identified through personal appraisal.	3.33	1.26
<i>*The mean score is based on participants level of agreement with each statement on a scale of 1 (strongly disagree) to 5 (strongly agree).</i>		

D10: Mean rating of resources construct and its sub-criteria

Resources construct and its sub-criteria	Mean score*	SD
Resources	4.50	0.36
Resources construct sub-criteria		
Resources management is important in supporting organisational policy and strategy.	4.38	0.49
Organisational information is analysed systematically on a regular basis to support organisational policy and strategy.	4.44	0.74
Financial data is reviewed regularly to support and determine the required financial resources.	4.61	0.64
A list of current and potential suppliers is available and they are contacted on a regular basis to ensure quality and to determine costs.	4.64	0.48
<i>*The mean score is based on participants level of agreement with each statement on a scale of 1 (strongly disagree) to 5 (strongly agree).</i>		

D11: Mean rating of process construct and its sub-criteria

Process construct and its sub-criteria	Mean score*	SD
Process	4.35	0.38
Process construct sub-criteria		
Innovation and creativity in process improvement is important.	4.31	0.54
Identifying and defining critical processes are important within your organisation.	4.13	0.48
Statistical process control and other methods are used to control and monitor your production processes.	4.36	0.71
Managers monitor all production processes and introduce continuous improvement whenever possible.	4.59	0.49
Prevention and correction details are always included in daily business operations.	4.53	0.72
Processes are reviewed regularly and discussed with team members.	4.19	1.08
<i>*The mean score is based on participants level of agreement with each statement on a scale of 1 (strongly disagree) to 5 (strongly agree).</i>		

D12: Mean rating of people satisfaction construct and its sub-criteria

People satisfaction construct and its sub-criteria	Mean score*	SD
People satisfaction	4.23	0.49
People satisfaction construct sub-criteria		
Employee motivation, training, participation and involvement are important issues.	4.54	0.70
Employees are asked for their views.	3.67	1.19
Employee recognition and rewards are important.	4.18	0.59
Responsible managers are aware of factors likely to influence employee satisfaction.	4.66	0.48
*The mean score is based on participants level of agreement with each statement on a scale of 1 (strongly disagree) to 5 (strongly agree).		

D13: Mean rating of customer satisfaction construct and its sub-criteria

Customer satisfaction construct and its sub-criteria	Mean score*	SD
Customer satisfaction	4.49	0.25
Customer satisfaction construct sub-criteria		
Judgement by the customers of the organisation's products, services and customer relationships is important.	4.82	0.39
Customers are asked if they are satisfied with the product/service they purchased from your organisation.	4.55	0.50
All customer complaints are recorded.	4.58	0.51
Close contact with customers is maintained by warranties/policies, etc.	4.79	0.42
Judgement by the organisation manager of customer satisfaction is important.	4.57	0.50
Data collection to monitor changes in customer satisfaction is important (i.e. what customers expect in products/services).	4.61	0.49
Customer complaints are analysed to improve products/services.	4.54	0.50
Comparisons of customer satisfaction with competitors and internal indicators are carried out.	4.09	0.61
*The mean score is based on participants level of agreement with each statement on a scale of 1 (strongly disagree) to 5 (strongly agree).		

D14: Mean rating of impact on society construct and its sub-criteria

Impact on society construct and its sub-criteria	Mean score*	SD
Impact on society	4.31	0.72
Impact on society construct sub-criteria		
The views of the community at large of the organisation's impact on society are important.	4.31	0.70
It is important for responsible managers to monitor the organisation's impact on society.	4.30	0.80
*The mean score is based on participants level of agreement with each statement on a scale of 1 (strongly disagree) to 5 (strongly agree).		

D15: Mean rating of business results construct and its sub-criteria

Business results construct and its sub-criteria	Mean score*	SD
Business results	4.52	0.29
Business results construct sub-criteria		
Organisational profitability will increase due to quality consciousness.	4.65	0.54
Quality improvement efforts are important in increasing sales revenue and profitability.	4.49	0.50
The effective management of resources and processes will lead to an increase in efficiency and effectiveness of your organisation.	4.24	0.43
People management will lead to employee and customer satisfaction.	4.37	0.48
Management of all the above issues will lead to organisational success and continuing success.	4.87	0.35
*The mean score is based on participants level of agreement with each statement on a scale of 1 (strongly disagree) to 5 (strongly agree).		

D16: Mean rating of the leadership construct and its sub-criteria among Manufacturing and Service industry

Leadership construct and its sub-criteria	Organisations within different industry				T-test P-value**
	Manufacturing		Service		
	Mean score*	SD	Mean score*	SD	
Leadership construct	4.55	0.26	4.59	0.16	0.002
Leadership construct sub-criteria					
Regular reviews of quality performance on products/services are important.	4.67	0.47	4.63	0.49	0.220
Quality issues are given top priority as criteria when making decisions.	4.33	0.83	4.65	0.54	0.018
The principles of total quality are reinforced to all members of the organisation.	4.50	0.50	4.72	0.45	0.001
Close contact with customers and suppliers is maintained on a regular basis.	4.56	0.50	4.88	0.32	0.000
Recognition and rewards are important among individuals and teams.	4.29	0.46	4.18	0.57	0.593
Appropriate resources and assistance are available to support quality improvement activities.	4.46	0.50	4.17	0.38	0.000
*The mean score is based on participants level of agreement with each statement on a scale of 1 (strongly disagree) to 5 (strongly agree).					
**P value denotes significant at P<0.05 (two tailed)					

D17: Mean rating of the policy and strategy construct and its sub-criteria among Manufacturing and Service industry

Policy and strategy construct and its sub-criteria	Organisations within different industry				T-test P-value**
	Manufacturing		Service		
	Mean score*	SD	Mean score*	SD	
Policy and strategy construct	3.61	0.69	4.20	0.37	0.000
Policy and strategy construct sub-criteria					
Strategic planning is linked to quality values.	3.08	1.38	4.11	0.67	0.000
The planning process includes continuous quality improvement.	3.31	1.38	4.13	0.68	0.000
Organisations have clear quality goals.	4.48	0.50	4.87	0.34	0.000
Relevant information is used as an input to organisational policies, strategies and plans.	4.38	0.49	4.40	0.49	0.637
Strategic plans are updated regularly and aligned to the achievement of business goals, policies and strategies.	3.52	1.24	4.03	0.69	0.000
Regular updating and improvement of policy and strategy are reviewed with senior managers.	3.31	1.23	3.95	0.66	0.000
New policies, strategies and plans are communicated to staff.	3.23	1.38	3.98	0.62	0.000
<p><i>*The mean score is based on participants level of agreement with each statement on a scale of 1 (strongly disagree) to 5 (strongly agree).</i></p> <p><i>**P value denotes significant at P<0.05 (two tailed)</i></p>					

D18: Mean rating of the people management construct and its sub-criteria among Manufacturing and Service industry

People management construct and its sub-criteria	Organisations within different industry				T-test P-value**
	Manufacturing		Service		
	Mean score*	SD	Mean score*	SD	
People management construct	3.51	0.71	4.24	0.43	0.000
People management construct sub-criteria					
It is important for your staff to understand how their tasks fit into an overall plan of things.	4.56	0.50	4.66	0.47	0.037
Staff encouraged to develop new ways of doing their job better through empowerment.	4.67	0.47	4.82	0.39	0.000
The training, recruitment, and career progression processes are important to develop skills and capabilities.	3.58	1.13	3.96	0.56	0.000
Team and individual targets and objectives are set and reviewed regularly.	2.85	1.30	3.88	0.79	0.000
Staff focused on continuous improvement are rewarded.	4.17	0.38	4.76	0.43	0.047
Long term business goals are clearly communicated.	2.44	1.30	3.81	0.84	0.000
Training needs are identified through personal appraisal.	2.63	1.46	3.86	0.84	0.000
<p><i>*The mean score is based on participants level of agreement with each statement on a scale of 1 (strongly disagree) to 5 (strongly agree).</i></p> <p><i>**P value denotes significant at P<0.05 (two tailed)</i></p>					

D19: Mean rating of the resources construct and its sub-criteria among Manufacturing and Service industry

Resources construct and its sub-criteria	Organisations within different industry				T-test P-value**
	Manufacturing		Service		
	Mean score*	SD	Mean score*	SD	
Resources construct	4.54	0.28	4.53	0.37	0.477
Resources construct sub-criteria					
Resources management is important in supporting organisational policy and strategy.	4.52	0.50	4.35	0.48	0.025
Organisational information is analysed systematically on a regular basis to support organisational policy and strategy.	4.63	0.49	4.50	0.70	0.072
Financial data is reviewed regularly to support and determine the required financial resources.	4.48	0.50	4.65	0.72	0.925
A list of current and potential suppliers is available and they are contacted on a regular basis to ensure quality and to determine costs.	4.56	0.50	4.69	0.46	0.009
*The mean score is based on participants level of agreement with each statement on a scale of 1 (strongly disagree) to 5 (strongly agree).					
**P value denotes significant at $P < 0.05$ (two tailed)					

D20: Mean rating of the process construct and its sub-criteria among Manufacturing and Service industry

Process construct and its sub-criteria	Organisations within different industry				T-test P-value**
	Manufacturing		Service		
	Mean score*	SD	Mean score*	SD	
Process construct	4.35	0.27	4.41	0.37	0.933
Process construct sub-criteria					
Innovation and creativity in process improvement is important.	4.12	0.32	4.46	0.52	0.000
Identifying and defining critical processes are important within your organisation.	4.12	0.32	4.21	0.41	0.002
Statistical process control and other methods are used to control and monitor your production processes.	4.73	0.45	4.24	0.73	0.181
Managers monitor all production processes and introduce continuous improvement whenever possible.	4.50	0.50	4.63	0.49	0.066
Prevention and correction details are always included in daily business operations.	4.60	0.50	4.56	0.74	0.229
Processes are reviewed regularly and discussed with team members.	4.04	1.15	4.43	0.91	0.764
*The mean score is based on participants level of agreement with each statement on a scale of 1 (strongly disagree) to 5 (strongly agree).					
**P value denotes significant at $P < 0.05$ (two tailed)					

D21: Mean rating of the people satisfaction construct and its sub-criteria among Manufacturing and Service industry

People satisfaction construct and its sub-criteria	Organisations within different industry				T-test P-value**
	Manufacturing		Service		
	Mean score*	SD	Mean score*	SD	
People satisfaction construct	4.14	0.57	4.36	0.34	0.000
People satisfaction construct sub-criteria					
Employee motivation, training, participation and involvement are important issues.	4.73	0.45	4.58	0.60	0.014
Employees are asked for their views.	3.10	1.50	3.95	0.91	0.000
Employee recognition and rewards are important.	4.15	0.36	4.31	0.46	0.000
Responsible managers are aware of factors likely to influence employee satisfaction.	4.63	0.49	4.66	0.47	0.494
*The mean score is based on participants level of agreement with each statement on a scale of 1 (strongly disagree) to 5 (strongly agree).					
**P value denotes significant at P<0.05 (two tailed)					

D22: Mean rating of the customer satisfaction construct and its sub-criteria among Manufacturing and Service industry

Customer satisfaction construct and its sub-criteria	Organisations within different industry				T-test P-value**
	Manufacturing		Service		
	Mean score*	SD	Mean score*	SD	
Customer satisfaction construct	4.47	0.22	4.54	0.21	0.096
Customer satisfaction construct sub-criteria					
Judgement by the customers of the organisation's products, services and customer relationships is important.	4.67	0.47	4.89	0.31	0.000
Customers are asked if they are satisfied with the product/service they purchased from your organisation.	4.62	0.49	4.50	0.50	0.017
All customer complaints are recorded.	4.48	0.50	4.67	0.47	0.010
Close contact with customers is maintained by warranties/policies, etc.	4.67	0.47	4.90	0.30	0.000
Judgement by the organisation manager of customer satisfaction is important.	4.65	0.48	4.48	0.50	0.002
Data collection to monitor changes in customer satisfaction is important (i.e. what customers expect in products/services).	4.52	0.50	4.72	0.45	0.001
Customer complaints are analysed to improve products/services.	4.50	0.50	4.59	0.49	0.210
Comparisons of customer satisfaction with competitors and internal indicators are carried out.	4.35	0.59	3.98	0.57	0.001
*The mean score is based on participants level of agreement with each statement on a scale of 1 (strongly disagree) to 5 (strongly agree).					
**P value denotes significant at P<0.05 (two tailed)					

D23: Mean rating of the impact on society construct and its sub-criteria among Manufacturing and Service industry

Impact on society construct and its sub-criteria	Organisations within different industry				T-test P-value**
	Manufacturing		Service		
	Mean score*	SD	Mean score*	SD	
Impact on society construct	4.19	0.90	4.41	0.50	0.059
Impact on society construct sub-criteria					
The views of the community at large of the organisation's impact on society are important.	4.15	0.92	4.41	0.49	0.047
It is important for responsible managers to monitor the organisation's impact on society.	4.23	0.94	4.41	0.55	0.014
<p><i>*The mean score is based on participants level of agreement with each statement on a scale of 1 (strongly disagree) to 5 (strongly agree).</i></p> <p><i>**P value denotes significant at P<0.05 (two tailed)</i></p>					

D24: Mean rating of the business results construct and its sub-criteria among Manufacturing and Service industry

Business results construct and its sub-criteria	Organisations within different industry				T-test P-value**
	Manufacturing		Service		
	Mean score*	SD	Mean score*	SD	
Business results construct	4.50	0.33	4.55	0.28	0.291
Business results construct sub-criteria					
Organisational profitability will increase due to quality consciousness.	4.73	0.45	4.63	0.48	0.010
Quality improvement efforts are important in increasing sales revenue and profitability.	4.52	0.50	4.49	0.50	0.812
The effective management of resources and processes will lead to an increase in efficiency and effectiveness of your organisation.	4.27	0.45	4.23	0.42	0.307
People management will lead to employee and customer satisfaction.	4.25	0.44	4.41	0.49	0.000
Management of all the above issues will lead to organisational success and continuing success.	4.75	0.44	4.96	0.24	0.000
<p><i>*The mean score is based on participants level of agreement with each statement on a scale of 1 (strongly disagree) to 5 (strongly agree).</i></p> <p><i>**P value denotes significant at P<0.05 (two tailed)</i></p>					

D25: Mean rating of the leadership construct and its sub-criteria among ISO and Non-ISO certified firms

Leadership construct and its sub-criteria	ISO certification				T-test P-value**
	ISO certified		Non-ISO certified		
	Mean score*	SD	Mean score*	SD	
Leadership construct	4.66	0.23	4.47	0.15	0.000
Leadership construct sub-criteria					
Regular reviews of quality performance on products/services are important.	4.82	0.39	4.51	0.50	0.000
Quality issues are given top priority as criteria when making decisions.	4.57	0.63	4.50	0.75	0.316
The principles of total quality are reinforced to all members of the organisation.	4.66	0.61	4.54	0.50	0.720
Close contact with customers and suppliers is maintained on a regular basis.	4.71	0.46	4.83	0.38	0.000
Recognition and rewards are important among individuals and teams.	4.30	0.60	4.07	0.56	0.001
Appropriate resources and assistance are available to support quality improvement activities.	4.29	0.73	4.07	0.44	0.000
<p><i>*The mean score is based on participants level of agreement with each statement on a scale of 1 (strongly disagree) to 5 (strongly agree).</i></p> <p><i>**P value denotes significant at P<0.05 (two tailed)</i></p>					

D26: Mean rating of the policy and strategy construct and its sub-criteria among ISO and Non-ISO certified firms

Policy and strategy construct and its sub-criteria	ISO certification				T-test P-value**
	ISO certified		Non-ISO certified		
	Mean score*	SD	Mean score*	SD	
Policy and strategy construct	4.04	0.58	3.85	0.67	0.126
Policy and strategy construct sub-criteria					
Strategic planning is linked to quality values.	3.89	1.14	3.55	1.06	0.864
The planning process includes continuous quality improvement.	4.07	1.04	3.65	0.95	0.953
Organisations have clear quality goals.	4.65	0.48	4.76	0.43	0.002
Relevant information is used as an input to organisational policies, strategies and plans.	4.38	0.70	4.24	0.66	0.120
Strategic plans are updated regularly and aligned to the achievement of business goals, policies and strategies.	3.96	0.79	3.67	1.11	0.000.001
Regular updating and improvement of policy and strategy are reviewed with senior managers.	3.84	0.88	3.48	1.10	0.000
New policies, strategies and plans are communicated to staff.	3.49	1.26	3.69	0.91	0.111
<p><i>*The mean score is based on participants level of agreement with each statement on a scale of 1 (strongly disagree) to 5 (strongly agree).</i></p> <p><i>**P value denotes significant at P<0.05 (two tailed)</i></p>					

D27: Mean rating of the people management construct and its sub-criteria among ISO and Non-ISO certified firms

People management construct and its sub-criteria	ISO certification				T-test P-value**
	ISO certified		Non-ISO certified		
	Mean score*	SD	Mean score*	SD	
People management construct	4.00	0.59	3.89	0.68	0.135
People management construct sub-criteria					
It is important for your staff to understand how their tasks fit into an overall plan of things.	4.70	0.54	4.46	0.61	0.021
Staff encouraged to develop new ways of doing their job better through empowerment.	4.79	0.41	4.68	0.47	0.001
The training, recruitment, and career progression processes are important to develop skills and capabilities.	4.05	0.65	3.69	0.91	0.009
Team and individual targets and objectives are set and reviewed regularly.	3.74	1.00	3.35	1.18	0.001
Staff focused on continuous improvement are rewarded.	4.39	0.68	4.55	0.61	0.501
Long term business goals are clearly communicated.	3.30	1.19	3.24	1.24	0.624
Training needs are identified through personal appraisal.	3.29	1.29	3.37	1.25	0.288
*The mean score is based on participants level of agreement with each statement on a scale of 1 (strongly disagree) to 5 (strongly agree).					
**P value denotes significant at P<0.05 (two tailed)					

D28: Mean rating of the resources construct and its sub-criteria among ISO and Non-ISO certified firms

Resources construct and its sub-criteria	ISO certification				T-test P-value**
	ISO certified		Non-ISO certified		
	Mean score*	SD	Mean score*	SD	
Resources construct	4.54	0.46	4.46	0.26	0.001
Resources construct sub-criteria					
Resources management is important in supporting organisational policy and strategy.	4.52	0.50	4.27	0.44	0.000
Organisational information is analysed systematically on a regular basis to support organisational policy and strategy.	4.50	0.92	4.40	0.55	0.007
Financial data is reviewed regularly to support and determine the required financial resources.	4.54	0.79	4.66	0.48	0.012
A list of current and potential suppliers is available and they are contacted on a regular basis to ensure quality and to determine costs.	4.67	0.47	4.61	0.49	0.105
*The mean score is based on participants level of agreement with each statement on a scale of 1 (strongly disagree) to 5 (strongly agree).					
**P value denotes significant at P<0.05 (two tailed)					

D29: Mean rating of the process construct and its sub-criteria among ISO and Non-ISO certified firms

Process construct and its sub-criteria	ISO certification				T-test P-value**
	ISO certified		Non-ISO certified		
	Mean score*	SD	Mean score*	SD	
Process construct	4.37	0.50	4.33	0.24	0.001
Process construct sub-criteria					
Innovation and creativity in process improvement is important.	4.28	0.61	4.33	0.47	0.210
Identifying and defining critical processes are important within your organisation.	4.21	0.58	4.07	0.36	0.000
Statistical process control and other methods are used to control and monitor your production processes.	4.29	0.90	4.41	0.49	0.016
Managers monitor all production processes and introduce continuous improvement whenever possible.	4.71	0.46	4.50	0.50	0.000
Prevention and correction details are always included in daily business operations.	4.44	0.92	4.61	0.49	0.001
Processes are reviewed regularly and discussed with team members.	4.28	1.06	4.11	1.10	0.470
<p><i>*The mean score is based on participants level of agreement with each statement on a scale of 1 (strongly disagree) to 5 (strongly agree).</i> <i>**P value denotes significant at P<0.05 (two tailed)</i></p>					

D30: Mean rating of the people satisfaction construct and its sub-criteria among ISO and Non-ISO certified firms

People satisfaction construct and its sub-criteria	ISO certification				T-test P-value**
	ISO certified		Non-ISO certified		
	Mean score*	SD	Mean score*	SD	
People satisfaction construct	4.33	0.54	4.15	0.43	0.235
People satisfaction construct sub-criteria					
Employee motivation, training, participation and involvement are important issues.	4.73	0.80	4.38	0.55	0.599
Employees are asked for their views.	3.73	1.17	3.62	1.21	0.219
Employee recognition and rewards are important.	4.21	0.68	4.15	0.50	0.016
Responsible managers are aware of factors likely to influence employee satisfaction.	4.84	0.37	4.50	0.50	0.000
<p><i>*The mean score is based on participants level of agreement with each statement on a scale of 1 (strongly disagree) to 5 (strongly agree).</i> <i>**P value denotes significant at P<0.05 (two tailed)</i></p>					

D31: Mean rating of the customer satisfaction construct and its sub-criteria among ISO and Non-ISO certified firms

Customer satisfaction construct and its sub-criteria	ISO certification				T-test P-value**
	ISO certified		Non-ISO certified		
	Mean score*	SD	Mean score*	SD	
Customer satisfaction construct	4.57	0.26	4.43	0.22	0.021
Customer satisfaction construct sub-criteria					
Judgement by the customers of the organisation's products, services and customer relationships is important.	4.80	0.40	4.83	0.38	0.459
Customers are asked if they are satisfied with the product/service they purchased from your organisation.	4.71	0.46	4.42	0.50	0.001
All customer complaints are recorded.	4.73	0.47	4.46	0.50	0.000
Close contact with customers is maintained by warranties/policies, etc.	4.73	0.47	4.84	0.37	0.001
Judgement by the organisation manager of customer satisfaction is important.	4.68	0.47	4.47	0.50	0.000
Data collection to monitor changes in customer satisfaction is important (i.e. what customers expect in products/services).	4.72	0.45	4.52	0.50	0.000
Customer complaints are analysed to improve products/services.	4.70	0.46	4.41	0.49	0.005
Comparisons of customer satisfaction with competitors and internal indicators are carried out.	4.28	0.74	3.94	0.43	0.000
<p><i>*The mean score is based on participants level of agreement with each statement on a scale of 1 (strongly disagree) to 5 (strongly agree).</i></p> <p><i>**P value denotes significant at P<0.05 (two tailed)</i></p>					

D32: Mean rating of the impact on society construct and its sub-criteria among ISO and Non-ISO certified firms

Impact on society construct and its sub-criteria	ISO certification				T-test P-value**
	ISO certified		Non-ISO certified		
	Mean score*	SD	Mean score*	SD	
Impact on society construct	4.40	0.66	4.22	0.75	0.802
Impact on society construct sub-criteria					
The views of the community at large of the organisation's impact on society are important.	4.40	0.63	4.23	0.74	0.900
It is important for responsible managers to monitor the organisation's impact on society.	4.40	0.78	4.21	0.82	0.532
<p><i>*The mean score is based on participants level of agreement with each statement on a scale of 1 (strongly disagree) to 5 (strongly agree).</i></p> <p><i>**P value denotes significant at P<0.05 (two tailed)</i></p>					

D33: Mean rating of the business results construct and its sub-criteria among ISO and Non-ISO certified firms

Business results construct and its sub-criteria	ISO certification				T-test P-value**
	ISO certified		Non-ISO certified		
	Mean score*	SD	Mean score*	SD	
Business results construct	4.67	0.27	4.40	0.25	0.012
Business results construct sub-criteria					
Organisational profitability will increase due to quality consciousness.	4.83	0.38	4.50	0.61	0.000
Quality improvement efforts are important in increasing sales revenue and profitability.	4.74	0.44	4.28	0.45	0.559
The effective management of resources and processes will lead to an increase in efficiency and effectiveness of your organisation.	4.41	0.50	4.10	0.30	0.000
People management will lead to employee and customer satisfaction.	4.48	0.50	4.28	0.45	0.000
Management of all the above issues will lead to organisational success and continuing success.	4.90	0.30	4.85	0.39	0.032
<p><i>*The mean score is based on participants level of agreement with each statement on a scale of 1 (strongly disagree) to 5 (strongly agree).</i></p> <p><i>**P value denotes significant at P<0.05 (two tailed)</i></p>					

D34: Mean rating of the leadership construct and its sub-criteria among small and medium sized firms

Leadership construct and its sub-criteria	Firm size				ANOVA test F-value**
	Small firms		Medium firms		
	Mean score*	SD	Mean score*	SD	
Leadership construct	4.50	0.22	4.61	0.20	0.005
Leadership construct sub-criteria					
Regular reviews of quality performance on products/services are important.	4.62	0.49	4.66	0.48	0.536
Quality issues are given top priority as criteria when making decisions.	4.36	0.83	4.63	0.60	0.150
The principles of total quality are reinforced to all members of the organisation.	4.58	0.58	4.62	0.56	0.798
Close contact with customers and suppliers is maintained on a regular basis.	4.79	0.41	4.79	0.33	0.033
Recognition and rewards are important among individuals and teams.	4.15	0.77	4.20	0.45	0.451
Appropriate resources and assistance are available to support quality improvement activities.	4.15	0.59	4.18	0.56	0.917
<p><i>*The mean score is based on participants level of agreement with each statement on a scale of 1 (strongly disagree) to 5 (strongly agree).</i></p> <p><i>**F value denotes significant at P<0.05 (two tailed)</i></p>					

D35: Mean rating of the policy and strategy construct and its sub-criteria among small and medium sized firms

Policy and strategy construct and its sub-criteria	Firm size				ANOVA test F-value**
	Small		Medium		
	Mean score*	SD	Mean score*	SD	
Policy and strategy construct	3.74	0.75	4.06	0.54	0.021
Policy and strategy construct sub-criteria					
Strategic planning is linked to quality values.	3.44	1.31	3.90	0.91	0.061
The planning process includes continuous quality improvement.	3.52	1.21	4.06	0.80	0.008
Organisations have clear quality goals.	4.82	0.39	4.66	0.47	0.045
Relevant information is used as an input to organisational policies, strategies and plans.	4.11	0.68	4.42	0.66	0.045
Strategic plans are updated regularly and aligned to the achievement of business goals, policies and strategies.	3.50	1.15	3.99	0.84	0.021
Regular updating and improvement of policy and strategy are reviewed with senior managers.	3.35	1.27	3.82	0.82	0.057
New policies, strategies and plans are communicated to staff.	3.55	1.17	3.62	1.04	0.394
*The mean score is based on participants level of agreement with each statement on a scale of 1 (strongly disagree) to 5 (strongly agree).					
**F value denotes significant at P<0.05 (two tailed)					

D36: Mean rating of the people management construct and its sub-criteria among small and medium sized firms

People management construct and its sub-criteria	Firm size				ANOVA test F-value**
	Small		Medium		
	Mean score*	SD	Mean score*	SD	
People management construct	3.74	0.76	4.06	0.53	0.011
People management construct sub-criteria					
It is important for your staff to understand how their tasks fit into an overall plan of things.	4.47	0.59	4.65	0.53	0.032
Staff encouraged to develop new ways of doing their job better through empowerment.	4.62	0.49	4.80	0.39	0.018
The training, recruitment, and career progression processes are important to develop skills and capabilities.	3.65	1.13	3.99	0.54	0.075
Team and individual targets and objectives are set and reviewed regularly.	3.23	1.36	3.72	0.86	0.025
Staff focused on continuous improvement are rewarded.	4.41	0.66	4.53	0.62	0.527
Long term business goals are clearly communicated.	2.97	1.34	3.43	1.12	0.044
Training needs are identified through personal appraisal.	2.97	1.36	3.51	1.15	0.004
*The mean score is based on participants level of agreement with each statement on a scale of 1 (strongly disagree) to 5 (strongly agree).					
**F value denotes significant at P<0.05 (two tailed)					

D37: Mean rating of the resources construct and its sub-criteria among small and medium sized firms

Resources construct and its sub-criteria	Firm size				ANOVA test F-value**
	Small		Medium		
	Mean score*	SD	Mean score*	SD	
Resources construct	4.45	0.38	4.54	0.24	0.066
Resources construct sub-criteria					
Resources management is important in supporting organisational policy and strategy.	4.32	0.47	4.41	0.49	0.200
Organisational information is analysed systematically on a regular basis to support organisational policy and strategy.	4.36	0.78	4.48	0.72	0.697
Financial data is reviewed regularly to support and determine the required financial resources.	4.53	0.66	4.68	0.51	0.005
A list of current and potential suppliers is available and they are contacted on a regular basis to ensure quality and to determine costs.	4.64	0.48	4.66	0.47	0.339
<p><i>*The mean score is based on participants level of agreement with each statement on a scale of 1 (strongly disagree) to 5 (strongly agree).</i></p> <p><i>**F value denotes significant at P<0.05 (two tailed)</i></p>					

D38: Mean rating of the process construct and its sub-criteria among ISO and Non-ISO certified firms

Process construct and its sub-criteria	Firm size				ANOVA test F-value**
	Small		Medium		
	Mean score*	SD	Mean score*	SD	
Process construct	4.27	0.37	4.40	0.34	0.154
Process construct sub-criteria					
Innovation and creativity in process improvement is important.	4.21	0.54	4.38	0.52	0.100
Identifying and defining critical processes are important within your organisation.	4.14	0.35	4.13	0.53	0.182
Statistical process control and other methods are used to control and monitor your production processes.	4.30	0.70	4.39	0.66	0.430
Managers monitor all production processes and introduce continuous improvement whenever possible.	4.45	0.50	4.69	0.46	0.020
Prevention and correction details are always included in daily business operations.	4.64	0.72	4.46	0.67	0.686
Processes are reviewed regularly and discussed with team members.	3.95	1.32	4.33	0.87	0.223
<p><i>*The mean score is based on participants level of agreement with each statement on a scale of 1 (strongly disagree) to 5 (strongly agree).</i></p> <p><i>**F value denotes significant at P<0.05 (two tailed)</i></p>					

D39: Mean rating of the people satisfaction construct and its sub-criteria among small and medium sized firms

People satisfaction construct and its sub-criteria	Firm size				ANOVA test F-value**
	Small		Medium		
	Mean score*	SD	Mean score*	SD	
People satisfaction construct	4.11	0.51	4.30	0.47	0.115
People satisfaction construct sub-criteria					
Employee motivation, training, participation and involvement are important issues.	4.41	0.78	4.61	0.61	0.186
Employees are asked for their views.	3.32	1.23	3.88	1.09	0.014
Employee recognition and rewards are important.	4.09	0.52	4.24	0.61	0.572
Responsible managers are aware of factors likely to influence employee satisfaction.	4.67	0.48	4.65	0.48	0.439
<p><i>*The mean score is based on participants level of agreement with each statement on a scale of 1 (strongly disagree) to 5 (strongly agree).</i></p> <p><i>**F value denotes significant at P<0.05 (two tailed)</i></p>					

D40: Mean rating of the customer satisfaction construct and its sub-criteria among small and medium sized firms

Customer satisfaction construct and its sub-criteria	Firm size				ANOVA test F-value**
	Small		Medium		
	Mean score*	SD	Mean score*	SD	
Customer satisfaction construct	4.47	0.30	4.51	0.22	0.679
Customer satisfaction construct sub-criteria					
Judgement by the customers of the organisation's products, services and customer relationships is important.	4.76	0.43	4.86	0.34	0.159
Customers are asked if they are satisfied with the product/service they purchased from your organisation.	4.64	0.48	4.52	0.49	0.039
All customer complaints are recorded.	4.45	0.50	4.68	0.46	0.008
Close contact with customers is maintained by warranties/policies, etc.	4.73	0.48	4.82	0.39	0.526
Judgement by the organisation manager of customer satisfaction is important.	4.65	0.48	4.51	0.51	0.492
Data collection to monitor changes in customer satisfaction is important (i.e. what customers expect in products/services).	4.39	0.49	4.73	0.44	0.000
Customer complaints are analysed to improve products/services.	4.45	0.50	4.58	0.49	0.068
Comparisons of customer satisfaction with competitors and internal indicators are carried out.	3.95	0.67	4.20	0.54	0.022
<p><i>*The mean score is based on participants level of agreement with each statement on a scale of 1 (strongly disagree) to 5 (strongly agree).</i></p> <p><i>**F value denotes significant at P<0.05 (two tailed)</i></p>					

D41: Mean rating of the impact on society construct and its sub-criteria among small and medium sized firms

Impact on society construct and its sub-criteria	Firm sized				ANOVA test F-value**
	Small		Medium		
	Mean score*	SD	Mean score*	SD	
Impact on society construct	4.07	0.91	4.44	0.53	0.016
Impact on society construct sub-criteria					
The views of the community at large of the organisation's impact on society are important.	4.12	0.87	4.42	0.54	0.067
It is important for responsible managers to monitor the organisation's impact on society.	4.02	1.02	4.46	0.61	0.009
<p><i>*The mean score is based on participants level of agreement with each statement on a scale of 1 (strongly disagree) to 5 (strongly agree).</i></p> <p><i>**F value denotes significant at P<0.05 (two tailed)</i></p>					

D42: Mean rating of the business results construct and its sub-criteria among small and medium sized firms

Business results construct and its sub-criteria	Firm size				ANOVA test F-value**
	Small		Medium		
	Mean score*	SD	Mean score*	SD	
Business results construct	4.44	0.27	4.59	0.29	0.003
Business results construct sub-criteria					
Organisational profitability will increase due to quality consciousness.	4.53	0.66	4.73	0.44	0.099
Quality improvement efforts are important in increasing sales revenue and profitability.	4.41	0.50	4.54	0.51	0.415
The effective management of resources and processes will lead to an increase in efficiency and effectiveness of your organisation.	4.15	0.36	4.32	0.46	0.011
People management will lead to employee and customer satisfaction.	4.26	0.44	4.45	0.49	0.009
Management of all the above issues will lead to organisational success and continuing success.	4.86	0.35	4.89	0.28	0.309
<p><i>*The mean score is based on participants level of agreement with each statement on a scale of 1 (strongly disagree) to 5 (strongly agree).</i></p> <p><i>**F value denotes significant at P<0.05 (two tailed)</i></p>					

APPENDIX E

DESCRIPTION OF THE NEW ENABLERS CRITERIA FOR SELF ASSESSMENT AND BENCHMARKING

1. INNOVATION MANAGEMENT

- **Clarity of goals (Describe the process for developing and achieving clarity of goals concerning process innovations)**
 - Setting goals and targets of process innovations;
 - The use of appropriate communication channels;
 - The utilisation of project timetables to ensure implementation.

- **Generating process innovations (Describe the process for developing new and innovation processes)**
 - Evaluation of the capabilities of existing processes;
 - Matching process capabilities to the requirements of customers;
 - The use of quality function deployment;
 - Linking process innovation to product innovation;
 - Developing new process ideas.

- **Implementation of new processes (Describe the process for ensuring effective implementation of new and innovative processes)**
 - Matching process requirements to the capability to adopt;
 - Managing suppliers involvement in the development and implementation;
 - Making the appropriate changes to the organisation.

- **Continuous improvement (Describe how processes are continually improved to maintain and produce new and innovative processes)**
 - Identifying opportunities for improvement in processes;
 - Integrating process improvement with quality control;
 - Benchmarking process performance;
 - Involving staff in improvement after installation.

2. KNOWLEDGE MANAGEMENT

- **Identification and utilisation of the knowledge a company has.**
 - Do you review your current knowledge base?
 - How do you identify new knowledge?
 - What form is your current and new knowledge in?
 - How accessible is it?

- **Identification of sharing knowledge methods.**
 - What methods are used to manage knowledge sharing?

- **Analysis of how knowledge can add value.**
 - What are the opportunities for using the knowledge?
 - What would be the effect of its use?
 - What are the current obstacles to its use?
 - What would be its increased value to the company?

- **Identification of actions that are important in achieving added value.**
 - How to plan the actions to use the knowledge?
 - How to conduct actions?
 - How to monitor actions?

- **Reviewing the use of the knowledge to ensure added value.**
 - Did the use of it produce the desired added value?
 - Did this use create new opportunities?

APPENDIX F

DESCRIPTION OF THE NEW RESULTS CRITERIA

INNOVATION RESULTS MEASURES

- **Process parameters (cost, quality, lead-time, speed)**
 - Process parameter performance versus competitors.
 - Percentage improvement over 12 months.

- **Installation lead time**
 - Time taken from start to finish.
 - Percentage of new and successful process innovations.

- **Costs**
 - Total R&D expenditure.
 - Planned versus actual project spending

- **New process**
 - Number of new processes per year

- **Continuous improvement**
 - Number of improvement suggestions per employee per year.
 - Number of improvement suggestions per employee implemented per year.
 - Average annual improvement in process parameters.

- **Review of progress**
 - Review of achievements
 - Set targets with clear goals