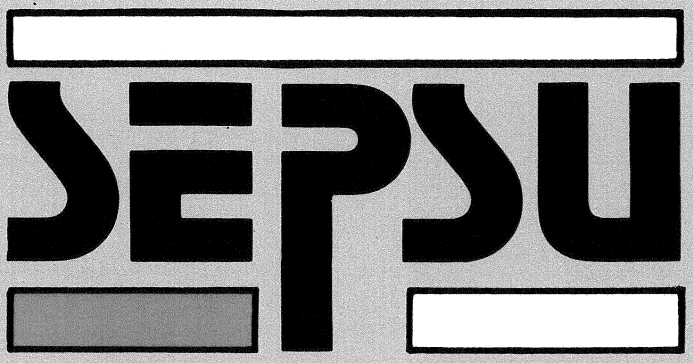

Policy Study No. 10

UK QUALITY MANAGEMENT – POLICY OPTIONS

SCIENCE AND ENGINEERING POLICY STUDIES UNIT

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of
The Royal Society and The Royal Academy of Engineering

FOREWORD

Quality management is hardly a subject to stir the blood. Yet, affecting all spheres of organized activity, it is one of the critical factors underpinning national competitiveness. It is not an optional extra that can be safely left to someone else to worry about.

Britain has a history of active concern with quality management, and led the world in codification of third party assessment. BS 5750 was published 15 years ago and has gained wide usage, first in the UK and then, as ISO 9000, throughout the world. And we have a healthy number of world class enterprises whose commitment to continuous improvement through a total systems approach is bringing competitive advantage.

There are many studies of particular detailed aspects of quality management. In the study reported here, SEPSU presents an authoritative and non-partisan review of the evidence concerning the practice of quality management as a whole, drawing systematically on the earlier work and adding fresh data. This report identifies significant areas for attention: the limitations as well as the potential advantages of third party assessment based on formal standards; weaknesses in the infrastructure supporting the standards-based approach; the scope for the leadership and coordinating role of Government; the role of education and training in disseminating a real understanding of quality management; the critical importance of paying attention to organizational culture; and new opportunities for companies to develop rigorous approaches to quality management adapted to their individual circumstances. There is much here of direct relevance to those who are implementing quality management initiatives within their own organizations, and to those who are wondering whether they should.

This report presents a valuable analysis of a complex subject, and identifies some substantive policy options. I hope all concerned with quality management in the UK will give it serious consideration.

Sir William Barlow, F.Eng
President, The Royal Academy of Engineering

June 1994

ACKNOWLEDGEMENTS

The Working Group has been fortunate in tackling a subject widely recognized as important, to which many individuals and organizations have therefore been willing to contribute their time and energy. We are most grateful to those who agreed to be interviewed or who sent us views in writing. Their names are at annex A. We benefited greatly from close interactions with the British Quality Foundation (BQF) and its Quality Infrastructure Task Force, conducting a parallel study led by Mr Geoff Dunn. Valuable comments were made by participants in meetings, organized by the British Quality Foundation and by the Quality Managers' Club, at which we presented our emerging findings.

The study has been supported financially by the Institution of Electrical Engineers and the Department of Trade and Industry, and by SEPSU's two parent bodies, The Royal Society and The Royal Academy of Engineering. We warmly acknowledge their generous support.

AUTHORSHIP

This report is the result of a team effort. The team consisted of SEPSU staff and a Working Group comprising a variety of experts. The SEPSU Management Board acknowledges gratefully the energetic participation of all involved.

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SUMMARY

Getting quality management right, in the broader sense of fitness for purpose and competitiveness, is now one of the central determinants of corporate survival. It is a key issue both nationally and at the level of the individual organization. It is also an emotive issue, and one where most of the public debate is conducted by 'quality professionals' rather than by companies and their suppliers and customers. This report is published by SEPSU in the hope that an organization experienced in dispassionate factual analysis of nationally important policy issues can help authoritatively to focus the debate on the points that matter most.

The report is based on four sources of data: analysis of a large number of recent surveys of various aspects of quality management; additional survey data collected by the British Quality Foundation from user organizations; correspondence and interviews with 58 individuals and organizations; and interviews with 12 organizations linked in customer/supplier chains.

The report covers ISO 9000 and Total Quality Management (TQM), but is by no means confined to these two particular approaches to quality management. The analysis is structured into five themes: organizations' experiences of quality standards; special issues facing small companies; the relations between approaches to quality management, company culture and performance; education and training; and the national quality infrastructure.

The concluding chapter summarizes key findings and identifies policy options for consideration by the various parties involved. The six main results are as follows.

1. Companies are more likely to seek ISO 9000 registration as part of their marketing strategy than as part of their quality management strategy (see para. 7.3). Nevertheless, ISO 9000 can bring benefits to a company in terms of greater awareness of quality issues and internal and external cultural changes (paras. 7.5, 7.6). If unimaginatively implemented, however, it can multiply bureaucracy and become a tool for codifying and freezing current practice (para. 7.10).

2. ISO 9000 is due for review in 1996. The policy options for this review include an explicit emphasis on the virtues of simplicity, common sense and fitness for purpose as opposed to legal rigour and exactness; recognition of the role of ISO 9000 in the Single European Market; consideration of ISO 9000 in relation to TQM and other approaches to quality management; and moderation of the costs of implementing ISO 9000 (para. 7.15).

3. A small company has the same need as any other for an effective approach to quality management. There is no merit in diluting the basic principles of ISO 9000 or of other approaches to quality management for the benefit of small companies. Implementation, however, does need to be simplified, with an eye to facilitating a culture of continuous improvement. But it is not self-evident how best to reconcile these two requirements of rigour and simplicity of implementation. A good deal depends on purchasers recognizing in practice that different approaches may be needed for their small and their large suppliers. Consultants and assessors, similarly, need to approach small companies with a due sense of proportion (paras. 7.18 – 7.28).

4. Successful implementation of a programme of quality management demands close attention to company culture - both internal arrangements and external relations - and is likely to lead to changes in company culture. Agents for cultural change include role models, quality awards, systematic self-assessment, benchmarking and partnership sourcing. Attention to human factors is crucial. So, too, is an ungrudging commitment of time and other resources (paras. 7.29 - 7.33).

5. Self-assessment against the quantitative criteria of a major quality award (such as the new UK Quality Award or the Baldrige Award) combines the benefits of an externally validated appraisal structure with the advantages of personal ownership of the process that go with an internally generated initiative. Done properly, self-assessment is a tough experience, and periodically repeated quantitative self-assessments provide a remorseless measure of whether progress is being made. In addition to driving internal change, this could in time constitute a recognized alternative to third party assessment against ISO 9000 as a route for publicly demonstrating a company's quality management capabilities (paras. 7.34 – 7.35).

6. An infrastructure of assessors, certifiers, accreditors and consultants has grown up around ISO 9000 so that customers can be assured about claims made by suppliers about their quality management. UK companies spend £80M p.a. just in fees to certification bodies. There are several serious generic problems with the infrastructure. One is that it is essentially voluntary: assessors do not have to adhere to the Registration Board for Assessors (RBA), certification bodies can practise without being accredited to the National Accreditation Council for Certification Bodies (NACCB), consultants are not obliged to belong to one of the consultants' organizations. So the infrastructure cannot police all the players. A second generic problem is that the RBA and NACCB are, in effect, monopoly suppliers of credibility to their respective constituencies. Their reward systems do not encourage tough behaviour, with the result that membership of RBA or NACCB is not regarded as prima facie evidence of professional competence. A third problem is that the infrastructure is inward-looking: it is not sufficiently focused on the end customer. These matters need to be addressed urgently and vigorously if the infrastructure is not to fall into disrepute (paras. 7.46 – 7.60).

The UK has a history of active concern about the management of quality. There is now a critical opportunity to build on that experience, through imaginative developments at home and active participation in developments at European level. Our findings point to considerations that need to be taken on board if this opportunity is to be exploited in ways that will contribute positively to national competitiveness.

CONTENTS

ANNEXES

FIGURES

1. INTRODUCTION

1.1 This opening chapter explains what we have been trying to do, and why; and the sources of data that we have exploited. Like all SEPSU work, this study is founded on extensive analysis of data. The analysis is presented in chapters 2-6. In the final chapter we comment on some of the key findings and identify some policy options arising from our work. The report is intended for a wide readership: those responsible for national policy on quality management, those who provide various elements of the quality infrastructure, those implementing quality initiatives within their own organizations and those who are wondering whether they should. We hope all will find something of value.

RATIONALE

1.2 Quality is self-evidently important, in all spheres of human endeavour. In the sphere of organized work, quality is now one of the central determinants of competitive survival and thus of national prosperity. This leads to a widespread interest in the management of quality as a dimension of corporate behaviour, manifested in recent years in an outpouring of reports on the subject. But that outpouring does not imply the subject is now fully understood; nor is it wise to interpret these reports as evidence that quality management is merely the latest in an endless series of transiently fashionable solutions to deep-seated problems.

1.3 Much of the policy analysis on quality management issues has been carried out by, or on behalf of, parties with vested interests - primarily bodies concerned with delivering one or another element of the formal quality infrastructure. That does not, of course, *de facto* impugn its integrity, but there is a case for a factually based analysis by a non-partisan body that can nevertheless speak authoritatively. That is what we are attempting in this report.

1.4 Our Working Group comprised individuals expert in many aspects of quality management. SEPSU itself, established jointly by the UK's National Academies of Science and of Engineering, is independent of all partisan groupings involved in quality management yet has been able, during this study, to gain access to a full range of experience in the subject. SEPSU's expertise lies in

factual analysis of policy issues and in identification of policy options, in a manner intended to facilitate the work of policy makers. Our aims in this study are therefore a dispassionate analysis of the current situation and an identification of the key policy issues and options arising.

1.5 The impetus for now undertaking such a project comes from a sense of disarray in the quality business. The past 15 years have seen a gradually accelerating interest in the potential of BS 5750/ISO 9000 as an instrument of quality management, and an escalation in the administrative infrastructure supporting its use. This has been accompanied in more recent years by a growing sense of frustration and disillusion arising from experiences with trying to implement BS 5750/ISO 9000. At the same time other approaches to quality management have come to the fore, of which Total Quality Management is but one example. These may be seen as an opportunity to build on foundations already laid, or as a threat to structures newly established. Either way, the theory and practice of quality management are currently the focus of a good deal of attention at national level and within individual organizations. It is therefore timely to analyse the available evidence and identify policy options.

SCOPE AND DEFINITIONS

1.6 Our formal terms of reference were as follows:-

- *to review Quality Management arrangements and practices employed in the UK, including BS 5750/ISO 9000;*
- *to assess the efficacy of the mechanisms within enterprises with respect to national and international arrangements and with reference inter alia to the customer-supplier relations from the small company perspective;*
- *to identify opportunities for quality management improvements; and*
- *to identify policy options for the future.*

1.7 The terms of reference make explicit mention of BS 5750/ISO 9000 and of small companies; both themes loom large in our report, but without excluding other facets of quality management. Much of our evidence is drawn from companies in the manufacturing sector, with a smaller amount based on the experiences of service organizations.

1.8 For convenience, we shall refer throughout to the 'ISO 9000' family of standards (except where reported speech requires otherwise). This is identical for all practical purposes to BS 5750 or EN 29000.

1.9 We are concerned with quality management, defined by the British Standards Institution (BSI) as 'that aspect of the overall management function that determines and implements the quality policy'. ISO 9000 is part of this and deals with quality systems, i.e. the organisational structure, responsibilities, procedures, processes and resources for implementing quality management. (These and other definitions are given in annex D.) ISO 9000 encourages but does not of itself assure product quality; much confusion has arisen from the assumption that a certified quality system is the necessary and sufficient guarantee of product quality.

1.10 ISO 9000 can serve as a springboard for Total Quality Management (TQM). TQM has various definitions: one offered by BSI is 'a management philosophy embracing all activities through which the needs and expectations of the customer and the community, and the objectives of the organization, are satisfied in the most efficient and cost-effective way by maximizing the potential of all employees in a continuing drive for improvement'. Our report covers a range of different approaches to quality management, including some like benchmarking and self-assessment that have not yet acquired the status of an acronym.

1.11 Our scope covers all kinds of organization, large and small, manufacturing and service. Small companies have characteristics that set them apart from larger companies when it comes to implementing quality management initiatives; they are therefore discussed in a separate chapter, though issues relevant to small companies are raised throughout the report.

SOURCES OF DATA

1.12 This study is driven by data. The data come from four sources:

- recent systematic surveys of various aspects of quality management;
- structured interviews with organizations linked in customer/supplier chains;
- evidence submitted to us by individuals and organizations;

- new survey data provided by the British Quality Foundation (see below).

1.13 It is in the nature of this subject that purely numerical data do not go very far in helping us to understand the issues. Most of our data are ultimately other people's opinions, either gathered more or less systematically through some form of survey ((i) and (iv) below) or expressed individually in newspaper articles, private correspondence etc ((iii) below). Structured interviews ((ii) below) provide an opportunity to explore stated opinions more deeply and separate real experience from prejudice.

(i) Review of previous surveys

1.14 We have studied 28 published surveys during the course of preparing this report. 24 of the surveys were published in 1992 or more recently. Details are given in the bibliography (annex B).

1.15 The surveys vary widely. Some are large systematic studies with carefully structured samples, respectable response rates and balanced commentary. Some are small systematic studies carried out with equal professionalism. Others, large or small, use captive or otherwise slanted samples to generate results of more limited applicability. Still others amount to a series of case studies that highlight critical success factors. Some surveys set out to document a gloom and doom scenario, others set out to preach the virtues of ISO 9000, TQM or quality management generally. The full range is represented, from academic investigation to focused market research to propaganda. Handled with care, it makes a rich source for getting at the realities and (equally important) the perceptions of the current state of quality management in the UK.

(ii) Structured interviews

1.16 The core issues in quality management concern how it is implemented in practice by real organizations, and with what outcomes. The actual experiences of people operating the system, or seeking benefits from it, are what counts. Questions about the principles of quality management or about national or international infrastructure in support of quality management are also important, of course, but subservient to what happens on the ground.

1.17 It became clear early on that one of the key drivers of quality practice was the relation between customers and suppliers: what customers demanded,

or were anticipated as demanding, in terms of quality management was a strong influence on how their suppliers behaved in practice. In defining a sample of organizations in which to conduct structured interviews, we therefore sought out some convenient customer/supplier chains that allowed us to examine inter-organizational relationships from both angles. In this way we interviewed up to 6 individuals from each of 12 organizations linked in customer/supplier chains in the motor, oil and electrical domestic appliance sectors.

1.18 The interviews were typically carried out by teams of two people from the Working Group and SEPSU staff, and involved spending a full day at the organization's premises talking with staff with various different responsibilities. All those whom we approached recognized the importance of the topic and cooperated willingly. A list is given in annex A.

(iii) Other evidence

1.19 In order to cast our net wider, we also interviewed 28 individuals from 20 organizations with interests in particular aspects of quality management, and received written evidence from a further 30 individuals. Details are given in annex A. This evidence proved a valuable adjunct to other sources of data.

(iv) British Quality Foundation

1.20 At about the time we were setting up our own study, the British Quality Foundation (BQF) established its Quality Infrastructure Task Force (QITF) to carry out a study. The QITF study has three components. First, six organizations representative of 'users' of quality management were asked to survey their members about their quality management needs as customer and/or supplier, about whether the needs were being met and about the scope for change. The six organizations were the Association of British Chambers of Commerce, Chartered Institute of Purchasing and Supply, Confederation of British Industry, Federation of Small Businesses, Ministry of Defence Procurement Executive and National Industries Liaison Group on Quality.

1.21 The second step was to present a synthesis of these user surveys to a meeting of organizations responsible for the national quality infrastructure, including the Association of British Certification Bodies, British Standards Institution, Registration Board of Assessors and National Accreditation Council for Certification Bodies. The final step, due for completion in Summer 1994, is to prepare a report arguing the case for change in areas where needs and opportunities have been identified.

1.22 In view of the commonality of interest between the SEPSU and BQF studies, we agreed that they should run in parallel while retaining their distinctive characters, and that there should be cross-membership between the SEPSU Working Group and the BQF QITF. This has been a most valuable resource for our work, both as access to data and as a forum in which to test out preliminary conclusions. The six user surveys just mentioned - some of them very substantial pieces of work - constitute the fourth strand in our collection of data.

STRUCTURE OF THE REPORT

1.23 The report is structured around five broad sets of issues, tackled individually in chapters 2-6. Each chapter brings together and synthesises the pertinent evidence from all four sources of data. The aim is to produce a balanced factual account of what the evidence as a whole reveals.

1.24 SEPSU practice is to focus on disinterested factual analysis, establishing structured information to help policy makers think about how they might proceed on some issue but not ourselves recommending how they should proceed. This report addresses a complex situation and presents a great deal of information. We have therefore provided an extended summary in chapter 7, in the form of a series of key findings and some of the policy options arising from them. We hope this will help to make our material more readily accessible.

1.25 We have made extensive use of published sources; these are listed in the bibliography and referenced as appropriate in the text. To protect confidentiality, unpublished sources (except the BQF QITF surveys) have not been referenced, though all 'witnesses' are listed in annex A.

2. UK EXPERIENCE OF QUALITY STANDARDS

2.1 There is more to quality management than the ISO 9000 family of standards. Indeed, in terms of the scoring system of the UK Quality Award (see annex E), ISO 9000 principally affects only the group of factors termed 'processes', which accounts for just 14% of the total system. The Baldrige Award, similarly, allows just 14% of its marks for quality systems. Yet ISO 9000 has a high profile in debates about quality management. This chapter therefore focuses on organizations' experiences in using ISO 9000 rather than on quality management as a whole. Chapter 6 similarly has an ISO 9000 focus.

MOTIVES

2.2 Formal quality assurance came to the UK in the early 1960s, through the Polaris programme and its associated General Requirements for the Assurance of Quality in Submarines. [Spickernell, 1991] The quality philosophy gradually developed and spread to other areas of defence procurement, for example via the NATO Allied Quality Assurance Publications (AQAP). In the mid 1970s there were moves to extend the lessons learned into the civil sector, coupled with a wish to avoid a major split between defence and civil practice. This led the British Standards Institution to publish BS 5750 in 1979.

2.3 The standard was followed in turn by the ACARD report *Facing international competition*, the White Paper *Standards, quality and international competitiveness*, the National Quality Campaign and the establishment of the assessment and certification infrastructure necessary for BS 5750 to have a real impact on industry. The 1985 NEDC report *Quality and value for money* gave a further boost to third party quality schemes. The International Standards Organization took up the baton in the early 1980s, and in 1987 published the ISO 9000 series of standards modelled very closely on BS 5750.

2.4 The ISO 9000 series has been adapted into national standards systems in more than 60 countries. [Durand et al, 1993] Uptake has been particularly vigorous in the UK in recent years. There were 6 300 companies or company divisions

individually listed on the DTI register of voluntary certifications to BS 5750/ISO 9000 and AQAPs in 1986, seven years after the standard was launched and three years after the ACARD report and the White Paper. By the end of 1993, this number had risen to 24 500, and a total of 31 000 certificates had been issued by accredited certification bodies (see para. 2.25 below).

2.5 Why do individual organizations choose to adopt ISO 9000? The evidence points to a spread of motives: it may be that within any given organization each motive applies with greater or lesser force at different times. There also appears to be a relationship between the balance of motives and the ensuing experience: organizations that use ISO 9000 willingly and positively across a broad spread of objectives are more likely to report benefits than those using it reluctantly. [Seddon, 1993]

2.6 Broadly speaking, a company may register for ISO 9000 because it sees it as making an inherently worthwhile contribution to its overall quality strategy, or because it is under strong external pressure to register. The latter is the most common; it also appears to be the least likely to produce a satisfactory outcome.

2.7 The finding that companies decide to seek registration to ISO 9000 primarily for 'external' reasons is not surprising. The standard was designed to satisfy customers about their suppliers' performance rather than to meet the suppliers' own needs. Many decisions to seek registration to ISO 9000 are still based on perceptions about customers' demands, and thus appear in the context of a general marketing strategy (or a basic survival strategy) rather as a matter of technical or production policy *per se*, still less as a part of an overall total quality strategy.

2.8 For example, in one major survey twice as many managers cited 'to stay in business/to be considered for tenders', 'to maintain/increase market share' and 'marketing benefits' as cited improving in-house quality management *per se* when asked why they had sought registration. [Tennant, 1993(a)]. Another survey found 52% of respondents reporting that ISO 9000 was a customer requirement, as against 21% who became registered to ISO 9000 as a means of improving efficiency. [SGS Yarsley, 1992] A third found 68% of respondents reporting customer or market pressure as the main reason for seeking ISO 9000 registration. [Blackham, 1992] The numbers vary from survey to survey, but the same general finding holds for both manufacturing and service sectors: 'ISO 9000 is now a requirement to remain on a tender list'. [BDO Consulting, 1993]

Since April 1993, companies bidding for some European government and public software contracts have been required to have TickIT certification or its equivalent - an interpretation of the basic ISO 9000 standard to meet the circumstances of the software industry. [Abbott, 1993]

2.9 There is an irony here, in that a survey reported that only 1% of buyers formally insisted on ISO 9000 registration. However, even that survey confirmed the view that registration provided some sort of competitive edge: 75% of respondents said they preferred to buy from suppliers who operated formal quality management systems, half of them specifying ISO 9000 as the preferred system. [IQA, 1993] Other authors suggest that 10-20% of private clients ask for contractors or consultants to be quality assured, with higher take-up rates in the public sector. [Billingham & Stewart, 1993] One of our witnesses told us that half his suppliers were currently registered to ISO 9000 and all would be within a few years - not because he insisted they should, but because both sides recognised that it simplified negotiations. Another was interested in ISO 9000 registration as a step towards forming a judgement about a potential new supplier, but was quite willing to accept other kinds of evidence about the presence or absence of effective quality systems.

2.10 Since most suppliers are themselves also customers, market pressures of this sort can snowball. One commentator has observed:

> *Rather like pyramid selling, once a company has achieved ISO 9000 accreditation its sole aim appears to be to sell it on to suppliers underneath it - backed by the threat of no further orders.* [Anon., 1993(b)]

2.11 The following account of customer pressure is far from unique.

> *Seatronics, as so many other companies have done, embarked upon the journey to ISO 9000 only because of pressure from our customers, who in turn were being pressurized by their customers. We dragged ourselves onto the Quality gravy train, kicking and screaming but acquiescing as every post delivered yet another demand for an uncontrolled copy of our quality manual or a schedule of our procedures, or a host of other things of which we had never heard. They sounded important and with the consequence of not complying with these demands, the less than subtle threat of withdrawing the opportunity of future business, we could no longer fight such an irresistible force.* [Ross, 1993]

2.12 The above story is clearly of an experiment that was destined to fail, and Seatronics jettisoned the endeavour 5 months after starting it. That the Seatronics experience is not unusual is borne out by the Vanguard Consulting survey of 647 organizations registered for ISO 9000, which found a clear correlation between motive and outcome: 73% of those who reported that ISO 9000 had detracted value from their business had embarked on ISO 9000 solely because it was demanded by customers, while only 33% of those reporting to have achieved significant value added from ISO 9000 had embarked on it because of customer demand. [Seddon, 1993]

2.13 The general perception is that public sector organizations are substantially more likely than private sector organizations to insist on their suppliers being registered to ISO 9000. The precise figures vary from survey to survey, but the same story emerges each time. This may reflect in part a perception of public sector organizations as typically large purchasers and therefore likely to be attracted by formal quality assurance procedures, which may at times include ISO 9000. But it may also reflect Government advocacy of the standard, especially by DTI. For example, under the Enterprise Initiative the DTI made grants available to cover up to half the costs of a consultant; many of these grants have been used in connection with advice on how to register for ISO 9000 (see further chapter 6). The Association of British Chambers of Commerce claims that 'many customers have been pushed into asking for ISO 9000 approval by DTI initiatives'. [ABCC, 1993]

2.14 There is an international dimension to the question of motivation. Suppliers operating inside an established market may object to the introduction of procedures that they see as impeding their existing operations. Suppliers outside the market - for example, non-European companies wanting to sell into the Single European Market - may be more willing to accept quality standards as a necessary entry ticket (within the limits of international trade agreements) that is worth paying if the potential prize is big enough. American companies, particularly, accept ISO 9000 as a pre-requisite for doing business in Europe. Conversely, British companies use ISO 9000 registration as part of their strategy for winning sales in other countries.

2.15 As discussed above, there is a variety of practice in the extent to which customers require their suppliers to be registered for ISO 9000. Recognizing the burden that ISO 9000 may impose, some customers are increasingly moving away from a blanket policy and paying attention to the complexity of an order

and the extent to which it is critical to their own business before deciding whether to demand registration. The MoD does not apply the same quality assurance disciplines to procuring paper-clips as to procuring fighter aircraft.

PRODUCT QUALITY

2.16 ISO 9000 is about quality systems and about consistency. It aims to give customers confidence in their suppliers by assuring them that the suppliers have in place management processes that deliver consistency. It encourages but does not of itself assure product quality. However, the approach to quality management through quality systems and TQM has tended to overshadow the fundamental objective of product quality. One witness commented that product quality was more boring than the management disciplines associated with high level systems activity.

2.17 Recognition of the difference between ISO 9000 and product quality has dawned slowly, and in some observers has fuelled a reaction against ISO 9000. Following a survey of its members, the Association of British Chambers of Commerce reported a degree of scepticism about the value of ISO 9000: registration in itself demonstrated an ability to deliver consistent, rather than necessarily good, quality. It might be a useful step towards good quality, but it was certainly no guarantee of it. [ABCC, 1993] The Chartered Institute of Purchasing & Supply similarly reported that ISO 9000 concentrated excessively on 'documented procedures and paperwork, rather than appropriateness of products and systems to the likely production/provision of a consistently high quality product or service'. [CIPS, 1993]. Many customers have been surprised to discover that a process geared towards systems of consistent quality management does not automatically lead to products or services of the quality they require.

2.18 One response to this is for general certification schemes to move into the certification of products as an extension of their basic work with the company in certifying management systems. Examples are the SGS Yarsley group and the Electricity Association Quality Assurance scheme. Major customers like National Power are strongly critical of the emphasis on general management systems at the expense of concern with the particular needs of specific products or sectors.

2.19 A greater emphasis on product quality may emerge from the development of the Single European Market, backed by European standards, EC Directives related to specific products and mutual recognition between the certi-

fication schemes in each Member State. The DTI is keen to strengthen the role of ISO 9000 in improving product quality.

STANDARDS AND CUSTOMIZED DIVERSITY

2.20 Standards are, axiomatically, concerned with consistency. Consistency in a supplier may be a necessary virtue, but it is evidently not a sufficient one. One commentator has even suggested that it is bad for the customer: 'It encourages a lazy approach to procurement. The good procurement specialist should go along and have a look at a supplier to assess its capabilities.' [Billingham & Stewart, 1993] That is, of course, what many of them do: as we discuss further in chapter 6, third party assessment has reduced but has by no means eliminated the practice of second party assessment. The IQA survey found that 63% of customers carried out their own assessments of supplier companies even though the latter had ISO 9000 registration; the figure was higher for non-registered suppliers. [Gaskin, 1993]

2.21 Some commentators argue the need for customized versions of ISO 9000 - simultaneously making the Standard more useful for the real world and diminishing the constancy of approach inherent in the very concept of a standard. The MoD Procurement Executive points to the need for a standard that does not place higher demands on quality assurance than would be warranted by the nature of the transaction under consideration. [MoD, 1993] The National Industries Liaison Group on Quality suggests that revision of ISO 9000 intended to clarify ambiguities could actually be counter-productive, especially for small companies, since it would eliminate the scope for flexible interpretation that makes it easier to apply the Standard to real business situations. [NILGQ, 1993]

2.22 One company we visited argued that ISO 9000 lacked credibility within their sector (the oil industry). They were keen to develop an industry-led sector-specific scheme that took account of their particular circumstances, and that went beyond ISO 9000 by introducing a rating system for the effectiveness of companies. Adherence to a quality process as an end in itself was not enough. This view has been developed strongly in the CRINE report, which argued that certification bodies used assessors who had insufficient industry experience and technical knowledge, leading to sub-standard companies being given ISO 9000 registration and a consequent loss of confidence in ISO 9000 within the oil industry. [Gaisford, 1993].

2.23 The International Standards Organization, however, in its document *Vision 2000*, argues against too much flexibility:

If the ISO 9000 series were to become only the nucleus of a proliferation of localized standards derived from, but varying in content and architecture from, the ISO 9000 series, then there would be little worldwide standardization. The growth of many localized certification schemes would present further complications. Once again, there could be worldwide restraint of trade because of proliferation of standards and inconsistent requirements.

The Association of British Chambers of Commerce shares these misgivings about the proliferation of guidelines. [ABCC, 1993]

2.24 There is, then, a need to achieve some degree of accommodation between the theoretical virtues of consistency and the practical attractions of customized diversity. In the UK, trade associations in a wide variety of sectors have produced formal guidelines for their members, most notably in the service sectors where there appear to be the greatest difficulties in applying ISO 9000 principles. When used well, sector-specific guidelines are regarded as beneficial to both customers and suppliers in the sectors concerned; but they can lead to problems if the guidelines come to take precedence over the basic standard and, for example, are not adjusted to take account of developments in the Standard itself.

IMPLEMENTATION

2.25 It is possible to implement ISO 9000: at least 31 000* groups in the UK have been certified as doing so. Nevertheless, survey results tend to highlight the difficulties that have to be overcome. The difficulties can be overcome; whether they could be mitigated or avoided in the first place is another matter.

2.26 One source of difficulty arises when the decision to register is taken for purely external reasons and implementation is driven by the demands of meeting an externally determined deadline that takes inadequate account of the company's need to adjust its culture and working practices. Under such circumstances registration, if achieved, is reported to impinge only superficially on how the company operates and therefore to deliver few if any of the expected benefits.

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* The figure of 31 000, valid at January 1994, is the total number of certificates issued by certification bodies accredited by NACCB. It includes both certifications falling within the accredited scope of the relevant certification body and certifications outwith the accredited scope. Certificates may be issued to whole companies or to discrete units within a company.

2.27 The use of consultants to guide companies through to registration is common, especially where a DTI grant is available to meet up to half the cost. Over half the companies in the Vanguard survey had used consultants, one third of whom were registered with the DTI. However, there is a widespread impression that consultants can be a mixed blessing. While some will work to high professional standards, others try to impose blanket solutions without troubling to understand the particular circumstances of the company involved. The role of consultants in quality management is addressed more fully in chapter 6.

2.28 The most loudly voiced complaint about implementation concerns the masses of documentation involved, both in the preparation and in the registration itself. 'Within weeks we were reeling under an overload of information and still none the wiser as to how to go about achieving this mystical, but crucial, ISO 9000', reported one company. [Ross, 1993] One report complained that:

> *a complete industry for document management has grown up around an ever increasing volume of paper and demands for information. Vendors and fabricators have stated that documentation and certification accounts for more than 5% of direct costs.* [Gaisford, 1993]

A survey of 500 Scottish companies registered to ISO 9000 found 81% of respondents reporting an increase in bureaucracy as a result of implementation. [Reported in Walsh, 1993] But there is some evidence supporting a contrary view. A report based on telephone interviews with 400 quality managers found only 3% recording increased paperwork. [Tennant, 1993(a)]

2.29 Yet, as the Economist Intelligence Unit report pointed out:

> *Writing procedures is an essential part of quality, but it's the writing of them that is valuable to those involved, much more than the manuals that result. ISO 9000 has made the production of paper an end in itself and people have lost sight of what it is all for.* [Binney, 1992]

In a similar vein, it was suggested to us that, 12-18 months after initial registration, companies should revisit their quality manuals in the light of experience and eliminate any elements that had not made a positive contribution to their activities and that therefore seemed marginal to the real requirements of ISO 9000. The expectation is that this would result in much thinner manuals. It

would also facilitate initiatives to improve performance and counteract unnecessarily prescriptive approaches to implementing ISO 9000.

2.30 Several respondents argued that inappropriate implementation could tend to freeze the *status quo* into a static, codified system inherently inimicable to a culture of continuous improvement. In these circumstances, registration for ISO 9000 achieves nothing more than replacement of one system by another, neither of them agents of dynamic change.

2.31 A further example of how the effectiveness of ISO 9000 as an agent of change may be blunted can be seen in the survey by the Chartered Institute of Purchasing and Supply, which reported that 'many suppliers put great effort into gaining ISO 9000 and subsequent follow-up audits, but in between do not actually operate to the level at which they have been certified'.

2.32 Some believe this almost to be the norm:

> *To many senior managements the exercise of achieving ISO 9000 certification is akin to obtaining a driving licence - there are certain formalities to be gone through, there is a short period during which the Highway Code must be strictly adhered to, but after that it is back to the real world, where the only crime is being caught.* [Parker, 1993]

The solution of more frequent and unannounced audits to encourage continuous use of the registered quality procedures may simply shift the problem from uncommitted companies to over-enthusiastic assessors, but the evidence suggests that companies that conform only in order to impress an external assessor are unlikely to derive much benefit from the experience.

2.33 Many firms implementing ISO 9000 have clear expectations of reducing costs and increasing profits. Cost savings would come from, for example, elimination of wasteful practices and reduction in multiple second party assessments. However, the costs of implementation are not negligible, and may come as a surprise to the companies involved. Findings here are equivocal, to say the least. The IQA survey reported that half its respondents did not know how ISO 9000 registration had affected their quality costs, while the other half divided equally between those who had achieved savings and those who had not. [IQA, 1993] In a survey aimed at demonstrating the benefits of ISO 9000 registration, it was admitted that:

Most companies felt that the expenses incurred had been higher than expected, mainly because they had not taken into account the level of internal costs which would be involved. [SGS Yarsley, 1992]

2.34 One witness suggested that to look for a clear-cut relation between ISO 9000 and the bottom line not only ignored the complex of factors that in practice determine profitability, but also ignored the long-term character of ISO 9000 and the need to adapt company culture alongside company procedures. In a sense, quality management was like other functions such as R&D or advertising: common sense told you it was a wise investment, but unequivocal proof was hard to find, especially if the terms were narrowly drawn.

2.35 Implementing ISO 9000 involves a non-trivial amount of investment, both internally and externally. We heard several complaints about the external costs. The clearest articulation of this comes in the CRINE report, written in the context of the oil industry but applicable elsewhere.

CRINE has identified 'industry culture and business practice' as the root cause of the distrust and the adversarial relationships which are commonplace. These basic problems lead to technical complexity; adversarial management; unnecessary and unbalanced risk of financial exposure; and inadequate communications, education and development. Ultimately, many of the problems identified are significant cost drivers either directly or indirectly. Manning the mistrust is one of the largest and most futile cost drivers of all. [Gaisford, 1993]

QUALITY STANDARDS AND QUALITY MANAGEMENT

2.36 The use of quality standards primarily as a way of pacifying customers leads to a conformance psychology and 'the risk that registration may be achieved as an external badge rather than as a result of a commitment to quality'. [Hill, 1993] Companies that use quality standards as a substitute for developing their own overall quality management strategy are likely to find themselves short-changed. The most positive experiences with ISO 9000 are reported by those companies that use it as a starting point for, or an early input to, their own strategies. The Economist Intelligence Unit report concludes that, if implemented within the context of total quality principles, 'ISO 9000 can play a useful role'. [Binney, 1992]. ISO 9000 serves to place quality on the management agenda; the preparation for certification at least forces managers to stand back and look at their processes.

2.37 The current interest in Total Quality Management (TQM) alters without necessarily diminishing the immediate status of ISO 9000. The LRQA survey of quality managers in companies already registered to ISO 9000 found that about half were involved in the development or implementation of TQM systems, virtually all of them in conjunction with rather than instead of ISO 9000. Seatronics, whose unfruitful encounter with ISO 9000 registration has been mentioned already, chose subsequently to introduce TQM over a period of 12 months and to acquire ISO 9000 in the process.

2.38 The Economist Intelligence Unit report points out that ISO 9000 defines quality in terms of conformance to requirements, while the total quality approach defines it as looking outwards to the customer and thinking of quality as that which delights customers. The report summarizes the difference between these two particular approaches to the management of quality in the scheme shown in figure 1. [Binney, 1992]

2.39 There is a spread of evidence on the extent to which TQM has penetrated business in the UK. A 1993 survey of commercial and administrative organizations in Scotland found that 25% of respondents already had TQM in place and a further 40% had started down the path. Companies that were small, public sector or service organizations were least likely to be involved in TQM. [Witcher, 1993] 71% of the members of the Institute of Management stated that their organizations had initiated a formal quality campaign (not necessarily TQM), and a further 11% intended to start. [Wilkinson et al, 1993] However, Business Marketing Services report that, although many UK organizations claim to be quality companies, TQM in practice is limited to a relatively small number of companies. [Thomas, 1993]

2.40 Our interviews point to a need for clear national guidance on TQM. Who should devise and disseminate such guidance is not self-evident. BSI has published a standard on TQM - BS 7850 - which appears in practice to operate as a mixture of guidance notes and formal standard. The chairman of the relevant BSI committee suggested that the standard might be pushed more strongly by certification bodies than by his own committee, and commented that other agencies such as the British Quality Foundation might emerge as stronger advocates of TQM than BSI itself. Whether BS 7850 will play much of a role in disseminating the ideas of TQM remains to be seen: several witnesses suggested that it was of very limited usefulness and should be allowed to fade into obscurity. Some regarded a standard for TQM almost as a contradiction in terms.

Issue	ISO 9000	Total Quality
Focus	Conformity to requirements Product or service centred	Customer delight All activities
Objective	Standardise practice	Continuous improvement
Responsible	Quality manager or director	Top management
Involvement of staff	None required	Essential
Development focus	Training	Education and development
Functions involved	Marketing and finance not mentioned	All
Attitude to defects	Inspect and test Corrective action	Design them out Eliminate root causes
Thinking about statistics	Techniques	Understanding
Approach to quality	Audit to ensure compliance	Weave into fabric of organisation

Figure 1. Comparison of ISO 9000 and total quality approaches

2.41 The long-term future of ISO 9000 is bound up with wider developments in quality management, and particularly the extent and manner in which the philosophy of TQM takes root in the UK.

SUMMARY: PERCEIVED BENEFITS OF ISO 9000

2.42 The most representative summary is probably that provided by the CBI: 'Apart from the rather turgid text, the standard, properly applied, can make a useful contribution to an organization's quality strategy. It cannot provide a panacea to solve all 'quality' problems.' [CBI, 1993(a)]

2.43 In more combative terms, the Energy Industries Council in December 1993 issued a statement drawing on the LRQA survey to counter what it perceived as a press hostile to ISO 9000. It argued that the difficulties small companies experienced in dealing with ISO 9000 bureaucracy should not be allowed to overshadow the 'advantages found in dealing with certified companies and suppliers', and called on its members to support the standard.

2.44 LRQA is not a neutral source: it describes itself as 'the leading certification body which assesses quality management systems to ISO 9000'. Against that background, its telephone survey of quality managers in 400 companies that it had assessed to ISO 9000 predictably pointed to substantial benefits in terms both of internal improvements such as better management control and increased efficiency and productivity, and of external aspects such as market share and the ability to bid for tenders. These benefits extended even to small companies. 89% of the companies in its sample reported that ISO 9000 had either met or exceeded their expectations.

2.45 One finding of the LRQA survey, that benefits increased the longer approval was held, and that ISO 9000 should therefore be seen as a long-term investment, is echoed by several of our respondents. ISO 9000 is not a quick fix, but in the right circumstances it can be a key element in a slow and more enduring fix.

2.46 More disinterested sources, such as the Vanguard survey, give a more cautious account of the overall benefits of ISO 9000. BSI has identified nine distinct dimensions of organizational performance on which ISO 9000 registration should have a positive impact: market share, new customers, customer satisfaction, procedural efficiency, staff motivation, staff attitudes, error rates, wastage, costs. The Vanguard survey of 647 organizations from both manufacturing and service sectors (which, incidentally, found no systematic difference between the two) reported that only 15% of its respondents had derived positive benefit in all nine dimensions. Benefits attributable to ISO 9000 were most likely to be reported for procedural efficiency (69% of registered companies) and error rates (55%), and least likely for market share (31%), staff motivation (31%) and costs (25%). Procedural clarity, suggests the report, feeds through only imperfectly to the measurable aspects of efficiency.

2.47 Business Marketing Services, similarly, found that only 5% of their respondents had been fully successful in meeting their main objectives for TQM.

Productivity and customer satisfaction were most likely to have improved; 'better utilization of staff' was least likely. [Thomas, 1993]

2.48 The Vanguard report found that ISO 9000 was regarded as 'broadly a good thing'. 74% of respondents disagreed strongly with the statement 'BS 5750 is worthless', but only 32% agreed that 'British management is enthusiastic about BS 5750' and 59% thought 'British management does not really understand what BS 5750 is actually about'. Most respondents recognized that it was necessary to change organizational culture to achieve success with ISO 9000; those unable or unwilling to make such a change - often those who went into ISO 9000 grudgingly - were unlikely to derive much benefit.

2.49 A fairly typical witness who had sought ISO 9000 registration initially because of customer pressure discovered that the discipline had a beneficial impact on company culture; the company was now moving on towards a TQM approach while retaining the benefits already achieved. As another witness put it to us:

> *ISO 9000 was very useful in providing basic systems discipline. We are now seriously reviewing it to reduce the paperwork and bureaucracy, and intend later to move on towards a TQM ethos.*

2.50 To quote the Economist Intelligence Unit again, 'ISO 9000 has an important supporting role to play in quality, provided it is handled correctly'. Nevertheless, ISO 9000 is 'a strange place for most organizations to start the implementation of quality'. [Binney, 1992].

3. SMALL COMPANIES

3.1 The principles of quality management do not, in the main, depend on the size of the organization. However, the practice manifestly does. In this chapter we report findings on the special characteristics of quality management in small companies. This is an area that arouses strong feelings, and small companies provide a fair proportion of the case histories that fuel press reports of problems with ISO 9000.

BSI REPORT

3.2 A key document on this issue is a report prepared by the BSI Policy Committee for Small Businesses (OC/18) and published in February 1994. [BSI, 1994; for the Government response, see *Hansard*, col 2, 7 February 1994.] OC/18 completed its task after a somewhat stormy passage [see the report itself; also Batchelor, 1994] and was prevented from carrying through a major research programme that it had planned to commission; nevertheless, the report stands as an authoritative analysis of the application of ISO 9000 to small businesses.

3.3 Although the main phase of the OC/18 research programme remains at the planning stage, the Small Business Research Trust has completed a pilot survey of 1000 small companies which provides a useful addition to the literature. Substantive systematic work on this issue has also been conducted by the Small Business Research Centre at the Kingston Business School.

3.4 The OC/18 report confirmed that 'the main underlying principles of BS 5750 are applicable to all businesses whether large or small'; the problems experienced by small companies arose from 'the method of application of the standard rather than from the basic principles'.

> *Many of the perceived problems appear to arise from lack of knowledge or poor application of the standard. However, perceptions whether accurate or not are very real in the minds of the small businesses concerned and cannot be ignored.* [BSI, 1994]

REGISTRATION FOR ISO 9000

3.5 In 1989, 94% of the 3 million businesses in the UK employed no more than 10 staff, and 97% employed under 20. These proportions have grown in recent years. [Daly & McCann, 1992]. The Federation of Small Businesses is the most vocal proponent of the view that small companies are particularly vulnerable to market pressures that set a premium on ISO 9000 registration. The small companies cannot stand up against major customers requiring, or thought to be requiring, that their suppliers be registered: yet, in the view of the FSB, ISO 9000 is about the quality of management rather than the quality of products, and insistence on elaborate documented management systems is rightly alien to the culture of most small or very small companies. As one of our witnesses argued:

> *Small companies are suffering unnecessarily from the insistence of their large customers on certification to BS 5750 in its present form. For companies with less than, say, 20 employees, BS 5750 should be rewritten, not in principle, but in application.*

The FSB is currently campaigning on behalf of its members who are being pressurized to be certified to ISO 9000 or lose business. [Pengelly, 1993]

3.6 The Vanguard survey found that smaller organizations had greater concerns about the costs involved in obtaining and maintaining ISO 9000 registration. [Seddon, 1993] The managing director of a £250K p.a. company with 8 employees, seeking ISO 9000 registration because of customer pressure, argued that the only way he could meet the costs of implementation was, ironically, to reduce the quality of the products he supplied. [Batchelor, 1992]

3.7 Research by the National Westminster Bank and the Small Business Research Trust found that, of the 40% of small firms that reported awareness of ISO 9000, 97% commented unfavourably on it. Cost and bureaucracy were the main problems. Nevertheless, though only 2.5% of respondents were already registered, a further 25% intended to seek registration because of perceived pressure from customers and Government. [Natwest, 1993] The OC/18 report gave very similar figures: 3% of all small firms were actually registered for ISO 9000 and a further 26% were contemplating registration, with the very smallest firms being least likely to register. [BSI, 1994]

3.8 A survey by the Small Business Research Trust found that 78% of its 251 respondents had heard of BS 5750. Of this 78%, 40% had formed an

unfavourable first impression of the standard, but 11% were actually using it and a further 38% said they intended to use it. However, the typical owner of a small business regarded BS 5750 as a marketing tool rather than as a means of reducing costs or increasing quality. [SBRT, 1994]

3.9 A survey mainly of the smaller companies located in Trafford Park found that most very small companies (fewer than 30 employees) had neither ISO 9000 certification nor a TQM programme. The likelihood of certification increased with company size, and almost half the total companies responding had achieved it. However, such companies had relatively restrained expectations of the benefits to be derived from taking the next step and introducing TQM, a finding attributed by the authors of the survey to discouraging experiences with the paperwork involved in ISO 9000. [Staiou & Boaden, 1993]

3.10 Two problems associated with ISO 9000 registration that particularly affect small companies are the disproportionate volume of paperwork and the cost. Many commentators call for the paperwork to be simplified for small companies: documentation was demanded out of habit, without considering whether the particular circumstances warranted it. On cost, evidence provided by the NACCB and ABCB to OC/18 indicates that, per employee, the cost of assessment for ISO 9000 is five times greater for a business employing 10 staff than for one employing 100 staff. However desirable ISO 9000 registration might be in principle, in practice it is not always justifiable.

> *There are few small businesses which would not benefit by adopting the basic principles enshrined in BS 5750 if they have not already done so. However, the Committee considers that the costs of obtaining third party certification may be inappropriate for many small businesses. The Committee has not found evidence to support the view held by many in the quality industry that all businesses should seek BS 5750 third party certification if they are to survive in the long run.* [BSI, 1994]

3.11 This conclusion is echoed in a valuable report from the Small Business Research Centre at Kingston University:

> *The notion that BS 5750 registration is always desirable because it leads to an increase in quality, and therefore small firms should be pushed to adopt BS 5750 'for their own good', is clearly untenable as a sensible policy objective.* [North et al, 1994]

3.12 The evidence from our interviews supports this view that the burden of ISO 9000 can often be out of proportion to the needs of small organizations. One company that had obtained registration planned to keep it for marketing purposes but to continue to develop its own quality management processes largely independently of ISO 9000 routines. Many articles in the national press and in trade journals record the dismal experiences of individual small companies trying to grapple with the process of gaining formal certification to ISO 9000.

CONSULTANTS

3.13 The 'opaque and complex nature of the jargon' associated with ISO 9000, highlighted by many commentators, often leads small companies to seek the help of consultants when considering registration for ISO 9000. Consultants can be part of the solution, or part of the problem. The OC/18 report argues that systematic lists of consultants should explicitly include some with 'a proper track record of success in delivering customer satisfaction in the small business field'; their existence needs to become 'widely known by the owner managers of small businesses, if the incidence of inappropriate consultancy projects is to be minimized'. [BSI, 1994]

3.14 It may be more important for a consultant to have experience of small firms in general than of the particular sector in which a small firm client is operating. On the other hand, many small companies work in service sectors such as transport, where we were told that consultants often tried to impose approaches developed to suit manufacturing companies. Consultants' and assessors' organizations are reported to show little sympathy or understanding of the problems facing small service companies. Some trade associations are responding by paying less attention to ISO 9000 and more attention to the basic requirements of business improvement.

3.15 One of our witnesses, acknowledging the difficulties, argued nevertheless that 'the managers or owners of small companies must be convinced that TQM is worthwhile and that ISO 9000 is a step in the necessary path to continuous improvement'. He attributed much of the blame to consultants 'concentrating on the bureaucracy rather than winning minds over to the longer-term benefits of TQM'. This possibility was admitted by a major quality management consultancy firm, which recognized the danger of small companies 'being misled by unethical consultants "selling days". The larger they make the system, the more consultancy days involved.' [Dobb, 1993] The problem of consultancies offering 'large company' solutions to small company clients is also highlighted by the Chartered Institute of Purchasing & Supply. [CIPS, 1993]

3.16 A company with a £1.3M turnover and 45 employees dispensed with consultants altogether in preparing for ISO 9000 registration. The process was successful and has benefited the company; but the time cost was one day per week over two years from both the managing director and the finance director. [Batchelor, 1992]

3.17 Despite the imperfections of consultants, witnesses expressed deep concern over the threatened withdrawal of DTI support for the costs of consultants helping small companies to register for ISO 9000. Many small companies wanted affordable access to good advice both over registration itself and over working with consultants. As reported in chapter 6, this threat has now been postponed.

SUCCESS FACTORS

3.18 There are, of course, success stories with small companies. The local branch of a major consultancy began by establishing its own documented management system based on ISO 9000 principles and in the following three years helped 30 clients - most of them employing fewer than 30 staff - to obtain registration. [Dobb, 1993] One of our witnesses, a freelance quality assessor, told us that he was about to give a positive assessment to a one-man company. Key factors for success in registering small companies included a sense of proportion in agreeing documentation systems, and assessors being more concerned with the principles of continuous improvement than with policing trivial instances of literal non-compliance. The witness pointed out that 'small companies do not suffer the communication problems of large companies and can bring to bear multi-skilled people to carry out the work; documentation can therefore be minimal'.

3.19 A key factor for the successful application of ISO 9000 to small businesses, widely advocated, is that the standard should be rendered more user-friendly, without at the same time becoming softer. For example, the OC/18 report concluded that 'the preparation of a suitable guide for the application of BS 5750 to small businesses should be treated as a matter of priority'. [BSI, 1994] This need has been recognized by the NACCB, which describes itself as 'determined to tackle the problem faced by small firms in setting up systems which are effective and sufficiently documented in terms of BS 5750 to obtain accredited certification, but no more costly and complex than a rational and reasonable interpretation of the standard demands'. [Hammer, 1993] NACCB and ABCB have established a joint Small Firms Working Group to produce guidance documents on how this may be achieved.

3.20 There is little support for diluting the basic principles of ISO 9000 for small companies: this would label small companies as second-rate. Rather, the evidence points to a need for greater sensitivity in the way the principles are applied to small organizations. Registration needs to be made simpler rather than easier.

> *All the literature on TQM indicates that to be successful, TQM requires a cultural change. That's usually where the literature stops. In the pursuit of cultural change, organizations will invest heavily in education programmes, in re-fashioned management development methods, and so on. Often the strategy is one of hit and miss.* [Seddon, 1991]

4. COMPANY CULTURE AND PERFORMANCE

4.1 Awareness of quality management in some form as an important element in the competitive survival of most organizations has grown rapidly in recent years and is now widespread. But organizations have often been slower to recognize that quality management, if it is to make any difference, usually demands changes in company culture and cannot be treated as a marginal activity - even if those that have recognized this may respond less haphazardly than implied in the opening quotation. In this chapter we look at the relations between company culture and quality management.

LEADERSHIP AND COMMITMENT

4.2 Changes in company culture do not just happen: they have to be made to happen. Management consultants devise and promote various techniques for doing this. PERA International, for example, promulgates an 'executive toolkit' with five elements for driving quality change - top team development, business process analysis, competitive benchmarking, cost of quality, and people processes. But PERA readily points out that the key success factors are leadership and commitment, starting in the boardroom and permeating all levels in the company. At a series of conferences organized by PERA in conjunction with their study, 25% of delegates cited lack of board-level commitment to TQM as the main problem impeding successful quality management, and an equal number cited the difficulty of achieving company-wide commitment. [PERA International, 1993]

4.3 There is some evidence, from an Institute of Management survey, about how people think commitment within a company to quality management can best be developed. Of a sample of 880 members of the Institute working in a wide variety of organizations, 33% thought that implementing a quality management programme was primarily the responsibility of senior managers. 43%, in contrast, thought the responsibility was shared among all employees: everyone had to get involved. Only 8% believed that the primary responsibility lay with quality control specialists. [Wilkinson et al, 1993]

4.4 Some witnesses put to us the view that establishing a specialist quality function put the issue into a ghetto and made it marginal to everyone else. This is clearly a real possibility, and was the experience of one company we visited. But other witnesses pointed out that it can be avoided if the specialist quality function is concerned essentially with animating other staff rather than with jealously owning the quality programme. The status and authority of the designated quality manager were also said to be important: he or she should have visible direct access to the chief executive, both to demonstrate the latter's commitment to the quality programme and to facilitate access into all parts of the organization. Under these conditions, the quality manager has a greater chance of being able to persuade all employees to feel ownership in the company's quality programme.

4.5 There is an analogy here with inspection and correction procedures at the end of manufacturing lines. When the Nissan plant in Sunderland was built, the approach was to make each employee responsible for his or her own quality, with self-inspection as the key. This was underlined by making the final rectification area deliberately small and repair areas non-existent. Instead, there is 'training and more training'. The Nissan 'quality team' deals with the setting of quality standards and has an overseeing role: they have no responsibility for quality control on the production line. When Grundfos, the Danish water-pump manufacturer, introduced a similar policy of workers controlling their own quality, and stopped external inspection, there was a learning process as people adapted to the new culture:

> *One MD in an assembly plant abroad protested to me about the end of inspection. I said no, we haven't stopped inspection; we've moved from 50 to 2000 inspectors.* [Binney, 1992]

The point in both cases is that the whole philosophy of total quality requires everyone in an organization to own the quality processes.

4.6 Top-down leadership is central to achieving a sense of shared ownership and commitment within a company. We found some positive examples of this in our supplier/customer chain interviews. But where the quality management programme is undertaken grudgingly, as a necessary chore in order to stay on tender lists, committed leadership is unlikely to be much in evidence. Some of our witnesses suggested that failed programmes were evidence of failed leadership rather than of flaws inherent in ISO 9000 or other systemized approaches to the management of quality.

4.7 A review by the Institute of Personnel Management of recent research reinforced the message of the Institute of Management survey.

> *The aims of quality management, in common with other management objectives, can only be realized if they are communicated adequately and widely enough to allow everyone in the organization to understand their contribution to the realization of these aims. Only then can total commitment to the concepts and vision of quality be achieved.* [Baron, 1993(a)]

The importance of human factors generally was recognized in a recent report that urged that human factors and organizational design be incorporated into ISO 9000 and recommended DTI to stimulate wider awareness of good practice in these matters. [ACOST, 1993]

4.8 Success in quality management demands leadership and commitment - which means an investment of time and money, not just rhetoric. Most of the organizations involved in quality management programmes have embarked on them fairly recently, and are still being carried along on the initial flush of enthusiasm. Sustaining this in the longer term presents a further set of challenges, especially if the expected benefits are slow in coming. Skilled leadership becomes particularly important in this second phase, and requires *inter alia* a sophisticated understanding of the nature of the benefits to be expected. The evidence points strongly to the conclusion that companies that implement quality management as a one-off action and then turn their attention elsewhere are unlikely to reap the full benefits.

AGENTS FOR CULTURAL CHANGE AND IMPROVED PERFORMANCE

(i) Role models

4.9 An organization's perception of the potential of quality management can be powerfully influenced by external agencies. A number of case studies have been produced by influential bodies with the aim of drawing attention to good, and bad, instances of quality management. These serve as role models inspiring those thinking of embarking on a quality management programme. Foreign companies setting up in the UK and importing quality management practices developed elsewhere can set powerful examples - the motor industry being a case in point. Major customers, including public procurement in such areas as defence and health, are able to give a forceful lead.

4.10 One advantage of a national quality assurance infrastructure is that it can in principle generate a cumulative expertise in consultants moving from company to company. They can then serve as efficient disseminators of best practice. The most elaborate instance of this is Arthur Andersen, who are building up a 'Global best practices knowledge base' as a customized resource on which their staff can draw when advising clients.

4.11 Assessors, too, can accumulate valuable expertise in the management of quality, though the danger of a conflict of interest impedes their freedom to make this expertise available to companies they visit. This problem is less acute where an industry has established its own sector-specific appraisal scheme independent of the ISO 9000 certification infrastructure and where the appraisers are not commercially driven. The experience of such schemes points up the potential of competent assessors as agents of cultural change.

(ii) Quality awards

4.12 The development of quality awards has proved to be an effective stimulus to cultural change. This was pioneered in the USA by the Baldrige Award in 1987, and taken further by the European Foundation for Quality Management with the European Quality Award, first given in 1992. [Dickson, 1993] Early in 1994 the British Quality Foundation announced the UK Quality Award, a British analogue to the latter. Details are given in annex E.

4.13 These initiatives serve to highlight and reward good practice. But rewarding good practice *per se* is secondary to stimulating cultural change so as to facilitate good practice. All three award schemes recognise explicitly that their main objective is establishment of a widely known role model:

> *It is our mission to get the message spread across the UK business community, and right down to small businesses.* [Malcolm Franks, BQF Chief Executive, as quoted in Dickson, 1994]

The BQF scheme takes cognizance of the need to make the role models pertinent to SMEs as well as large companies by having two categories for their Award - one for businesses employing more than 250 staff and one for those employing fewer.

4.14 The main contribution of quality awards to orienting company culture towards quality management lies in their identification and promulgation of the

detailed characteristics of good practice in quality management. The award schemes identify various dimensions of quality management (leadership, people management, customer satisfaction, business results, etc - a total of nine separate dimensions for the BQF and EFQM prizes, or seven for the Baldrige award) and assign a weighting to each. For each dimension there is then a detailed description of a series of characteristics against which one can assess the performance of a given organization.

4.15 For the purposes of making the award, this assessment is carried out by an external panel. This can be a major undertaking: Xerox, a 1989 Baldrige winner, spent $800 000 preparing its application and readying its employees for site visits by the examining panel, while Corning, a 1989 finalist, spent 14 000 staff hours [Garvin, 1991]. But the benefits of such investment are not expressed in terms of winning a badge of public recognition - they are more enduring than that. They would have to be: there are only 6 Baldrige awards each year, two each in the categories of manufacturing, service and small business. Formal applications for the award number only a few hundred. But the number of application forms requested is said to exceed one million, which points to extensive use of the Baldrige approach for internal company purposes such as self-assessment and benchmarking. The BQF Award underlines this by requiring companies to have undertaken at least one self-assessment prior to application. The EFQM issues brochures on self-assessment based on its marking structure.

(iii) Self-assessment

4.16 The value of the Baldrige, EFQM and BQF awards is that they are sophisticated tools for self-assessment, rooted in experience. They can also be freely adapted to suit the circumstances of particular organizations: self-assessment allows you to set your own criteria, with external sources providing a check-list. Although self-assessment offers scope for self-delusion, the use of detailed, externally developed criteria helps to keep the system honest.

4.17 Self-assessment can be carried out at whatever frequency suits the needs of the organization; since the result is expressed in terms of a numerical score rather than a simple pass/fail (which is the outcome of assessment against a formal standard), the difference between successive self-assessments provides a measure of achievement (or lack of achievement) in programmes of continuous quality improvement. The use of milestones - rather like the bronze, silver and gold stages of the Duke of Edinburgh's Award - can be an effective additional

stimulus. Self-assessment also gets round some of the problems of external assessment described in chapter 6.

4.18 The main point of conferences is often said to be the coffee and meal breaks, where the real objective of personal networking is achieved. The papers serve primarily to define the community that will be present, and to lend formal justification to the event. In a similar way, the real benefit of the major quality awards comes from their use in self-assessment: the high profile given to award ceremonies and award winners serves to draw attention to how the detailed award criteria work. The effectiveness of the awards is to be measured not by the number of organizations entering the competition but by the number requesting the detailed application forms and using them in-house. The supporting literature for the new UK Quality Award explicitly recognizes its role in self-assessment.

4.19 The characteristics of a pass/fail standard and a structured self-assessment approach to driving cultural change may be compared as follows:

Standard	**Self-assessment**
Static: conformance to a fixed specification	Dynamic: measures continuous improvement
Pass/fail	Graded scoring system
Manufacturing origins	Designed for general business
Every firm has to be inspected	Only inspected if you want to be considered for the formal award
Focus on management systems	Strong team emphasis
Use for external credibility	Use for driving internal change

Figure 2. Comparison of standard-based and self-assessment approaches

4.20 Our evidence points to a strong potential interest in the self-assessment approach, as an adjunct to or as an alternative to the use of formalized stan-

dards and third-party assessments. The self-assessment approach echoes at corporate level the theme of empowerment at individual level: witnesses thus described it as resonant with modern management philosophy. The development of the UK Quality Award is expected to make an important contribution to the practice of quality management in the UK. BQF and DTI have set themselves the target of making 75% of all companies with over 500 employees and 50% of all companies with over 250 aware of the award within 5 years.

4.21 Some witnesses argued that a standard like ISO 9000 could be used as a basis for self-assessment. Many of the 'internal' benefits from the standard could be secured without recourse to external validation. One consultant told us that he advised ISO 9000 clients not to bother with the trouble and expense of a formal third-party assessment unless their own customers demanded it. Another, looking at other features of assessment of continuous improvement, suggested that third-party assessment could recognize various levels of performance against the specifications of a standard. But it seems that the flexibility of quantified self-assessment cannot easily be reconciled with the philosophy of a pass/fail standard.

(iv) Benchmarking and clubs

4.22 A first cousin of self-assessment via national award criteria is benchmarking. Several of our witnesses drew attention to the growing practice of benchmarking, in which groups of like-minded organizations pool their experiences of particular aspects of business processes and challenge each other's expectations of what can be achieved. Each organization can then set its own performance target against the level achieved by the best, or the average, in the group. 42% of the Business Marketing Services sample used benchmarking as part of their TQM programmes. [Thomas, 1993] 'Companies with world-class potential' are reported to be considerably more likely to use benchmarking than less successful companies. [Hanson & Voss, 1993]

4.23 The Benchmarking Centre identifies three different modes of benchmarking - competitive analysis, performance comparison and best practice benchmarking - and claims that 70% of companies use at least one of them. Best practice benchmarking it defines as 'the continuous systematic search for and implementation of best practices which lead to superior performance'. [Povey, 1993] The DTI emphasises that benchmarking 'is not about aiming to clone the success of other companies'. Rather, 'the real goal is to build on the success of

others to improve future performance'. [DTI, 1992(b)] DTI recently launched the 'Benchmarking Challenge', under which 13 trade associations were awarded a total of £500K to meet one third of the costs of setting up and running benchmarking clubs.

4.24 The Economist Intelligence Unit (EIU) reports that many of the companies it interviewed make use of benchmarking.

> *Used correctly, benchmarking can jolt an organization into much needed change - exposing large differences between the performance of best and of average companies - and it can foster a culture of continuous improvement. It can have enormous persuasive power, providing the hard data that show people what needs to change and why.*

However, the EIU adds that benchmarking is difficult to do well and that much of the effort on it has been wasted. [Binney, 1992]

4.25 The Society of Motor Manufacturers and Traders, one of the winners under the recent DTI Benchmarking challenge, is setting up benchmarking clubs aimed particularly at second and third tier suppliers, to enable them to judge their performance and decide on areas for improvement. This is intended as a means of offering assistance and encouragement throughout the supply chain towards TQM and 'lean supply'.

4.26 Clubs are also springing up outside the DTI framework. For example, the Construction Industry Training Board is setting up quality clubs around the country to allow building firms to share the cost of advice from experienced construction quality managers. The clubs are intended for smaller companies involved in building work who need practical advice on how to save money by managing quality. Aspiring club members pass through introductory courses to learn the fundamentals of quality management and then publish their policy and action plan and start their awareness campaign. Once admitted to the club, they have to explain at monthly meetings how they are putting their new skills to work. [CITB, 1992]

4.27 One of the better established clubs is the Inter-Company Productivity Group, set up in 1983. It now has 17 members - mainly large companies in process industries, fast-moving consumer goods and assembly industries. In addition to a variety of benchmarking activities, the Group runs a wide-ranging

series of best practice seminars and workshops on strategic management issues and, of course, provides extensive opportunities for long-term personal networking - all geared towards improving culture and performance in its member companies.

(v) Supplier relations

4.28 The ways in which a company's customers can influence its culture and performance have been discussed already. But by the same token, a company can in turn influence the culture and performance of its own suppliers. At most stages in a customer/supplier chain, much of the value in a product has already been added before it reaches the customer: the customer may spend as much or more on acquiring components and raw materials than on adding value to them. For one motor car manufacturer we interviewed, three-quarters of the factory gate price of their products was paid to suppliers. In such a situation it is imperative to pay close attention to relations with suppliers. If the company is operating on 'just-in-time' principles, and if its own staff are imbued with a sense of personal responsibility and 'right first time', there is every incentive to develop constructive rather than adversarial relations with suppliers.

4.29 Constructive relations may involve extensive exchange of personnel, incentive schemes ('Best supplier of the year' awards), medium-term commitments to encourage necessary investments in equipment and in training, etc. This does not imply cosy relationships that blunt a supplier's competitive edge. Constructive relations may also involve helping a supplier establish a suitable rapport with its own suppliers, thus stimulating good practice down several tiers of the customer/supplier chain.

4.30 If the company at the head of a customer/supplier chain is unquestionably competent, then, according to suppliers we interviewed, such downward pressures are welcomed as drivers of good performance. But if customers demand levels of quality performance that they themselves fail to reach, the suppliers report considerable resentment at being required, in effect, to make up for their customer's shortcomings.

4.31 The development of constructive customer/supplier relationships constitutes, in effect, the 'preferred supplier' approach to assuring the quality of a customer's purchases. This is now being taken forward under the rubric of 'partnership sourcing', with the active support of the CBI and DTI. The aim is to get away from adversarial, short-term relationships between customers and

suppliers characterised by mutual exploitation and distrust, and at the same time avoid cosy one-to-one relationships that easily become complacent and inefficient.

> *Partnership sourcing is where customer and supplier develop such a close and long-term relationship that the two work together as partners.... The principle is that teamwork is better than combat.... Partnership sourcing works because both parties have an interest in each other's success.... It means rejecting the 'master-servant' syndrome where the supplier is merely told what to supply and the customer told the price. Instead, the partners agree on common goals and build the commitment, trust and mutual support necessary to achieve them.* [Partnership Sourcing Ltd, 1991]

4.32 It is notable that none of the three major quality award schemes takes account of a company's relations with its suppliers. Yet, as the companies we interviewed made clear, this is a key aspect of cultural change and improved performance.

MEASUREMENT OF RESULTS

4.33 How do you measure success in developing the quality management aspects of company culture and performance? Two clear messages from our evidence are that it is difficult, and that it is a very important element in implementing a quality management programme.

4.34 The most obvious measure is impact on profitability. This is also the most controversial line of approach. The Institute of Management survey found that 47% of respondents reported some improvement in profitability, 42% no effect and 11% a deterioration as a result of introducing a formal quality management programme. [Wilkinson et al, 1993] The Durham University survey of Scottish companies reported 'no evidence of a significant impact in terms of a direct effect on profitability' from TQM. [Witcher, 1993] The GAO survey of 20 American companies that did well in the Baldrige competition did find some evidence that quality programmes made a discernible positive contribution to financial performance, but even winning a Baldrige award does not guarantee profitability. [GAO, 1991] The EIU concluded that the evidence about the impact of total quality initiatives on company profitability was ambivalent. [Binney, 1992] A large consultancy has, however, claimed (with little supporting evidence) that its experience 'proves that significant bottom line benefits are achievable within six months' of starting a total quality programme. [Kearney, 1991]

4.35 The consensus of the survey evidence is that measurable benefits attributable to a quality management programme are on the whole most likely to be in customer satisfaction and in various cultural aspects of an organization - morale, teamwork, commitment, awareness. The Business Marketing Services survey reported that significant impact on profitability was most likely to be found in companies that had been actively engaged in quality management for at least five years:

> *To expect dramatic results in the first few years of TQM is unrealistic. Patience and a long-term approach are required. This may, of course, run counter to a lot of the short-term thinking that is endemic in UK business. It is clear, however, that quality companies must be prepared for a long journey when they embark on TQM.* [Thomas, 1993]

4.36 It is therefore significant that the Institute of Management survey reported that over 80% of its respondents expected their quality management programmes to run 'indefinitely'. [Wilkinson et al, 1993]

4.37 Since the large majority of UK companies now involved in quality management programmes have started down this path only in the last three years, it may be expected that the measurable impact on profitability should still be modest. That does, however, make it harder for proponents of quality management to go on fighting their corner, as the Institute of Management survey reported:

> *The worst problem for those of us who believe in quality excellence is the tenuous link between our success in the commercial environment and the quality of our service. Most of our customers buy on price, as long as there is an acceptable level of quality.* [Wilkinson et al, 1993]

4.38 The Abram, Hawkes survey of large companies with TQM programmes found that only two thirds of their respondents had set quality performance targets and, of this two-thirds, only half provided rewards for their achievement - usually in the form of personal recognition of the individuals concerned. Moreover, many companies set targets in only certain areas of their business - most frequently in customer service and production, and least frequently in the administration and R&D functions. [Abram, Hawkes, 1993]

ADAPTATION TO LOCAL CIRCUMSTANCES

4.39 The importance of tailoring a quality management system to fit local circumstances was stressed by one witness, who saw the need to start from where the company actually was rather than from the assumptions of a ready-made system.

> *An essential step is making everyone in the company aware of what is going on in talking about ISO registration, then gathering information on procedures that exist in the company at that time, then collating this into a manual. Once complete, these should be examined for their effectiveness and corrected where necessary; only then should gaps in existing information be filled when viewed from the need to have a complete system that meets externally imposed requirements such as in ISO 9000. Always, those using the system should write them so that they 'own' the result.*

4.40 Several of our witnesses reported that formal quality systems had little local impact: once implemented, the companies went back to 'normal' life as quickly as possible. Others stressed the need to prevent this by engaging the staff affected in the implementation: 'The quality systems must be written by the staff that implement them.'

4.41 One of our interviewees, similarly, warned of the danger of importing a quality management system that could ruin systems already in place without providing anything better. It was all too easy to develop a culture in which staff documented what they thought the external system required them to do, instead of what they actually did, and then, almost inevitably, proceeded to ignore it. That was not the most effective route to securing an environment in which a quality management programme could achieve beneficial results.

5. EDUCATION AND TRAINING

5.1 The emerging philosophy of quality management puts a premium not just on motivation of the workforce but on personal empowerment, commitment and willingness to take responsibility. This in turn demands both personal and technical skills of a high order. Education and training, at all career stages and for all staff, are central to successful management of quality.

5.2 Many organizations have recognized the importance of these issues and are responding accordingly. Others have not. In this chapter we report our findings on the current status of education and training in the management of quality in the UK.

FORMAL EDUCATION

5.3 Some witnesses argued that development of the personal characteristics associated with best quality practice should be an implicit objective of formal education at all levels. However, we have little systematic evidence on this. One major manufacturing company that we interviewed expressed strong support for the concept of National Vocational Qualifications, but had reservations about course content and found it necessary to invest heavily in training to instil an ethos suited to advanced quality practice.

5.4 The National Curriculum Council (now subsumed within the School Curriculum and Assessment Authority) published a report on *Technology in the national curriculum* in September 1993 intended *inter alia* to reduce the content of the compulsory curriculum. This report concluded that the existing 'business and industrial practices' element was 'unnecessarily burdensome', but recommended the inclusion of a module on quality, costs and industrial processes at each of the four Key Stages (ages 5-7, 7-11, 11-14, 14-16). For Key Stage 1, this involved teaching pupils that the quality of a product depended on how well it was made and how well it met its purpose. For Key Stage 4, the report recommended that pupils know how to distinguish between quality of design and quality of manufacture, and be taught criteria and techniques to help them judge the quality of a product, including: how far it met a clear need, its fitness for purpose, whether it was an appropriate use of resources, environmental

impact, and manufacturability and maintenance requirements. [NCC, 1993] Those witnesses who were aware of them generally supported the NCC proposals, though it was pointed out that they did not explicitly cover the processes of evaluation and feedback needed for continuous improvement.

5.5 Universities are under increasing pressure to concern themselves with demonstrating and enhancing the quality of their teaching services. This has led *inter alia* to discussions about the applicability of ISO 9000 and TQM to institutions in the university sector. [Burrows et al, 1992] A potential spin-off from this could be greater awareness, conversely, of the importance of teaching the principles and practice of quality management.

5.6 Some 30 universities in the UK carry out teaching and research on Total Quality Management, most often in Schools of Engineering or of Management Studies. [Dale & van der Wiele, 1993] The European Foundation for Quality Management coordinates the field at European level and awards annual prizes for the best masters and doctoral theses on TQM issues.

5.7 Evidence from employers, academics and professional bodies that accredit university courses in connection with their own professional qualifications points to strong support for the notion that students should acquire the ethos of a quality culture during the first degree. This was an explicit objective of some undergraduate and postgraduate courses in engineering and in business schools, though it was not always implemented. But it was far from universal even in these disciplines, and was virtually absent elsewhere. Yet graduates from all disciplines progressed to careers in manufacturing industry - and quality management is not a concept relevant only to manufacturing industry.

5.8 It was put to us, however, that most university lecturers lacked the culture and the personal experience needed to impart quality management principles in a manner suited to their students. Some witnesses suggested that this situation might change as these principles were gradually injected into the management of universities.

5.9 Quality management tools and techniques, it was argued, could for example be applied, implicitly or explicitly, to laboratory work, the conduct of projects, preparation of dissertations and activities involving teamwork. What was needed was training in tools and techniques for those leading courses, and to some extent for those coordinating the assessment of the quality of teaching.

Departments already engaged in teaching or research on quality management could give a lead here.

PROFESSIONAL TRAINING

5.10 Some degree courses, particularly in engineering, are subject to validation from professional bodies. These bodies are therefore in a strong position to influence the content and style of courses. We discussed with two major engineering institutions current practice and future possibilities for including aspects of quality management in professional training. One of the companies we interviewed believed that the institutions had a real part to play in disseminating the principles of quality management via their validation activities, but that they were generally failing to rise to the challenge.

5.11 In one of the institutions, there was a view at staff level that quality was an easy subject and should not be allowed to dislodge any engineering from the curriculum. However, the chairman of the relevant committee said that the institution was constantly reviewing course content. He was under pressure from all sorts of 'marginal' issues. He recognized that quality management was more about attitude than about acquiring a mass of facts, and argued that it would be advantageous to introduce quality management via projects and workshops already built into the course. The second institution had made a policy commitment to 'ensuring a greater awareness of and concern for Total Quality, not only in the accreditation of courses but within the organization and administration of this Institution and of the Engineering Council'.

5.12 The Engineering Council is ultimately responsible for the content of engineering degree courses. Its Standards and Routes to Registration (SARTOR) document sets generic standards for each of the three registration levels - professional engineer, incorporated engineer and technician. Quality as such is not an explicit heading within the document, but is embedded within courses. Individual institutions rather than the Engineering Council itself are debating how to introduce the principles of quality management more explicitly. The SARTOR document was last issued in 1991 and is due for review in 1996.

5.13 Some of the most successful companies show a very strong practical commitment to training and retraining staff at all levels as a matter of company policy.

> *In 1991 each of Nissan Motor UK's 3000 employees received an average of 24 days off-the-job training, and manufacturing staff an additional 12 days of on-*

the-job training. Total training expenditure amounted to £6.5M. If the salaries of people being trained are included, the figure rises to 14% of the annual salaries bill. [Binney, 1992]

Such expenditure may be exceptional, but commitment to training is an inevitable corollary of commitment to quality management. Our witnesses emphasized that training was not a one-off investment: little was gained unless it was recognized by employers and employees alike as a continuous process. Moreover, it should not be the first thing to go when business slackened. Up to a point, at least, less pressure on the production line could mean more time for strategic analysis and for training. [Tighe, 1993]

INVESTORS IN PEOPLE

5.14 Investors In People (IIP) is, essentially, a human resource analogue to ISO 9000. It is a lever, based on training, through which staff can be developed and mobilized in a way that generates continuous improvement. It is sometimes described as an element, explicit or implicit, in the path from ISO 9000 to TQM. It is a national standard, developed by the Employment Department rather than BSI and assessed by licensed assessors from Training and Enterprise Councils rather than by certification bodies. Registered IIP companies are re-assessed every three years.

5.15 Launched in November 1990, the IIP accolade had been awarded to 63 companies by June 1992, with 10 times that number having overtly committed themselves to meeting IIP specifications at some point in the future. [CRG People at Work, 1993] By March 1994, 5000 companies had committed themselves to IIP. The Government has set a target of 50% of medium to large organizations to be 'Investors In People' by 1996, helped by a large-scale publicity campaign. [MacLeod, 1994; Beckett, 1994]

5.16 IIP is a benchmark against which all companies can measure their own commitment to their staff and the effectivenss of their investment in them. The Employment Department has defined a number of criteria that a company seeking IIP recognition must meet, including the following.

- The employer should have a written but flexible plan which sets out business goals and targets, considers how employees will contribute to achieving the plan and specifies how development needs in particular will be assessed and met.

- Management should develop and communicate to all employees a vision of where the organization is going and the contribution employees will make to its success.

- The resources for training and developing employees should be clearly identified in the business plan.

- All employees should be encouraged to contribute to identifying and meeting their own job-related development needs.

- The investment, the competence and commitment of employees, and the use made of skills learned should be reviewed at all levels against business goals and targets.

5.17 Several of the companies we interviewed had gained IIP certification and valued it highly as a component of their overall quality management strategy. It had much less value if it became an end in itself, detached from mainstream corporate strategy. IIP was applicable equally to small firms and to large: a series of IIP case studies covered firms from 8 employees to 15 000. [Employment Department, 1993] In one company we were told that IIP had served to focus and reanimate a previously flagging training policy. IIP was generally welcomed so long as its implementation did not become bogged down in paper work. Care would be needed to guard against diminishing credibility as the scheme expanded and the apparatus of verification became more difficult to control: the negative features of recent ISO 9000 experience had to be avoided in developing the IIP initiative.

6. THE NATIONAL QUALITY INFRASTRUCTURE

6.1 In the absence of standards for quality management, a customer wishing to form a view on the adequacy of the quality arrangements in a potential supplier would have to invest time and effort in carrying out his own assessment. This is expensive for customers with many suppliers and disruptive for suppliers with many customers. So, with the active encouragement of Government, an infrastructure of third party assessment has evolved to exploit the standards-based approach and make the business of verifying quality claims more efficient. Third party assessments are carried out by individual *assessors*, generally employed by *certification bodies* which may in turn be *accredited* by the National Accreditation Council for Certification Bodies (NACCB). *Consultants* help suppliers to get through the assessment, and advise other players as need arises. These elements are discussed successively below.

6.2 The infrastructure does not come cheap. 'Manning the mistrust', in Gaisford's telling phrase, costs UK companies £80M p.a. in fees to certification bodies for initial registration and periodic audit. That does not include their own staff time, or payments to consultants. Use of the infrastructure is not, however, the only route by which customers' needs for assurance about their suppliers' quality arrangements can be met, and the final section of this chapter considers alternative approaches.

ROLE OF GOVERNMENT

6.3 The Department of Trade and Industry aims 'to help UK business compete successfully at home, in the rest of Europe, and throughout the world'. To this end it has identified a series of tasks for itself, of which one is 'to stimulate and encourage best practice throughout business in quality, design and management'. [DTI, 1994a] The Government thus accepts that it has a duty to ensure that the UK industrial base has the necessary supporting infrastructure to enable it to perform effectively and competitively. The Government does not have to provide that infrastructure, but does ensure that it is in place and working effectively.

6.4 Government Departments operate independently and have their own particular areas dealing with quality-related issues. The Department of Health, for instance, has a branch responsible for BS 5750 and quality initiatives within the Health Service. Cooperation between Departments normally occurs only when there is a need to coordinate a response to a Parliamentary Question or to Ministerial correspondence or to write a speech in which the interests of two or more Departments are involved.

6.5 DTI has stronger links with certain Departments. MoD with its enormous procurement spending has always had a strong interest in quality and was an early impetus behind the development of BS 5750 through its AQAP series. Again, in the field of certification, MoD recognised early on the need for different levels of certification - 1st, 2nd or 3rd party depending on the criticality of products. The Department of Employment has been behind the IIP initiative and the Department of Environment is involved with the development of BS 7750, although the Environment Division within DTI is taking the lead on this standard. The Department of Health is exploring different quality systems and has commissioned a study by Bath University into quality management systems in the health sector to inform its policy. They are wary of BS 5750 because of its bad press and, in common with most Government Departments, are standing back from an unstinting endorsement of the standard.

6.6 Government Departments have acted as certification bodies (Medical Devices Directorate and the Health and Safety Executive) and accreditation bodies (NAMAS). All this complex and largely uncoordinated activity in the quality and performance management sphere has led to a growing recognition that there should be more unison between Government Departments. It is hoped that the new Business Links recently introduced in the Regional Offices and combining different Departments in the same location will provide a better appreciation of each others' work and interests.

6.7 Government policy on quality resides in DTI. This has become somewhat fragmented, and internal restructuring has not succeeded in unifying responsibilities. Currently, the responsibility for the application of BS 5750 to small firms is divided between three separate DTI Divisions. There are moves currently under way to rationalise this, but in a Department with such wide areas of interest it is inevitable that some aspects of policy will be divided between different divisions.

6.8 The Government's role in establishing the quality verification infrastructure in the early 1980s was described briefly in chapter 2. Underpinning the infrastructure is the British Standards Institution itself, originator of BS 5750, UK representative on the International Standards Organization and a major player in the certification business. The DTI in March 1994 published a report on future resourcing of the preparation of standards. This report confirmed DTI's continued financial support for BSI, albeit at the relatively modest level of £1.5M core funding for 1994-95 plus £2.5M for certain priority areas such as Single Market standards, training and support for attendance at overseas meetings. BSI estimates the costs of its standards-making activities at £30M p.a. [DTI, 1994b]

6.9 The DTI's views on other specific aspects of the infrastructure are discussed later in this chapter. The consultation preceding the March 1994 report did, however, confirm to DTI that 'there are for many businesses real benefits from BS 5750'. The report noted views from industry that:

- DTI funding helps to support BSI Standards' impartiality and to safeguard it against vested interests;
- Government is a significant user of standards and should, therefore, make a financial input;
- Government has a duty to ensure the wider public interest in standards is recognised.

ASSESSORS

6.10 Assessors are the sharp end of third party certification, and so a natural target for critical comment. The 502 respondents to the IQA survey are a source of evidence on this. They were asked whether assessors understood their businesses, during pre-assessment, assessment, surveillance and re-assessment.

> *Rather fewer than half of the responses indicated unequivocal satisfaction with assessors' understanding of the business. Whilst the great majority were considered at least adequate, there was nevertheless a significant and worrying minority of cases (10-20%) in which business understanding was considered inadequate. The responses indicate that there is some way to go before all companies are satisfied with either the level of business understanding of assessors or the thoroughness of the assessments.* [IQA, 1993]

6.11 Three-quarters of respondents regarded assessors' performance at the re-assessment stage as no more than adequate. One respondent is quoted as explaining this in the following terms.

> *Internal QA audits carried out by company personnel had highlighted significant deficiencies in the company's quality system and we made reports available to the auditors. None of the deficiencies appeared to the auditors to warrant any action in any form and no check was undertaken by them to confirm that corrective action had been implemented. The assessment body does not re-assess firms once registration has been awarded, they just carry out surveillance visits, in the case of my company every six months. As the latest inspector stated, why should our registration be revoked when we are in fact a source of income every six months?* [Gaskin, 1993]

6.12 Most of the complaints about assessors revolve around lack of relevant knowledge and lack of professionalism. One of the companies we interviewed commented that assessors were 'generally poor'. Despite some recent improvements, assessors still showed little understanding either of the particular sector or of small firms, and were all too ready to impose preconceived ideas. Two other companies complained that their certification bodies sent different teams of assessors for each visit, thus preventing any build-up of relevant experience. NILGQ report that, particularly in the service sector, 'suppliers are concerned that assessors are not sufficiently briefed on the products/service being produced, therefore key issues are missed'. [Tennant, 1993(a)] BSI OC/18 report that 'many consultants and assessors involved in applying BS 5750 to small businesses had large company backgrounds and lacked understanding of the different priorities of small businesses'. [BSI, 1994] Several other witnesses also pointed to assessors (and consultants) offering 'big company solutions to small company problems'.

6.13 A certification body can appoint anyone it likes to carry out its assessments. Most assessors, however, are covered by the Registration Board for Assessors (RBA), an independent arm of the assessors' professional body, the Institute of Quality Assurance (IQA). The RBA was launched in 1984. At 28 February 1994, it had nearly 5500 registrants, of whom two thirds were based in the UK. About one quarter of RBA registrants are thought to work for third party certification bodies, the remainder being employed as second party or internal assessors or as consultants. Two thirds of the registrants have degrees or similar qualifications. The RBA re-registers assessors every three years, pro-

vided they continue to meet the necessary requirements and have undertaken at least five acceptable assessments in the preceding three years.

6.14 The RBA is controlled by an independent Governing Board, nominated partly by the IQA and partly by representative user organizations. Its list is recognized by the UK Government as the National Registration Scheme for Assessors of Quality Systems. The RBA also runs an analogous National Registration Scheme for Internal Auditors of Quality Systems, and approves training courses for assessors.

6.15 Although this ought to ensure a consistent and high level of performance, a typical witness with experience of the major certification bodies pointed to 'the wide variation in the standard of assessors, despite the fact that they have all been registered lead assessors'. Another commentator argues that 'the RBA is not taking a tough enough independent line in auditing the performance of its registered assessors within the certification bodies.' He attributes this to a Government belief that 'certification is a barrier to trade and, if it cannot be legislated against in a free market, then it must be bypassed'. [Craig, 1993] A less Machiavellian interpretation highlights the fact that, in the words of one of our witnesses, 'the path to lead assessor registration requires no audit of actual assessments carried out'. Corroborative evidence of fairly relaxed standards may be adduced from the fact that in 10 years of operation only 2 assessors have been removed from the register by RBA itself because of complaints about poor performance. [Don Campbell, personal communication]

6.16 The evidence as a whole suggests that, although many assessors do a reasonable job, there are enough counter-examples to give cause for concern. The CBI argues that 'the certification bodies are responsible for the assessors they employ and should be policed by the NACCB or its replacement'. [CBI, 1993(a)] The ABCC, similarly, states that 'the current NACCB system needs tightening up, particularly in the case of the registration of assessors'. [ABCC, 1993] CIPS sees little to praise:

> *The RBA scheme is tolerable, but very expensive and gives us nothing for our money. This is a restrictive practice and having two or three registration schemes would allow competition. There is too much variation, the needs are not being met, and there is some apparent corner cutting.* [CIPS, 1993]

6.17 Some commentators argue that assessors should be narrowly specialized in particular industrial skills, and several specialized assessors' groups have come into existence - for example, in aircraft, environment and computers. However, this could lead to a company being assessed by a series of differently specialized assessors, adding to expense and to opportunities for inconsistency. An alternative suggestion is that assessors should be required only to be 'conversant with' the industrial sectors in which they operate. [Craig, 1993] NILGQ members are 'a little wary' of schemes for sector-specific assessment, 'since they are often entirely UK based and not recognized even within Europe'. This makes them inappropriate for purchasing from overseas suppliers; 'in addition, British manufacturing interests may be made less competitive than their European equivalents, by having to comply with tougher unilaterally imposed interpretations.' [NILGQ, 1993]

6.18 In summary, then, there are persistent calls for assessors to be better trained and better controlled: assessors should themselves be rigorously assessed. The IQA itself is aware of the problem. Its survey on the implementation of BS 5750 concluded:

> *The IQA should invite the RBA to review its training and experience requirements to ensure that applicants have the appropriate educational and work experience in the area for which they are being registered. The IQA should also consider setting up a continuous review programme for assessors to ensure that those that are registered under the scheme provide a consistently high level of auditing.* [IQA, 1993]

CERTIFICATION BODIES

6.19 Certification bodies exist to assess whether companies have, and maintain, management systems that comply with the requirements of ISO 9000; a company wishing to claim compliance generally seeks to be certified accordingly. By March 1994, 34 certification bodies were accredited by the National Accreditation Council for Certification Bodies (NACCB) (see next section); but such accreditation is not compulsory and some certification bodies continue to operate outside NACCB auspices. Some of these 34 are accredited only for product certification rather than for ISO 9000 certification.

6.20 Some of our witnesses strongly expressed the view that 'much of the current criticism should properly be addressed at the certification process, not the standard. The standard is there for all to use and the certification process is

something quite different.' For example, the SMMT is addressing this through a joint committee of the motor industry and relevant certification bodies, which is preparing an agreed set of guidance notes to ensure that the certification process is conducted with appropriate expertise. This is a further instance of the movement, noted in the discussion on customized diversity in chapter 2, to develop ways of adapting a standards approach to the actual circumstances of particular sectors.

6.21 The main problem is lack of consistency within and, particularly, between certification bodies. CIPS reports that 'a great deal of inconsistency is apparent between certification bodies in their interpretations of the standards', which it links to the 'very poor' professionalism of some certification bodies. [CIPS, 1993] It looks to NACCB to enforce commonality of interpretation. The CBI argues that 'one of the major difficulties in applying BS 5750 is due to the degree of judgement allowed in its application'. This places substantial responsibility on the assessors, which they are not all equally able to handle. [CBI, 1993] The ABCC takes a similar view.

> *There seems to be a wide disparity between certification bodies. Some take a more realistic view of matching the requirements of the company with that of the standard. Others want to see every minor requirement of the standard covered, even if it is not applicable to the organization being audited, and expect controls that are of no benefit to the organization.*
>
> *There is a lack of consistency between assessors, consultants and certification bodies which is devaluing the basis of BS 5750.* [ABCC, 1993]

6.22 CIPS points to the importance of consistency between certification bodies in different countries, especially in the context of the Single European Market. If it is difficult to achieve consistency within a single country with a relatively sophisticated quality infrastructure, it is much more difficult to achieve it across all 12 Member States of the European Community; yet that is a natural concomitant of that growth in cross-Member State sourcing that the SEM is expected to bring about.

6.23 In July 1990 the MoD decided that accredited certification was sufficiently developed to allow MoD to stop its own second party assessment activities in favour of requiring accredited certification. [Flack, 1993(a)]. It promptly encountered a number of problems, of which the first was the immediate response to

the announcement of its change of policy: 'Much of industry seemed not to know what MoD was talking about'. The picture will have changed since then, but it is clear that an understanding of the various elements of the quality infrastructure is still far from universal. The ABCC states that even now 'most customers are not aware of certification bodies'. [ABCC, 1993]

6.24 MoD also found that a working definition of what it was prepared to treat as an acceptable third party certification was - at least initially - too complicated for many suppliers; that the use of sector-specific guidance schemes was problematic; that the ISO 9000 family of standards was 'far more complicated than those used by MoD in the second-party days'; that both customers and suppliers were reluctant to voice complaints about the quality infrastructure and, when they did, the complaint was commonly 'dismissed or denied'; that the system was inimical to small firms; and that 'universally available and universally acceptable accredited certification', essential for an international level playing field in procurement, did not exist. [Flack, 1993(a)]

6.25 These problems make life difficult rather than impossible. MoD has persevered with its policy, and about 90% of its supplier registrations are now by third party certification. But some problems remain.

6.26 The ABCC states that there are too many certification bodies in the UK, and that competition between generalist and sector-specific bodies will reduce the thoroughness with which assessments are undertaken. It also draws attention to certification bodies operating in fields outside their mandated scope. [ABCC, 1993] CIPS calls for 'strict control over the number and quality of certification bodies'. [CIPS, 1993] NILGQ suggests that 'the mushrooming of certification bodies stems from commercial and not necessarily QA pressures'. [NILGQ, 1993]

6.27 In response to this proliferation, many commentators argue that, before being allowed to operate, certification bodies should be accredited or be actively seeking accreditation. Moreover, certification bodies should operate only within the specific scopes for which they are accredited or seeking accreditation. Many organizations, MoD included, refuse to recognize third party assessments by certification bodies not accredited to NACCB.

6.28 One certification body has more than 50% of the accredited certification market. That body is BSI QA, wholly owned by the national standards-making

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6.28 One certification body has more than 50% of the accredited certification market. That body is BSI QA, wholly owned by the national standards-making

body. This situation is widely regarded as unhealthy: there is thought to be too much scope for partiality between the quasi-legislative BSI, which is under constant pressure to increase its income from non-Government sources, and its commercially successful offshoot. Many commentators are calling for BSI QA to be split off completely from BSI, in order to preserve the integrity of the UK's national standards-writing function. BSI itself argues that 'it is desirable to separate clearly the standards-making activity - which must be independent of pressures from any particular interest group - from the commercial activities of Testing and Quality Assurance that compete with others in the market place.' [DTI, 1994(b)]

6.29 The DTI has discussed this issue with BSI and reports that, as a result:

> *BSI will be taking steps to reinforce the ring-fencing of BSI standards within the overall organization, to increase the transparency of its accounts, and discussing with the Standards Board ways in which that Board's membership and terms of reference could be strengthened .... These questions are primarily a matter for the Institution and its membership.* [DTI, 1994(b)]

6.30 Several of our witnesses suggested that certification bodies should help companies positively to develop their quality management skills, and not simply police compliance with fixed procedures. However, this could give rise to further conflicts of interest, and certification bodies are therefore prohibited by the NACCB from offering consultancy services to the companies they assess. Although this situation was understandable, it was thought that an opportunity to facilitate improvement was being lost.

6.31 Despite all this evidence of shortcomings with certification bodies, there is some sympathy for their situation. As one of our witnesses put it:

> *The narrow scopes, the rapidly expanding involvement of certification in all industries, the focus on product as well as process, are all adding up to a virtually impossible requirement on the staffing of the certification body.*

NACCB

6.32 The National Accreditation Council for Certification Bodies (NACCB) is one of the cornerstones of the national quality infrastructure, designed to keep the system transparently honest and credible. The evidence indicates that the NACCB is being asked to do an increasingly difficult job with inadequate

resources in an unhelpful constitutional environment. Its shortcomings are attributed at least in part to factors beyond its control.

6.33 There are several mechanisms for addressing the activities of certification bodies. The Association of British Certification Bodies (ABCB) is a voluntary grouping of 35 certification bodies, all of which must now either be accredited or be seeking accreditation. It works to establish consensus on key operational and strategic matters affecting certification throughout the UK. Its membership structure exposes it to the perception, expressed by one commentator, that it is 'more concerned with compromise and the least common denominator than with a common high standard of performance credible in the whole market'. [Craig, 1993] Nevertheless, NILGQ reported:

> *We take some comfort in the knowledge that certification bodies in the UK have the ability to police themselves through the ABCB, but this needs to be confirmed through demonstration. Those that do not belong to ABCB, and overseas certification bodies, give cause for concern as their day-to-day performance is unknown.* [NILGQ, 1993]

6.34 A second body, the National Measurement Accreditation Service (NAMAS), provides the national accreditation service for calibration and testing laboratories and is the major channel for the dissemination of measurement standards. Its requirements for granting accreditation are recognized internationally. NAMAS currently accredits some 1500 laboratories turning over £500M annually, and the number is growing at a net 150 per year. NAMAS is established within the National Physical Laboratory. DTI funding dropped from 33% of total NAMAS income in 1990/91 to 14% in 1992/93, with the rest coming from accreditation fees and to a small extent from training of assessors and overseas consultancies. [National Physical Laboratory, 1993] It is the view of the CBI that NAMAS and NACCB should be merged into a single National Accreditation Agency reporting to the DTI. [CBI, 1993 (b)]

6.35 But the main mechanism for attempting to control certification is the NACCB. NACCB was established in 1984 under the BSI Royal Charter, with a broadly representative Council embracing interested parties. It judges certification bodies against the criteria of EN 45011/2/3 (for bodies certifying products, quality systems and personnel respectively) and advises the Secretary of State for Trade and Industry on whether to grant accreditation. Accreditation allows the certification body to use the 'tick and crown' mark. NACCB is required to be

self-financing, and is officially 'impartial and independent from any certification activities undertaken by BSI'. [NACCB prospectus]

6.36 The Government has stated its commitment to 'a continuing and developing national accreditation system' and sees a central role for the NACCB in this. In October 1993, following a consultation exercise, it extended NACCB's remit to include the environmental standard BS 7750 and the European Community Eco Management and Audit regulation. At the same time Government is reviewing NACCB's legal status, partly in response to numerous expressions of concern about NACCB's close linkages to BSI. BSI itself petitioned DTI to separate NACCB, and the principle of separation has been accepted. The review is still in progress at the time of writing: options include making NACCB into some form of agency or non-Departmental Government body, turning it into a company limited by guarantee with some residual Government control, or full privatization. The proper role for Government in the national accreditation infrastructure and a wish to minimize public expenditure are, for the Government, key issues in this review. [Riggs, 1993] At the end of April 1994, DTI issued a consultation document on these matters, indicating its support for a merger between NACCB and NAMAS and its wish that the new body should be self-financing. [DTI, 1994(c)]

6.37 Two other important issues for NACCB are small firms and the international dimension of accreditation. Press stories chronicling unhappy experiences of small firms in dealing with the formal quality management infrastructure have recently highlighted this issue. The NACCB affirms its determination 'to tackle the problem faced by small firms in setting up systems which are effective and sufficiently documented in terms of BS 5750 to obtain accredited certification, but no more costly and complex than a rational and reasonable interpretation of the standard demands', adding cautiously 'it may be possible to ensure this with less paper'. [Hammer, 1993] NACCB and ABCB have established a joint Small Firms Working Party to prepare guidelines on how certification bodies deal with small firms without themselves contravening NACCB procedures. At the time of writing this Working Party has still to report, but the outcome is expected to be two publications in the DTI 'Managing in the 90s' series, offering advice for small firms and for their customers respectively.

6.38 The CBI has expressed concern that, despite systematic third party certification backed by NACCB accreditation, demands for multiple assessments of quality management systems have not been eliminated. It calls for 'an improved

structure for agreeing the scope and operation of accredited testing and certification schemes, the criteria for sector-based schemes, and the means of policing them'. [CBI, 1993(a)] In a recent statement on the UK's future need for accreditation services [CBI, 1993(b)], based on wide consultation among its members, the CBI identified four shortcomings of the NACCB:

- failure adequately to monitor the competence of assessors, especially in light of the degree of personal judgement allowed in the application of BS 5750, which has resulted in purchasers refusing to accept some accredited certificates;
- lack of monitoring certification bodies after accreditation;
- an inflexible and bureaucratic approach to sector-based certification schemes;
- failure to consult industry about present concerns and future needs.

6.39 The chief executive of a certification body has similarly commented that the NACCB 'is seen by many as more concerned with the minutiae of bureaucracy and with international agreements than in installing and enforcing a coherent and equitable accreditation system in the UK'. [Craig, 1993] Members of the Energy Industries Council Quality Assurance Group, and many individual witnesses, regard NACCB as relatively ineffective, failing to deliver consistency of performance between certification bodies, its writ unenforced and its staff under-resourced: the apparent lack of authority behind NACCB is said to cause much concern. [Burgess, 1992]

6.40 NACCB exists to give certification bodies, where justified, credibility in the eyes of their customers. The development of the Single European Market requires this to be done on an EC-wide scale, via a process of mutual recognition between NACCB and its analogues in the other Member States. This is being tackled through the European Accreditation Committee (EAC) and the European Organization for Testing and Certification (EOTC). Given the difficulties in developing a national system of accreditation with the requisite authority and credibility, the challenge of developing a European system will be considerable. This raises in another form the question of the proper role of Government in the accreditation process.

6.41 The key issue in accreditation that emerges from the evidence is credibility. Credibility is said to be conferred by Government endorsement of accreditation, by the demonstrable integrity and impartiality of NACCB (and of other bodies such as NAMAS) and by the NACCB's track record in underpinning a consistent, and consistently good, performance by the certification bodies. [Campbell, 1993; National Forum, 1994] Commentators want accreditation to work well, for the sake of the national interest, and generally see NACCB as part of the solution not just part of the problem. There is therefore opposition to the suggestion that the Government might withdraw altogether by privatizing NACCB: this would be seen as weakening NACCB's credibility both nationally and internationally. NILGQ argues that 'the role of the NACCB needs to be developed to ensure that our interests at both national and international level are maintained'. [Tennant, 1993(a)] The MoD puts it more strongly.

> *It is the MoD view that solutions are best sought within the forum of the NACCB. Consequently the MoD supports the NACCB activities and strongly urges others to do the same.* [Flack, 1993(a)]

CONSULTANTS

6.42 There are at least 3000 quality management consultants operating in the UK. [Burgess, 1993(b)] Many do sound work, but by no means all. The Vanguard survey found 70% of its respondents agreeing that ISO 9000 'has spawned many rogue consultants', [Seddon et al, 1993] and the ABCC states that 'many consultants have jumped on the bandwagon of the DTI initiative'. [ABCC, 1993]

6.43 Over half the respondents to the Vanguard survey used consultants to help them achieve initial registration to ISO 9000. This is the most common use of consultants in connection with ISO 9000. It can produce mixed results, especially if registration is being sought in a hurry or solely in response to customer demand rather than as part of a strategic approach to quality management. In these circumstances, some consultants may try to offer a standardized quality manual of their own devising that supposedly 'guarantees' success but in practice leads to disillusionment: 'many suppliers say that they failed assessment when they used a consultant and are now either trying to achieve ISO 9000 themselves or have given up'. [ABCC, 1993]

6.44 There are no statutory controls on consultants, but there are several schemes to encourage higher professional standards. These focus on some form

of recognition for those who meet a particular level of performance. The British Quality Foundation has recently formed a 'Consulting and Training Providers Group' for such consultants. The 160 registered members of the Association of Quality Management Consultants (established by the DTI in 1984) are selected as professionally competent to act as consultants to industry and commerce across a whole range of quality management activities. The Association is currently drafting a guide to best practice for quality management consultants. The largest scheme, part of the DTI Enterprise Initiative Consultancy Scheme, is the maintenance by PERA International and by Salford University Business Services (SUBS) (for the North West) of databases of quality consultants. PERA and SUBS are required to satisfy themselves about the qualifications and experience of the consultants they put on their databases.

6.45 Nevertheless, the evidence suggests some dissatisfaction with the service provided by consultants. One of the companies we visited reported a bad experience with a consultant from the PERA database:

> *The consultant had no experience of our sector and contributed almost nothing to the preparation of the quality manual or the application for certification. He had, however, subsequently been successful in offering his services to all our competitors based on plagiarized documentation.*

The CBI confirms that all is not well, and looks to BQF for a way forward:

> *In spite of the PERA register, the largest number of complaints received from CBI members concerns the variable competence of consultants and the scale of their charges. The CBI believes the BQF could play an invaluable role in bringing some coherence to this field by establishing a code of conduct and arbitration of claims for unsatisfactory practice.* [CBI, 1993(a)]

6.46 The National Industries Liaison Group on Quality (NILGQ) urges that 'consultants should be vetted and registered before they assist companies seeking certification. As a minimum they should attend an in-depth course themselves on the application of BS 5750 (including updates).' [NILGQ, 1993] ABCC agrees: 'It should be a requirement that consultants should be trained and registered by their capability before being allowed to offer their services.' [ABCC, 1993] CIPS makes a similar point - 'consultants should be approved by and registered with NACCB/DTI before being allowed to practice in the field' - and goes on to explore some of the difficulties that companies experience with consultants:

There should be set guidelines for consultants - they have to listen to the requirements of the user: many do, but there are too many who simply put in place procedures which they have made work in another company - they may not be the best fit. Often the customer has little idea of what is required, and only finds out later, by hard experience, that he has bought something more complicated than necessary for his requirements. [CIPS, 1993]

6.47 If there are pressures, then, to improve the quality control on quality consultants themselves, there is also a growing understanding of how to make better use of consultants: shortcomings can be found in the customer as well as the consultant. One problem arises from using consultants for short-term solutions to what are seen as short-term problems (e.g. gaining registration). Quality management is a long-term process; it often demands cultural change; it cannot be accomplished in a few months. It may therefore be more beneficial to engage a consultant for a few days per year over five years than for a one-off block booking. Determination, willingness to learn and change, willingness to commit resources of time and money are all necessary.

6.48 A report by the Economist Intelligence Unit warns against consultants who try to apply established techniques to solve a client's problems, but it does accord a real role to consultants who set out to understand the client's situation, help the client to understand it, and allow the client to take ownership of a suitably tailored quality culture.

Be wary of consultants. Many in the quality field have gained a reputation for taking too limited a view of total quality and for doing poor quality work ..... Do not rely on consultants. If real change is to happen your own people must own the change process ..... Consider the use of a consultant as a partner in learning: not an expert but someone who can act as a catalyst and challenge, increasing the speed and effectiveness of your learning. [Binney, 1992]

6.49 The DTI's Enterprise Initiative recognized a special need to help SMEs, and in 1988 launched a consultancy scheme under which grants were available of up to 50% of the cost of employing consultants for up to 15 days. In five years this scheme supported 62 000 projects involving 10 000 consultants; 45% of the projects and 33% of the consultants focused on quality management. Originally due to close in March 1994, the scheme has been given a stay of execution and will gradually give way to a 'flexible consultancy and diagnostic service' delivered locally through Business Links partnerships involving Training and

Enterprise Councils, Chambers of Commerce and others. The PERA and SUBS databases will be developed into a 'new consultancy brokerage service'. The BSI OC/18 report points out that 'most small businesses have limited experience of selecting and managing the use of independent consultants', highlights the importance of these DTI schemes and stresses that they should take particular account of consultants experienced in working with small businesses. A special effort will be needed to disseminate the new arrangements among small businesses. [BSI OC/18, 1994]

LESS FORMAL APPROACHES TO QUALITY ASSURANCE

6.50 The quality assurance business is run largely by the various elements of the formal infrastructure described above - assessors, certifiers, accreditors, consultants. It is not run by its customers. Indeed, there is a temptation for the assessors etc to regard each other as their customers, with the real customer - the organization seeking assurance about another party - nowhere to be seen. Not surprisingly, real customers are finding ways of circumventing this.

6.51 Theoretically, second party assessments ought to be on the way out. For example, the 13 members of NILGQ (all large companies who between them spend annually nearly £10 bn with nearly 100 000 suppliers) carried out 5000 second party assessments in 1986 but only 500 in 1993. Second party assessments have certainly become less frequent - the infrastructure supporting third party assessment is not working too badly - but they have not disappeared and show no signs of doing so. The issue is not only whether third party assessments are reliable but also whether ISO 9000 registration is either necessary or sufficient evidence that a supplier can meet his customer's detailed requirements. Even in the LRQA survey, whose sample of 400 was drawn from companies geared towards ISO 9000 registration, only 42% of respondents reported that registration had reduced the need for customer audits. [LRQA, undated] The more companies are registered for ISO 9000, the less useful ISO 9000 becomes as a tool for discriminating between potential suppliers.

6.52 The IQA survey sought information on the extent to which customers used ISO 9000 registration as a way of assessing potential suppliers. Only 1% of customers demanded that suppliers be registered as a matter of course, 39% preferred suppliers to be registered, and 36% required some kind of quality system without laying down which. 23% accepted ISO 9000 registration without further ado as sufficient evidence of quality, 47% used it as a starting point but added

further requirements and assessed suppliers against them, and 30% used a standard company questionnaire. So having ISO 9000 registration only partially defends you against second party assessments. Of companies that carried out second party assessments on ISO 9000 registered suppliers, 57% argued that registration did not necessarily prevent non-conformance and 22% said it was simply a matter of company policy. [Gaskin, 1993]

6.53 So the formal quality assurance infrastructure can only go so far in underpinning the relation between customer and supplier. There is relatively little support for making ISO 9000 ever more detailed and sophisticated: indeed, the pressure is in the opposite direction, towards greater simplicity and accessibility. One way forward, as discussed in chapter 2, is to seek a closer coordination between the general quality systems approach and the specific product quality approach. Another, not incompatible with the first, is to develop the 'preferred supplier' approach. As discussed in chapter 4 under 'supplier relations', this is now being taken forward via 'partnership sourcing' with the active support of the CBI and DTI.

7. KEY FINDINGS AND POLICY OPTIONS

All the good maxims already exist in the world; we just fail to apply them.
[Pascal, as quoted in Binney, 1992]

7.1 This chapter constitutes an extended summary of the data presented in chapters 2-6. We have pulled out from the data a number of key findings (given in bold italic). In order to stimulate debate, and in fulfilment of our terms of reference, we have also identified, in bold, some policy options by way of indicating possible ways forward.

UK EXPERIENCE OF QUALITY STANDARDS

7.2 Systematic attempts to quantify the various elements of total quality assign only one seventh of the whole to those aspects addressed directly by ISO 9000. Nevertheless, ISO 9000 has a high profile in quality management, supported by its *de facto* role in customer/supplier relations and by a large formal infrastructure of assessment and certification underpinning that role.

7.3 ***The most common single motive for a company to seek registration to ISO 9000 is customer pressure, real or anticipated.*** ISO 9000 thus becomes as much a marketing tool as a means for tackling technical quality issues. A particular use is marketing in other countries.

7.4 The evidence on the extent to which customers actually demand ISO 9000 registration is mixed. Many appear to use it as a filter for judging potential suppliers, but to make much less use of it in actual contract specifications. Others use it as a starting point, adding their own specific requirements on top.

7.5 In theory, ISO 9000 and the apparatus of third party assessment should save customers from having to conduct their own (second party) assessments of a supplier's approach to quality management. In practice,

of course, this is not quite what happens, for reasons discussed later. However, if a supplier is registered to ISO 9000 it facilitates subsequent second party assessment. Moreover, a second party assessment will be carried out for a specific purpose and can therefore be more useful to the customer than a generic third party assessment. As ISO 9000 and other initiatives raise awareness of quality issues, customers may become more demanding and thus more interested in carrying out their own assessments. So the value of ISO 9000 should be judged not just by whether it saves labour but also, and more importantly, by whether it enables a better mutual approach to quality between customer and supplier.

7.6 The internal costs of implementing ISO 9000 are not trivial, and can surprise the unwary. Although the benefits of implementation can sometimes be measured in terms of particular financial indicators, ***the most significant benefits tend to come from stimulating cultural change, both in terms of the internal dynamics of the company and in terms of how the company relates to its suppliers and its customers.***

7.7 What also emerges from the evidence of company experience is that enthusiastic and sustained commitment, particularly from senior management, is a key ingredient: those who embark on ISO 9000, Total Quality Management or any other quality initiative reluctantly and half-heartedly are likely to find their low expectations fulfilled, whereas those who implement particular initiatives as part of a wider quality strategy tend to derive benefit from it. This relation between enthusiastic commitment and benefit is common to many areas of human endeavour.

7.8 ***ISO 9000 is about quality systems and about consistency. It does not of itself directly assure product quality.*** Numerous customers have been surprised to discover that quality systems do not lead automatically to product quality. This in turn has sparked a growing interest in bringing product quality more explicitly back into the general context of quality management. This is important if a backlash against ISO 9000 is to be avoided: if quality systems and product quality remain wholly separate, then interest in quality systems will wither. ***There is no long-term justification for quality systems that do not enhance customer satisfaction with the product or service provided.***

7.9 There are initiatives in a number of industries to make ISO 9000 more accessible by developing sector-specific guidelines and interpretations. Done well, this is said to be helpful; done badly, it creates more problems than it solves.

7.10 The way ISO 9000 is actually implemented in individual companies gives rise to a number of problems that are not inherent in the standard itself. ***Encyclopaedic documentation and excessive bureaucracy are not inevitable, as becomes apparent if a company revisits its quality manual 12-18 months after initial ISO 9000 registration and eliminates the bits that have not in practice contributed to quality performance. The bureaucracy is associated with the apparatus of third party assessment in an adversarial culture.*** The solution largely comes down to common sense, a sense of proportion, and a willingness to pay more attention to the underlying philosophy of ISO 9000 than to the operational detail - qualities needed by all parties concerned. ***Nevertheless, if unimaginatively implemented ISO 9000 can easily become a tool for codifying and freezing current practice; TQM is much more concerned with continuous improvement.***

7.11 ISO 9000, intelligently used, can sometimes serve as a helpful pointer for a company starting down the road to TQM, as well as having value in its own right. BSI's role in promoting TQM is unclear - even the authors of the TQM standard BS 7850 seem somewhat half-hearted about this. They are right to be so: ***the very nature of a standard is antithetical to the philosophy of TQM.***

7.12 ***The future development of ISO 9000 is caught up with the increasingly European - not to say global - context of UK business.*** The UK led the way in the 1970s with BS 5750, and with Germany and France dominates general European standards-making. But the European market for ISO 9000 is very different from the UK market: there are ten times as many ISO 9000 registrations in the UK as in France and Germany combined. Germany is said to have a strong quality culture, but in relation to standards based more on product certification than on quality system certification. [BSI, 1994] Nevertheless, BSI QA argues that the EC approach to conformity assessment and ISO 9000 'will undoubtedly greatly increase registration activity in all sectors of industry throughout Europe and worldwide'. [BSI QA, 1993]

Share experience with European partners

7.13 We have not broadened our investigations to other countries and so cannot comment on their national quality arrangements. However, the UK has a uniquely extensive experience of ISO 9000. **Those concerned with quality management in the UK should therefore assess options for sharing their ISO 9000 experience, positive and negative, with their European partners.** This could be both a business opportunity for the UK and a learning opportunity for the EC, allowing it to avoid some of the difficulties already experienced in the UK. The development of quality practice within the Single European Market remains fluid at this stage.

7.14 BS 5750 looms very large in BSI's own business profile: sales of the standard and income from BSI's own certification activities accounted for 60% of its £78M turnover in 1993. [Batchelor, 1993] ***This leaves BSI exposed to changes in the market for its main income-generator.*** It also creates problems of public perception: BSI is so strongly identified with BS 5750/ISO 9000, both financially and through the apparatus of BSI QA and NACCB, that its strategy for the future development of the standard may be thought to pay more attention to BSI's survival as an institution than to the UK's need for quality standards. BSI has to be seen as operating in the national interest if ISO 9000 is to have credibility in the long term.

Define options for review of ISO 9000

7.15 ISO 9000 is due for a major review in 1996. Our evidence suggests that it is not too early for BSI now to be systematically consulting UK interests about the outcomes to be sought from the 1996 review. **The policy options for the review include an explicit emphasis on the virtues of simplicity, common sense and fitness for purpose as opposed to legal rigour and exactness; recognition of the role of ISO 9000 in the Single European Market; consideration of ISO 9000 in relation to TQM and other approaches to quality management; and moderation of the costs of implementing ISO 9000.**

Correct common perceptions of ISO 9000

7.16 It would seem that there are still many misapprehensions about what ISO 9000 can and cannot contribute to the success of an organization. It may be that the quality 'providers' (including BSI) are over-selling their product; it may be that vociferous critics are under-selling it. **Bodies professionally concerned to promote the integrity of the quality 'business' need, as a matter of some urgency, to consider options for disseminating a more realistic understanding of its strengths and limitations.** In partic-

ular, there is a leadership opportunity here for the British Quality Foundation, its sponsors and other disinterested authorities to promote understanding of what compliance with ISO 9000 can do for quality management.

7.17 ***Purchasers have a major responsibility to use the quality infrastructure sensibly.*** Sector-specific organizations, Business Links and other sources of local advice can help here. Vigour of application should be related to criticality and complexity of purchase. ***A sense of proportion is needed.***

SMALL COMPANIES

7.18 The comments in the previous section in principle apply to all organizations. In addition, some special considerations apply to small companies.

7.19 97% of companies in the UK employ fewer than 20 staff, and 35% of the total workforce work in them. ***A small company has the same need as any other for an effective approach to quality management, and the basic principles of quality management apply to small and large companies alike.*** There is no merit in diluting the basic principles of ISO 9000 or of other approaches to the management of quality to make implementation less demanding for small companies. A diluted approach would inevitably be seen as inferior, disadvantaging any company that used it. Implementation, however, does need to be made simpler. It is not self-evident how best to reconcile these two requirements of rigour and simplicity of implementation: practice needs due sensitivity from all involved.

7.20 As the pressures for formal, externally verifiable approaches to quality management work their way along the customer/supplier chain, small companies are increasingly confronted with the opportunities and threats of ISO 9000 and its accompanying infrastructure. A report by the small business committee (OC/18) of BSI has addressed the problems that this trend creates.

7.21 The DTI has responded positively to the OC/18 report.

> *We shall take action as soon as possible, within the Managing in the 90s programme, to publish guidance on BS 5750 for small firms and for pur-*

chasers. We shall facilitate, through Business Links, the development by Training and Enterprise Councils, Chambers of Commerce and others of local self-help schemes for small companies. We shall continue to contribute to the cost of research into the difficulties of small firms in this field and will seek a suitable forum for continued oversight of these issues. We shall also ensure that the European Commission is alert to the problem. [Hansard, col 3, 7 February 1994]

7.22 OC/18 started, but was prevented from carrying through, a major research project into the problems of small companies faced with demands for externally verifiable quality management systems. The DTI response may be regarded as affirmation of OC/18's strong recommendation that this project be enabled to proceed.

7.23 Insofar as small companies have to use ISO 9000, it has been widely emphasised that, without loss of rigour, the standard needs to be made more accessible. DTI's recognition of this, and its undertaking to publish guidance both for small companies and for their customers, will therefore be welcomed. OC/18 suggested that the guidance should cover eight areas: a description of ISO 9000 in plain English; the potential benefits to a small company from application of ISO 9000; certification options, including self-certification; the additional benefits, and costs, of obtaining third party certification; balancing benefits against costs; selecting and managing specialist advice; documentation; selecting a certification body.

7.24 ***The dual targeting in the DTI response of both small companies and their customers is significant, since a good deal depends on the customers recognizing in practice that different approaches may be needed with their small and their large suppliers.*** Large public sector procurement bodies, such as local authorities or MoD, *de facto* give an influential lead here. Equally, certification bodies, the assessors they employ, and the NACCB and ABCB have a major influence on whether ISO 9000 is used appropriately in the particular circumstances of small companies. The findings of the joint NACCB/ABCB Small Firms Working Group will be important in this context.

7.25 An important conclusion of the OC/18 report and of other informed commentators is that, for small businesses, the costs of obtaining third party certification to ISO 9000 may not always be justifiable. ***There is***

no evidence to support the notion that small companies should seek certification as a matter of course.

Examine suitability of consultants for small companies

7.26 The right use of properly experienced consultants is important, both for the general reasons discussed later and because small companies often require help in selecting and using consultants. **One policy option here is for the successor to the current DTI scheme for facilitating small company access to consultants to apply explicitly rigorous standards to selecting suitable consultants.**

Adapt quality awards for small companies

7.27 The new UK Quality Award has two categories, for companies with more, or fewer, than 250 employees. This is a step towards recognizing the small company dimension. **The BQF should assess options for taking further cognizance of the circumstances of small companies, for example by developing a third Quality Award category for companies with fewer than 50 employees.**

Publicize small company successes

7.28 The small company dimension is now well recognised in thinking about how to develop quality management processes in the national interest. Several substantial initiatives are in hand. **An option for sustaining and focusing this momentum is for the DTI and bodies like BQF to measure and publicize the extent to which initiatives to facilitate quality management in small companies achieve their objectives.**

COMPANY CULTURE AND PERFORMANCE

7.29 To reorient the culture of a company and focus it towards improved performance demands sustained leadership from the senior management, coupled with ownership of the process shared among all staff. A specialist quality function within the company structure helps if it facilitates these things, but hinders progress if other staff interpret it as meaning that they do not personally need to be concerned about quality issues. *Attention to human factors is crucial. So, too, is an ungrudging commitment of time and other resources.* Managers need to recognise that this is a long-term process; between the first flush of enthusiasm and lasting benefit often lies a long haul.

7.30 It is no accident that the model of quality management codified in the UK Quality Award starts with leadership and ends with business results, via a central emphasis on sound business processes and on customer satisfaction.

7.31 The formal apparatus of standards and supporting infrastructure is needed chiefly to prove to a third party that a given organization has a sound approach to quality management. It can make a substantive contribution to cultural change and improved performance, provided the dangers of a narrow conformance mentality are avoided. Otherwise it can get in the way of thinking creatively about the organization's particular needs. Advice, from Business Links, sector-specific specialists or other sources, may be needed to guide organizations in discerning their needs and judging whether, for example, formal ISO 9000 certification is appropriate.

7.32 But there are numerous other approaches that are also worth trying. No one approach is guaranteed to solve all problems: organizations have to determine their own routes in the light of their own circumstances, and should choose whatever mix suits them at the time. Corporate ownership is important: an approach adopted mainly because of an over-enthusiastic external advocate is unlikely to generate the requisite commitment.

7.33 Role models have a part to play, especially in raising expectations of what can be achieved in practice. For a given supplier, the most visible role model may be its main customer, whose attitude to quality management therefore has a knock-on effect down the customer/supplier chain. This can develop into a constructive 'preferred supplier' relationship and, beyond that, into partnership sourcing, where purchaser and supplier work to develop each other's capabilities to mutual advantage. Indeed, the relations that a company is able to develop with its customers on the one hand and itssuppliers on the other - be they adversarial and mutually exploitative or constructive and mutually beneficial - are a principal determinant of the quality culture within which the company is able to operate.

Focus on supplier/purchaser relations

A policy option for DTI, BQF, IIP and other bodies concerned with promoting best practice in quality management is therefore to look closely at ways of highlighting the importance of positive supplier/purchaser relations. This could, *inter alia*, be incorporated into the criteria for the UK and European Quality Awards.

7.34 Quality awards provide a detailed methodology for measuring the component elements of organizational quality, covering both management systems and the product or service offered. An approach of self-assessment exploiting the framework of a major quality award combines a

formal quantified system with the advantages of ownership and the sense of continuous improvement that go with an internally generated initiative. ***This is not a soft option: done properly, self-assessment is a tough experience, and periodically repeated quantitative self-assessments provide a remorseless measure of whether progress is being made.*** The quality award structure constitutes a continuum standard covering (in principle) most aspects of a company's business. Systematic assessment against this continuum standard, by the company itself or by a third party, may in due course constitute a recognized alternative to third party assessment against ISO 9000 as a route for demonstrating a company's quality management capabilities.

Increase use of self-assessment

7.35 **Self-assessed quality management programmes are a powerful catalyst for sustained improvement in company performance. They could usefully be brought to a wider audience through pump-priming and awareness exercises involving *inter alia* companies that already have relevant experience.** This would be a valuable and cost-effective contribution to the practice of quality management in the UK. Possible vehicles for fostering such programmes might include the BQF and IIP (subject to proper funding). The UK Quality Award provides a ready basis for self-assessment; variants can be adopted to fit the circumstances of particular companies. Benchmarking and benchmarking clubs are further variants on this theme, and have already been the subject of DTI campaigns.

Tap the experience of assessors

7.36 Competent, active quality assessors are in an especially good position to develop a clear understanding of the determinants of effective quality management. Some thought needs to be given to how this understanding can best be made available to individual companies. Concern over potential conflict of interest prevents assessors acting also as consultants, but an opportunity is being lost as a result. **There would be merit in looking for ways of enabling assessors, for example after completing a formal assessment, to share their non-confidential experience informally with the company concerned.** Such a development would move assessors from merely policing compliance to being constructive agents of improvement in quality management.

7.37 ***Measurement can be a key ingredient in quality management, at both national and company level.*** Continuous improvement will falter in

the absence of feedback loops from internally measurable variables and from reviews of customer satisfaction. A quality programme needs to specify what will be measured, how and when it will be measured and who will do what with the results.

EDUCATION AND TRAINING

7.38 Education and training, at all career stages and for all staff, are central to successful management of quality.

7.39 Concepts of quality have found a firm place in the formal school curriculum. For example, recent proposals on technology in the national curriculum put forward ways of reducing the content of existing courses but retained an explicit module on 'quality, costs and industrial processes' at every Key Stage from age 5 upwards. This is welcome. ***But quality could become a marginal concept if present only in the technology curriculum: the basic principles have a wider relevance and merit wider exposure.***

7.40 Universities are under increasing pressure to demonstrate the quality of their work. A spin-off from this is increased awareness of their role in teaching the principles and practice of quality management. For example, some 30 universities in the UK carry out teaching and research on TQM, mostly in Schools of Engineering or of Management Studies. ***Again, this is promising but it needs to be strengthened in engineering and broadened to other disciplinary areas in some measure***: graduates from all disciplines progress to careers in manufacturing industry, and quality management is not applicable only to manufacturing industry. Given suitably skilled staff, quality principles can be imparted through the practice of properly managed projects, team exercises etc without significantly impinging on the time available for formal teaching.

7.41 Professional institutions exercise considerable influence on the educational courses that they validate in connection with their own qualifications. We have only patchy evidence on the extent to which they use this influence to promote the formal or informal teaching of quality. In engineering, there is support in principle but scope for more commitment in practice. **Both the Engineering Council and its constituent institutions should consider options for giving quality issues a higher profile in the courses they accredit at all three levels of professional registration**. The IEE's undergraduate prize for quality management and its summer

Introduce quality management concepts into professionally accredited courses

schools constitute additional routes through which professional institutions can promote training in quality management.

7.42 Companies working to quality principles recognise the need to invest major sums in training at all levels. This is usefully reinforced by the Investors In People initiative, which demands substantial commitment to continual, relevant training from companies to which it awards its certificate. The combination of IIP and a systematic approach to quality management can make a powerful contribution to enhancing a company's competitiveness.

THE NATIONAL QUALITY INFRASTRUCTURE

(i) Government

7.43 The Government accepts it has a duty to ensure that the UK industrial base has the necessary supporting infrastructure to enable it to perform effectively and competitively. ***It does not have to provide the infrastructure, but it does have to ensure that it is provided and is in good working order.*** It frequently reviews how it should discharge that duty: for example what scale and manner of support it should give to BSI, what constitutional arrangements would best suit the current needs of BSI QA or NACCB or what special initiatives are needed to promote quality management among small companies. In a recent consultation on the resourcing of standards-making, DTI concluded that 'there are for many businesses real benefits from BS 5750'.

7.44 The Government's responsibility extends to concern with the international quality infrastructure. ***The Government has a particular role in ensuring that the UK is effectively represented on the international scene,*** in relation to regulatory standards but also, importantly, within the rapidly developing quality management systems area. There is an opportunity here for the UK to put its extensive experience to good use.

7.45 ***The Government's role in quality management has two aspects. One is to provide leadership in addressing today's reality*** - through fostering awareness of quality issues, coordinating initiatives, pump-priming new opportunities and channelling public funds to activities necessary for the public good. ***The second is to stimulate creation of tomorrow's reality.*** In this aspect the Government is a key custodian of the national quality

vision for the future, facilitating by appropriate means the work of those engaged in developing and implementing more effective approaches to the management of quality in the UK.

(ii) Assessors, certifiers, accreditors and consultants

7.46 An infrastructure of assessors, certifiers, accreditors and consultants has grown up around ISO 9000 so that customers can be assured about claims made by suppliers about their quality management. The infrastructure appears to be a mixture of serious professionals and opportunists: like any rapidly growing activity, it attracts its share of cowboys. A potentially more damaging problem is that the infrastructure can become (some would say has already become) inward-looking, to the neglect of its real customers. ***Many commentators express real concern about the performance of particular elements of the infrastructure.***

7.47 Assessors are at the sharp end of the national quality assurance infrastructure. ***It is therefore regarded as unsatisfactory that there are no statutory controls on assessors.*** Voluntary self-regulation is not working well enough to instil the requisite credibility in the system. Moreover, the body managing this voluntary self-regulation, the RBA, is said to operate in an overtly lenient manner. **A policy option for improving the assessment function is for both client companies and the NACCB, as a minimum and urgent step, to insist that certification bodies employ only registered assessors, and that organizations registering assessors (i.e. currently the RBA) impose tough conditions both for initial registration and for re-registration. The latter should involve a check on the quality as well as the quantity of work done by the assessor.**

Use only registered assessors

Impose tougher conditions for registration

7.48 Moreover, assessors need both incentives and mechanisms for continuously improving their capabilities. An incentive could be provided by the practice of client companies completing satisfaction questionnaires after assessments. Mechanisms will need to be identified by registration bodies not just for initial training (as at present) but for retraining and mandatory updating.

7.49 Certification appears to be a profitable activity for the certifiers: it costs UK industry directly at least £80M p.a., and the number of certification bodies continues to grow. Some deal with quality systems generally, others specialise in a particular sector such as electric cables, ceramics,

ready mixed concrete or reinforcing steels. There is some controversy over the extent to which specialised certification bodies are desirable, in parallel with the debate over sector-specific guidelines to ISO 9000. **Options for reducing the number of certification bodies, e.g. by merger, should be considered.**

Reduce number of certification bodies

7.50 Certification bodies get a mixed press. Consistency within bodies is not now regarded as a significant problem, but consistency between bodies remains a source of concern. Many organizations are reported to have only a vague idea of what certification bodies are for. **The NACCB should consider ways of communicating more actively and effectively with those whom the quality infrastructure is intended to serve, and of policing the system more rigorously.** Both actions have resource implications, ultimately for the infrastructure as a whole.

NACCB to communicate with end customers

7.51 One certification body, BSI QA, has over half the UK market for certification. Its close association with the national standards-making body, and the latter's financial dependence on its profits, mean that its dominance of the market is seen as creating serious conflicts of interest, Chinese walls notwithstanding. One way out would be for BSI to detach itself entirely from BSI QA and seek other ways of financing its standards-making work. The DTI has rejected this option, calling instead on BSI to reinforce the ring-fencing of BSI Standards and to increase the transparency of its accounts. DTI will no doubt monitor the effectiveness of this approach and review its decision if it appears to be necessary.

7.52 Certification bodies seek external validation of their integrity through being accredited by the NACCB. But this is on a purely voluntary basis. ***The continuing existence of non-accredited certification bodies is seen as weakening the whole operation of certification: many commentators call for compulsory accreditation.***

7.53 Both the RBA and the NACCB enjoy a monopoly in their respective validation activities. This lack of competition is not ideal, if only because there is no impetus on them to set and maintain tough entry and renewal standards. Moreover, registered assessors and accredited certification bodies constitute income for the RBA and NACCB: they have little real incentive to remove unsatisfactory performers from their lists. In the long run this will inevitably diminish the effectiveness of the quality infra-

structure. This would be all the more true if NACCB were to be privatized and to depend entirely for its financial survival on accrediting as many certification bodies as possible.

7.54 The NACCB's close association with BSI is regarded by many as unhelpful. DTI's current review of NACCB is expected at least to break this linkage: it is in the interests of the quality infrastructure as a whole that there should be a greater mutual independence between its component parts. **An option for the future is to seek a structure that ensures that NACCB is more open to external influence, operates tighter quality control both over its own activities and over the bodies it accredits, and is able to work effectively at European level.**

Toughen controls on accreditation

7.55 Consultants, like assessors, can choose to belong to professional bodies but are not obliged to do so. There are many suggestions that some form of adherence should be a mandatory condition of being allowed to practice. **A minimum option is to implement a consultants' code of practice, with sanctions applied to those who fall short of the standard expected.**

Toughen controls on consultants

(iii) General

7.56 ***There are three inherent weaknesses in the national quality infrastructure as just described. One is the close interrelation between the national standards-making body, the national accreditation body and the dominant certification body.*** This weakens the perceived credibility of all three, since they inevitably appear to lack the mutual independence that is central to their authority. Further problems are associated with the requirement that BSI be virtually self-financing. These difficulties need to be resolved by the two DTI reviews currently in progress.

7.57 ***The second inherent weakness arises from the essentially voluntary character of the whole structure.*** Assessors, certification bodies and consultants are controlled only through a process of voluntary self-regulation. There is no mandatory requirement for them to submit to the controls of, respectively, the Registration Board for Assessors, the National Accreditation Council for Certification Bodies and the consultants' organizations.

7.58 ***Moreover, the RBA and NACCB are, in effect, monopoly suppliers of credibility to their respective constituencies.*** But their incomes, in each

case, derive from those whom they admit to membership: in the short term at least, they have every incentive to admit as many as possible and no incentive to remove paying members from their lists. It is therefore not surprising that many commentators point to the inadequate performance of the RBA, NACCB and consultants' bodies as guarantors of the professional competence of their members: ***their reward systems do not encourage tough behaviour. This cannot be in the national interest.***

Address urgently problems of voluntariness and monopoly

7.59 This is a matter of direct concern to the DTI, in both its trade and its industry functions. **A way forward would be for the DTI to invite the RBA, NACCB and consultants' bodies to develop proposals, as a matter of urgency, for addressing these issues of voluntariness and lack of effective sanction; and for the DTI to consider with other organizations the scope for creating competition for these monopoly suppliers.**

7.60 ***The third inherent weakness of the national quality infrastructure is its inwardness. It is not sufficiently focused on the end customer.*** This may be an inevitable consequence of the philosophy of ISO 9000, with its emphasis on 'manning the mistrust' - on compliance and external proof of compliance. End customers are responding: various forms of second party assessment bypassing the official infrastructure continue to prosper. Such assessment can be carried out in an adversarial spirit, but at its best it can mean customers seeking to build up quality management practice in their suppliers, to the mutual benefit of both parties. Bodies such as the British Quality Foundation and Government-led initiatives like Investors In People can give a positive lead here.

7.61 The 'preferred supplier' approach to assuring quality, and the current development of 'partnership sourcing', are widely seen as positive steps in the right direction, warmly to be commended. ***A common sense approach to quality management that keeps the end customer firmly in view is most likely to deliver benefits.*** The formal infrastructure can certainly contribute to this, and will continue to play a large role at national and international level. But there must also be space for individual company initiative. Quality must be owned by organizations that provide products and services, not imposed on them from the outside. All aspects of quality management must be judged by whether they help the providers to meet their customers' requirements in an increasingly competitive environment.

7.62 The UK has a history of active concern about the management of quality. There is now a critical opportunity to build on that experience, through imaginative developments at home and active participation in developments at European level. Our findings point to considerations that need to be taken on board if this opportunity is to be exploited in ways that will contribute positively to national competitiveness.

ANNEX A: LIST OF WITNESSES

The following list identifies individuals who contributed to the study by making time available to be interviewed, by sending us relevant material or by expressing their views through correspondence. In addition, numerous individuals made helpful comments in response to presentations of emerging findings made at meetings organized by the British Quality Foundation and by the Quality Managers' Club.

Mr Robert Baxter	Quality Manager, May Holdings Ltd
Mr M. A. Begley	Quality Systems Manager, Moss Construction Southern Ltd
Mr Alan Brazier	Chairman and Managing Director, Vax Appliances plc
Mr Charles Brooks	Director Operations, Vax Appliances plc
Mr Don Brown	Alcatel Network Systems
Mr John Burke	QA Manager, Nissan Motor Manufacturing UK Ltd
Mr Don Campbell	Secretary General, Institute of Quality Assurance
Mr P. W. Candy	
Mr Chris Carpenter	Department of Engineering Science, University of Warwick
Mr Peter Chapman	
Mr Robert Coles	Quality Manager, Society of Motor Manufacturers and Traders Ltd
Mr Martin Daft	Quality Assurance Manager, Eaton Ltd
Mr Gordon Dawson CBE, FEng	
Sir Ron Dearing	Chairman, Schools Curriculum and Assessment Authority
Mr Stuart Denyer	SDI Consulting
Mr David Devers and colleagues	Plant Manager, Eaton Ltd
Mr Gerard Devlin	Magherafelt College of Further Education, Co. Londonderry
Mr Bob Duxbury	Technical Manager, Edward Howell & Son

Mr Tony Edwards	CENTEC
Professor Keith Foster	Director of Academic Affairs, Engineering Council
Dr Jeff Gadsdon	General Manager, QUASCO Ltd
Mr Rex Gaisford	Amerada Hess Ltd
Mr Chris Garnett	Consultant Engineer, EPM Services
Mr John Gibson	Head of Quality, Air Traffic Services Standards, CAA
Mr Scott Glover	Director, Coventry and Warwickshire TEC
Mr Ron Gulliver	Quality Assurance Manager, Kier London Ltd
Mr Chris Hakes	Director, Bristol Quality Centre, University of the West of England; Chairman, BSI QMS 22/5 Committee
Mr Brian Hide	Birmingham City Challenge
Mr John Hill	Manufacturing Systems Engineering, University of Warwick
Mr Graham Hollox	Manufacturing Engineering Group, University of Cambridge
Ms Ali Humphrey	St Albans Leisure Ltd
Mr I Hussain	Vanguard Consulting Ltd
Professor Alan Jebb	Director, City University Quality Unit; Research Director, TQM R&D Centre, Anglia Polytechnic University
Dr Peter Johnson	Director, Lucas Engineering & Systems Ltd
Mr Philip Jordan	Chairman, IEE Manufacturing Division Professional Group on Quality Management
Dr Peter Jost, CBE	Chairman, K.S. Paul Products Ltd
Mr John Jubber	Quality and Environment Systems Manager, Road Haulage Association
Dr Bernard Juby	Federation of Small Businesses
Mr Roger Kelly	Manager, Trafford Park Performance and Quality Forum
Mr Gordon Kirk	Gordon Kirk Ltd
Dr Gunther Kruse	Managing Director, London International GmbH
Mr Colin Leighfield	Works Director, Edward Howell & Son
Mr Alan Lightly	Education and Training Officer, Institution of Mechanical Engineers
Mr David Lobb	Quality Manager, Melfin (UK) Ltd

Mr Morcom Lunt	Lucas Engineering & Systems Ltd; IEE Manufacturing Industry Committee
Mr Graham Mackenzie, FEng	Group Chief Executive, UES Holdings Ltd; President, Engineering Employers Federation
Mr Denis Malone	Executive Director, Warwickshire Enterprise Agency
Mr John Morgan, FEng	Chairman, Trafford Park Development Corporation
Mr Neil Morrison	Ikeda Hoover plc
Mr C Moys	
Mr Jim Naden	Total Quality Team, Scottish Enterprise
Mr Mike Perry	Mike Perry Associates
Professor Jim Picken	Chairman, Academic Standards Committee, Institution of Mechanical Engineers
Mr Richard Power	Chief Systems Engineer, London Underground
Professor Alan Pugh, FEng	Chairman, Accreditation Committee, Institution of Electrical Engineers
Mr Rory Putt	Manager for Education and Training Services, Institution of Mechanical Engineers
Dr John Roche	Director, Quality Assurance Research Unit, University College, Galway
Mr Frank Ryder	Consultant
Mr Martin Savory	Education and Training Officer, CENTEC
Mr John Seddon	Vanguard Consulting Ltd
Mr Richard Shekelton	Shekelton Associates
Mr Nigel Sherman	Nissan Motor Manufacturing UK Ltd
Dr Ken Sherwood	Consultant
Mr Terry Smith	Education Officer, Engineering Council
Mr Harry Snee	Engineering Manager, Ikeda Hoover Ltd
Mr John Souter	Director, BSI QA
Dr Bob Stokoe	School of Education, University of Sunderland
Professor Denis Towill, FEng	School of Electrical, Electronic and Systems Engineering, University of Wales College of Cardiff
Ms Suzanne Turner	Postgraduate student, Manufacturing Systems Engineering, University of Warwick
Mr Jeremy Vines	Manager, Quality, M. W. Kellogg Ltd
Professor Chris Voss	BT Professor of TQM, London Business School

Mr Tony Welland	Education Officer, Institute of Quality Assurance
Mr Malcolm White	Procurement Manager, M. W. Kellogg Ltd
Professor David Whitehouse	Department of Engineering Science, University of Warwick
Mr Peter Willis	Principal, IBM Consulting Group
Mr Bob Woolley and colleagues	Chairman and Managing Director, Frederick Woolley Ltd
Dr Eddy Yde	IBM UK Ltd

ANNEX B: BIBLIOGRAPHY

John Abbott, 'The quest for quality', *Unix News* (October 1993), 29

Abram, Hawkes Associates & Kingston University, *A report on TQM within the UK's 500 largest companies* (Abram, Hawkes Associates, 1993) [A questionnaire survey of quality executives in the UK's 500 largest companies, with 136 (27%) replying of whom 88 had TQM programmes]

Advisory Council for Applied Research and Development, *Facing International competition: the impact on product design of standards, regulations, certification and approvals* (HMSO, 1982)

Advisory Council on Science and Technology, *People, technology and organizations* (HMSO, 1993)

American Society for Quality Control, *Malcolm Baldrige National Quality Award: 1994 Award criteria* (1994)

Anon, 'More than one route to quality street', *Garage and automotive retailer* (July 1993), 3

Association of British Chambers of Commerce, *The quality infrastructure* (1993) [Response to BQF QITF inquiry]

Peter Barber, 'What value BS 5750 to a small company', *NACCB Newsletter* (October 1993)

Angela Baron, 'The quality management literature', in *Quality: people management matters* (Institute of Personnel Management, 1993)

Angela Baron, 'The employer survey', in *Quality: people management matters* (Institute of Personnel Management, 1993) [A questionnaire survey of the heads of the human resource function in 1200 UK organizations, with 346 - 29% - responses]

Philip Bassett, 'Is the political clock quietly ticking away for TECs?', *The Times* (10 January 1994)

Charles Batchelor, 'Badge of quality', *Financial Times* (1 September 1992)

Charles Batchelor, 'A blot on its reputation', *Financial Times* (28 January 1994)

BDO Consulting, *ISO 9000 - the experience of service sector organizations*, as reported in Nigel Hill, 'The customer is sometimes right', The Times (28 October 1993) [Survey of all service sector organizations registered to BS 5750 listed in the DTI Quality Assurance Directory, with a 34% response rate]

Francis Beckett, 'A woman to give credits where they are due', *The Guardian* (3 March 1994)

Erica Billingham & Alastair Stewart, 'Standard fireworks', *Building* (19 November 1993), 20-21

George Binney, *Making quality work: lessons from Europe's leading companies* (Economist Intelligence Unit, Special Report No 8655, 1992) [A report based on 6 very detailed case studies and 40 other extended interviews]

Alan Bird, as reported in 'More than one route to quality street' and 'Bureaucratic horror story of BS 5750', *Garage and automotive retailer* (July 1993)

Alan Blackham, *The value of ISO 9000 registration - conclusions of international survey* (Bywater plc, 1992) [A mixed questionnaire/telephone interview survey of 61 companies from 100 selected at random from the DTI QA register, to be followed by parallel surveys in Canada and New Zealand]

Alan Brazier, 'Bring common sense to Government grants', *Midlands industry & commerce* (November 1993)

British Quality Foundation, *Principles of total quality management* (BQF, 1993)

BSI Policy Committee for Small Businesses, *Report on the application of BS 5750 to small businesses* (BSI OC/18, 1994)

BSI QA, *BS 5750/ISO 9000/EN 29000:1987 : a positive contribution to better business* (DTI Managing in the '90s, 1993)

Norman Burgess, *Survey of EIC QA Group members into quality systems and certification* (1992) [20 respondents]

Norman Burgess, 'A critical review of quality management developments', *Conference proceedings: quality management strategy - the future* (BQF/IQA/CBI, 1 April 1993)

Norman Burgess, 'Certificated quality management', *NACCB Newsletter* (October 1993)

Norman Burgess, *Quality in consulting: the role of consulting in quality management* (European Organization for Quality, Annual Conference, 1993)

Alison Burrows, Lee Harvey & Diana Green, *Quality assurance systems: a review of the application of industrial models to education and training* (Quality in Higher Education Project, 1992)

Lynda Campbell, 'Accreditation of certification: what's in it for me?', *NACCB workshop* (5 November 1993)

Chartered Institute of Purchasing and Supply, *The quality infrastructure* (1993) [Synopsis of members' responses to BQF QITF inquiry)

Chemical Industries Association, *Responsible care management systems* (CIA, 1992) [Guidelines for certification to BS 5750 and 7750 in the chemical industry]

Confederation of British Industry, *The quality infrastructure* (1993) [Response to BQF QITF inquiry]

Confederation of British Industry, *The UK's future need for accreditation services* (CBI, M 98 93, 1993)

Construction Industry Training Board, 'Clubbing together for quality advice', *Chartered builder* (November 1992), 12

John Craig, 'Essential moves for quality control', *Management consultancy* (September 1993), 63-66

CRG People at Work, *Investors in People: a qualitative study of employers* (final report, 1993) [Structured interviews with 24 employers]

Joe Cullen, 'Conditions for success', in Rory Chase, ed, *Implementing TQM* (IFS Ltd 1992)

Barrie Dale & Ton van der Wiele, *TQM at European universities and business schools: directory* (EFQM, 1993)

Michael Daly and Andrew McCann, 'How many small firms?', *Employment gazette* (February 1992), 47-51

Department of Trade and Industry, *Best practice benchmarking* (DTI, Managing in the '90s, 1992)

Department of Trade and Industry, *The Single European Market in conformity assessment* (1993a)

Department of Trade and Industry, *Trade Associations: the benchmarking challenge* (1993b)

Department of Trade and Industry, *A guide for business* (1994a)

Department of Trade and Industry, *Future resourcing of the preparation of standards. Report on a consultation by the DTI* (DTI, 1994b)

Department of Trade and Industry, *Consultation on the future provision of accreditation services in the United Kingdom* (DTI, 1994c)

Tim Dickson, 'Quality street cred', *Financial Times* (20 October 1993)

Tim Dickson, 'In search of excellence', *Financial Times* (2 February 1994)

Fred Dobb, 'BS 5750 and the small firm', *BSI News* (August 1993), 16-17

Ian Durand, Donald Marguardt, Robert Peach & James Pyle, 'Updating the ISO 9000 quality standards: responding to marketplace needs', *Quality progress* (July 1993), 23-28

Employment Department, *Investing in people: the benefits of being an Investor in People* (1991)

Energy Industries Council, *Quality Assurance Committee - Bulletin for EIC members* (December 1993)

European Foundation for Quality Management, *The European Quality Award 1992* (EFQM, 1992)

Ken Flack, 'MoD's experiences on moving from 2nd party to 3rd party certification of suppliers', *Conference proceedings: quality management strategy - the future* (BQF/IQA/CBI, 1 April 1993)

Ken Flack, 'Accreditation of certification: what's in it for me?', *NACCB workshop* (5 November 1993)

Rex Gaisford et al, *The CRINE report: cost reduction initiative for the new era* (1993)

David Garvin, 'How the Baldrige Award really works', *Harvard Business Review* (November 1991), 80-93

Mike Gaskin, 'Conclusions of the IQA Working Party investigating the use and implementation of ISO 9000 standards by third party assessment bodies as seen by the user', *Conference proceedings: quality management strategy - the future* (BQF/IQA/CBI, 1 April 1993) [Questionnaire survey distributed to all 11 000 members of the IQA and through various other channels, achieving an overall response rate of 4% with a total of 502 replies, described as 'an acceptable sample for analysis']

General Accounting Office, *Management practices: US companies improve performance through quality efforts* (GAO/NSIAD-91-190, 1991)

Richard Gourley, 'One-stop help shop', *Financial Times* (14 December 1993)

Jim Hammer, 'Getting it right', *NACCB Newsletter* (October 1993)

Phil Hanson & Chris Voss, *Made in Britain* (IBM (UK)/London Business School, 1993)

Derek Harris, 'Efficiency under the microscope', *The Times* (28 October 1993)

Nigel Hill, 'The customer is sometimes right', *The Times* (28 October 1993)

Institute of Quality Assurance, *Survey on the use and implementation of BS 5750 standards by third party assessment bodies as seen by the end user* (IQA, undated, c. 1993) (summarized in Gaskin, 1993)

International Standards Organization, *Vision 2000: a strategy for international standards' implementation in the quality arena during the 1990s* (Report of ad hoc Task Force of ISO/TC 176, 1990)

A. T. Kearney, *Total quality: time to take off the rose-tinted spectacles* (A. T. Kearney/TQM Magazine, 1991) [A survey of a 'wide cross-section of British industry and commerce', but no data given on sample size or response rate]

Lloyd's Register Quality Assurance, *BS 5750/ISO 9000: setting standards for better business* (undated) [A telephone survey of 400 quality managers and senior managers from LRQA's customer base, covering the mechanical engineering, foods, services and electronics sectors]

Donald MacLeod, 'Time to target the boss', *The Guardian* (3 March 1994)

Ministry of Defence Procurement Executive, *The quality infrastructure* (1993) [Response to BQF QITF inquiry]

National Accreditation Council for Certification Bodies, *Prospectus*

National Curriculum Council, *Technology programmes of study and attainment targets: recommendations of the National Curriculum Council* (NCC, 1993)

National Economic Development Council, *Quality and value for money* (NEDC, 1985)

National Forum for Conformity Assessment and Quality Policy, *Complaints about certification and accreditation* (1994) [not a list of grumbles, but an account of how complaints are handled by various bodies, including ABCB, NACCB and NAMAS]

National Industries Liaison Group on Quality, *The quality infrastructure* (1993) [Response to BQF QITF inquiry]

National Physical Laboratory, *Annual report and accounts 1992-93* (1993)

Natwest quarterly survey of small businesses in Britain, as quoted in Norman Burgess, 1993 [435 respondents]

Julian North, Robert Blackburn and James Curran, *Maintaining quality in small firms and the role of BS 5750* (Kingston Business School, Small Business Research Centre, 1994)

Dave Parker, 'Goods practice', *New Civil Engineer* (16 September 1993), 31

Partnership Sourcing Ltd, *Partnership sourcing* (CBI, 1991) [series of 7 case studies]

Partnership Sourcing Ltd, *Understanding partnership sourcing* (Partnership Sourcing Ltd, 1993)

Ro Pengelly, 'Quality and the consultant - who needs BS 5750?', *Professional Engineering* (February 1993), 10-11

PERA International, *Achieving world class performance: how UK companies get it right* (Pera/CBI, 1993) [Case studies of 22 companies that have successfully introduced quality management programmes]

Barry Povey, 'The state of benchmarking in the UK', *UK quality* (October 1993), 14

Geoffrey Riggs, 'How do we meet industry's expectations in the future?', *NACCB workshop* (5 November 1993)

Graeme Ross, 'This thing called quality', *Bulletin of the Aberdeen Chamber of Commerce* (September 1993)

John Seddon et al, *BS 5750 implementation and value added* (Vanguard Consulting, 1993) [A questionnaire survey of manufacturing and service organizations registered to BS 5750, with 647 analysed replies (30% response rate)]

John Seddon, *I want you to cheat!* (Vanguard Press, 1992)

Small Business Research Trust, *SBRT research into BS 5750: executive summary of pilot study* (SBRT, 1994) [Questionnaire survey of 350 randomly selected members from each of the Federation of Small Businesses, the Forum of Private Business and the Rural Development Commission, with a 24% response rate - described by SBRT as 'very acceptable and better than expected']

Derek Spickernell, *The origins of ISO 9000* (IEE Colloquium on ISO 9000: a foundation for total quality worldwide, 1991)

Efthimia Staiou & Ruth Boaden, *Small companies in Trafford Park: their views about total quality management* (Manchester School of Management, 1993) [A questionnaire survey achieving 53 replies - 33% response rate - from a mixture of manufacturing and service companies]

Michael Sweeney, 'Benchmarking - how to go about it', *'90s News* (February 1994), 3

Mike Tennant, 'National Industries Liaison Group report on user viewpoints', *Conference proceedings: quality management strategy - the future* (BQF/IQA/CBI, 1 April 1993)

Mike Tennant, 'Accreditation of certification: what's in it for me?', *NACCB workshop* (5 November 1993)

Roger Thomas, 'The effectiveness of total quality management', *Conference proceedings: quality management strategy - the future* (BQF/IQA/CBI, 1 April 1993) [Questionnaire survey by Business Marketing Services of 927 UK companies (20% response rate), most of them involved in some form of quality management programme]

Chris Tighe, 'Sharp gear change', *Financial Times* (21 December 1993)

Roger Trapp, 'Benchmarking moves on to bench-testing', *Independent on Sunday* (9 January 1994)

Brian Usilaner & Michael Dulworth, 'What's the bottom line payback for TQM?' *Journal for quality and participation* (March 1992), 82-90 [Includes a summary of the GAO survey of the impact of formal TQM improvement strategies on the performance of selected US companies]

Isaac Walsh, 'Separating fact from fiction on BS 5750', *Management consultancy* (September 1993), 57-60 [Includes report on a survey of 500 Scottish companies by Glasgow Caledonian University]

John Whyte & Barry Witcher, *The adoption of total quality management in Northern England* (Durham University Business School, Paper 9236, 1992) [A questionnaire survey achieving 235 replies - 16% response rate - including 147 from companies that had introduced TQM]

Adrian Wilkinson, Tom Redman and Ed Snape, *Quality and the manager* (Institute of Management, 1993) [Questionnaire survey of 4000 members of the Institute of Management, with 880 (22%) responses]

Barry Witcher, *The adoption of total quality management in Scotland* (Durham University Business School, 1993) [Questionnaire survey of 1500 organizations, with 650 (43%) responses]

SGS Yarsley, *Attitudes to BS 5750: a survey of 500 registered companies* (1992)

ANNEX C: ACRONYMS

ABCB	Association of British Certification Bodies
ABCC	Association of British Chambers of Commerce
ACARD	Advisory Council on Applied Research and Development
ACOST	Advisory Council for Science and Technology
AQAP	Allied Quality Assurance Publication (NATO)
AQMC	Association of Quality Management Consultants
BQF	British Quality Foundation
BS	British Standard
BSI	British Standards Institution
BSI QA	BSI Quality Assurance
CBI	Confederation of British Industry
CEN	Centre Europeen de Normalization
CIA	Chemical Industries Association
CIPS	Chartered Institute of Purchasing and Supply
CITB	Construction Industry Training Board
CRINE	Cost Reduction Initiative for the New Era
DTI	Department of Trade & Industry
EAC	European Accreditation Committee
EC	European Community
EFQM	European Foundation for Quality Management
EIC	Energy Industries Council
EIU	Economist Intelligence Unit
EOTC	European Organisation for Testing and Certification
FSB	Federation of Small Businesses
GAO	General Accounting Office
IEE	Institution of Electrical Engineers
IIP	Investors in People
IQA	Institute of Quality Assurance
ISO	International Standards Organisation
LRQA	Lloyds Register Quality Assurance
MoD	Ministry of Defence
NACCB	National Accreditation Council for Certification Bodies
NAMAS	National Measurement Accreditation Service
NATO	North Atlantic Treaty Organization

NCC	National Curriculum Council
NILGQ	National Industries Liaison Group on Quality
OC/18	BSI Policy Committee for Small Businesses
QITF	Quality Infrastructure Task Force (of BQF)
RBA	Registration Board for Assessors
R&D	Research and Development
SARTOR	Standards and Routes to Registration
SBRT	Small Business Research Trust
SEM	Single European Market
SEPSU	Science and Engineering Policy Studies Unit
SME	Small and Medium Enterprise
SMMT	Society of Motor Manufacturers and Traders
SUBS	Salford University Business Services
TEC	Training and Enterprise Council
TQM	Total Quality Management

ANNEX D: GLOSSARY OF TERMS

Accreditation

The process of signifying the competence of a certification body to act within a defined scope. In the UK, this process is carried out by the NACCB.

Benchmarking

An improvement process in which a company measures its performance against the best-in-class companies, determines how those companies achieved their performance levels and uses the information to improve its own performance. The subjects that can be benchmarked include strategies, operations, processes and procedures.

Certification

The authoritative act of documenting compliance with requirements* [e.g. documenting that an organization is complying with the requirements of ISO 9000]

Certification body

An impartial body, governmental or non-governmental, possessing the necessary competence and integrity to operate a certification system, and on which the interests of parties concerned with the functioning of the system are represented*

Inspection

Activities such as measuring, examining, testing, gauging one or more characteristics of a product or service and comparing those with specified requirements to determine conformity*

ISO 9000 series standards

A set of five individual but related standards on quality management and quality assurance developed to help companies effectively document the quality system elements to be implemented to maintain an efficient quality system. The standards, initially published in 1987, are not specific to any particular industry, product or service. The standards were developed from BS 5750 by the International Organization for Standardisation (ISO), a specialised international agency for standardisation composed of the national standards bodies of 91 countries.

Quality

The totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs*

Quality assurance

All those planned and systematic actions necessary to provide adequate confidence that a product or service will satisfy given requirements for quality*

Quality audit

A systematic and independent examination to determine whether quality activities and related results comply with planned arrangements and whether these arrangements are implemented effectively and are suitable to achieve objectives*

Quality management

That aspect of the overall management function that determines and implements the quality policy*

Quality manual

A document stating the quality policy, quality system and quality practices of an organization*

Quality policy

The overall quality intentions and direction of an organization as regards quality as formally expressed by top management*

Self-assessment

A process by which an organization assesses its own quality performance, in connection either with its own management requirements or with the requirements of an external party. Self-assessment may be carried out against the criteria of ISO 9000, of an established Quality Award or of some other systematic approach to measuring quality.

Total Quality Management

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

* Definition taken from BS 4778

ANNEX E: QUALITY AWARDS

I The UK Quality Award

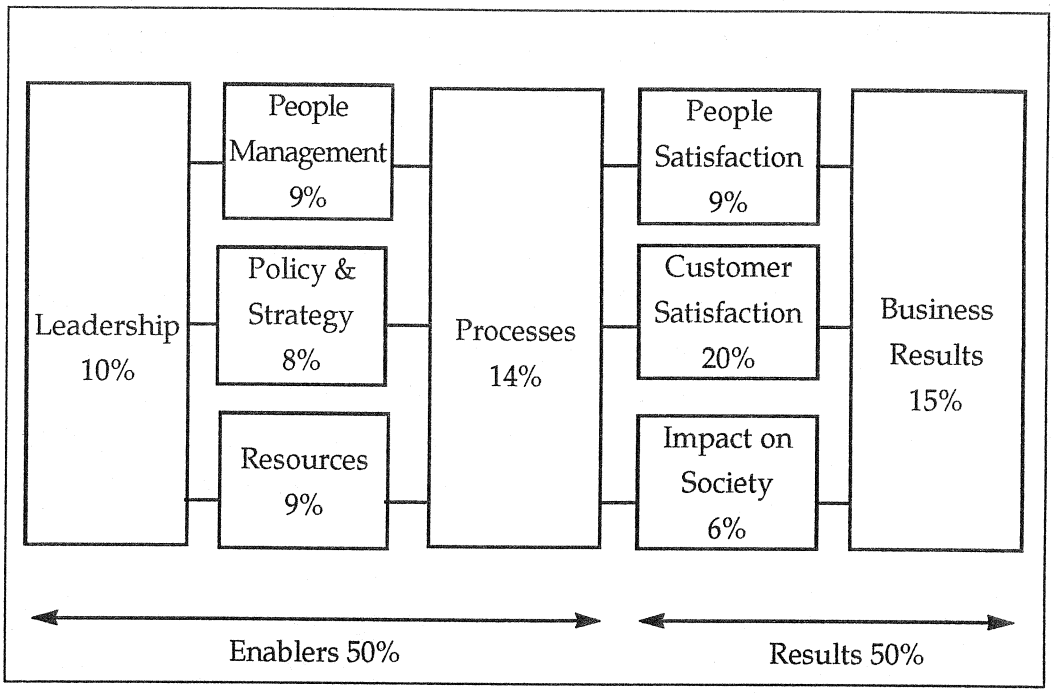
The recently announced UK Quality Award uses the principles of self-assessment based on the framework of the European Model for Quality Management. This model was originally developed by a pan-European group of organizations from within the European Foundation for Quality Management (EFQM). The framework is used as the basis of the European Quality Award. It is expected that in the medium term the framework will be developed further.

The UK Quality Award has been introduced by the British Quality Foundation as a means of identifying, rewarding and publicizing outstanding organizations to become the role models for total quality management. The award scheme, and the underlying model, provide a framework for all organizations to assess themselves, to identify areas for improvement and, ultimately, to bring them up to the level of the best organizations. Indeed, all applicants are required to submit a detailed self-assessment against the Award criteria.

The Award is to run annually and it is envisaged that a small number of equal status awards will be made in two categories of 'for profit' organizations - those with 251 employees or more, and those with 250 employees or fewer. It is intended that after the first year the award schemes will be extended to include 'non-profit' organizations.

The underlying model is based on the premise that ***processes*** are the means by which an organization harnesses and releases the potential of its ***people*** to produce ***results***. The processes and the people are the ***enablers*** that provide the ***results***.

The model is shown below.



1994 UK Quality Award criteria
Source: British Quality Foundation

For further details of the UK Quality Award, and information on self-assessment, please contact: Director of Awards, British Quality Foundation, Vigilant House, 120 Wilton Road, London SW1V 1JZ (tel: 071 873 8600; fax: 071 873 8588).

II The Baldrige Award

The Baldrige Award, named after the then Secretary of Commerce, was established by the American Congress in 1987 to help American industry meet the perceived growing challenge of foreign competition. Awards, presented annually by the President, are presented in three categories: manufacturing companies, service companies and small businesses. Winners are expected to share information about their successful quality strategies with other American organizations, e.g. through presentations at conferences and promotional videos.

The Baldrige criteria are reviewed annually. The 1994 criteria are shown below.

1994 Examination Categories/Items			Point Values
1.0	**Leadership**		**95**
	1.1	Senior Executive Leadership	45
	1.2	Management for Quality	25
	1.3	Public Responsibility and Corporate Citizenship	25
2.0	**Information and Analysis**		**75**
	2.1	Scope and Management of Quality and Performance Data and Information	15
	2.2	Competitive Comparisons and Benchmarking	20
	2.3	Analysis and Uses of Company-Level Data	40
3.0	**Strategic Quality Planning**		**60**
	3.1	Strategic Quality and Company Performance Planning Process	35
	3.2	Quality and Performance Plans	25
4.0	**Human Resource Development and Management**		**150**
	4.1	Human Resource Planning and Management	20
	4.2	Employee Involvement	40
	4.3	Employee Education and Training	40
	4.4	Employee Performance and Recognition	25
	4.5	Employee Well-Being and Satisfaction	25
5.0	**Management of Process Quality**		**140**
	5.1	Design and Introduction of Quality Products and Services	40
	5.2	Process Management: Product and Service Production and Delivery Processes	35
	5.3	Process Management: Business and Support Service Processes	30
	5.4	Supplier Quality	20
	5.5	Quality Assessment	15
6.0	**Quality and Operational Results**		**180**
	6.1	Product and Service Quality Results	70
	6.2	Company Operational Results	50
	6.3	Business and Support Service Results	25
	6.4	Supplier Quality Results	35
7.0	**Customer Focus and Satisfaction**		**300**
	7.1	Customer Expectations: Current and Future	35
	7.2	Customer Relationship Management	65
	7.3	Commitment to Customers	15
	7.4	Customer Satisfaction Determination	30
	7.5	Customer Satisfaction Results	85
	7.6	Customer Satisfaction Comparison	70
		TOTAL POINTS	**1000**

1994 Baldrige Award criteria Source: American Society for Quality Control

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European collaboration in science and technology: II Pointers to the future for policy makers
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SEPSU Policy Study No. 4 (1990, £30)

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(Second edition, 1991, £30)

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