RICS

RESEARCH

COBRA '97

Does the possession of the ISO9000 certificate provide a measure of quality?

Ted Hughes and P V Ryall, University of Glamorgan

ISBN 0-85406-840-6

THE ROYAL INSTITUTION OF CHARTERED SURVEYORS

DOES THE POSSESSION OF THE ISO 9000 CERTIFICATE PROVIDE A MEASURE OF QUALITY?

Terry Hughes MSc FRICS; Trefor Williams BSc MPhil, MCIOB MIQA MBEng; Paul Ryall BSc, all of The School of the Built Environment, University of Glamorgan, Treforest, Pontypridd, CF37 1DL

Clients increasingly have required both consultants and contractors to possess an ISO 9000 certificate as a requirement of their employment. If the purpose of this is to ensure quality then the authors work would suggest that this need not be the case. A company's motivation and methods used to develop a system are a more accurate measure of the system's likely effectiveness. Two implementation methods identified are the comprehensive and analytical approaches. The comprehensive approach tended to be linked to "badge hunting" motives whilst the analytical approach tended to show a motive more closely linked to improving organisational effectiveness. The comprehensive approach was encouraged by the employment of consultants which led to larger manuals and a lack of staff willingness to use them. Therefore if clients want a true measure of quality they would be better advised to examine the prospective company's motivation and implementation approach rather than simply accept the possession of a certificate.

1. Introduction

Government policy in the 1980's and 90's recognised the strategic importance of improving the quality of management to achieve greater international competitiveness throughout the British Economy. To this end the Government implemented certain programmes in particular the Department of Trade and Industry (DTI) Enterprise Initiative which provided financial assistance to small companies to employ quality consultants to aid them in their attempts to achieve accreditation to ISO 9000 formerly BS 5750.

Concern has been raised about the appropriateness of applying quality management systems developed in the manufacturing sector into the construction sector with little adaptation for the unique characteristics of the latter.

Despite this concern it is now commonplace for clients to require both their professional advisors and potential contractors to have a quality management system registered to ISO 9000.

But are clients taking the right approach in specifying the requirement for ISO 9000 accreditation and can their professional advisors be satisfied that a registration certificate is enough to demonstrate a company's commitment to achieving quality? .

The authors believe that their study has shown that the question for the client is not whether a prospective tenderer has achieved accreditation to ISO 9000 but more importantly which approach to implementation and development of a quality management system have they followed. Have they followed an approach which has fostered an environment where compliance with their own system has become the objective or have they produced a culture where compliance with their management system is only a function of improving their organisational effectiveness?. This paper will aim to show the importance that a company's motivation toward this development plays.

Several authors have investigated particular aspects of quality improvements and ISO 9000. Dale and (Duncalf, 1984), (Deshpande et al, 1986) and (Rayner and Porter, 1991) all examined the experiences of small firms attempting to achieve registration to ISO 9000. (Taylor, 1994) concentrated on attitudinal and behavioural aspects of senior management towards ISO 9000 whereas other authors such as (Weston, 1995) and (Street and Fernie, 1992) have examined companies' experience of obtaining registration in a particular location either in the UK or abroad.

There have been several studies of various aspects ISO 9000 related to organisations and their motives for attempting to achieve accreditation to the quality standard. However, little study has been

made of the approach used and the relative effects these approaches have had on the efficiency of the resultant quality systems. The relationship between organisational motivation, implementation approach and system efficiency would appear to be of paramount importance if improvements in organisational effectiveness are to be achieved.

2. The Survey

The survey comprised a sample population of 113 construction consultants and contractors active in the South Wales and South Western regions of England and registered to ISO 9000 Parts 1 or 2 in 1996. 61 completed questionnaires were returned within the allocated period which converted to a return rate of 54% of the sample population.

The authors' response was dwarfed by that of Taylor who received 682 responses however only 115 or 16.8% of these were registered to ISO 9000. Other surveys such as (Rayner and Porter, 1991) 20 interviewees; (Whittington, 1989) 14 interviewees; and (Weston Jr., 1995) 40 interviewees were smaller than the author's but were interview based rather than postal survey by questionnaire.

The majority of previous studies concentrated on the manufacturing sector but (Rayner and Porter, 1991) and (Taylor, 1994) did include a certain proportion of service and other sector companies. In this respect the authors' survey differed in that it concentrated on one sector only i.e. construction, and specifically contractors and consultants. (see Results section later).

The diversity of size of companies in other surveys was similar to the authors' with small, medium and large categories in terms of turnover and number of employees.(see Results section later)

The majority of respondents were registered to ISO 9002 which reflected the fact that the majority were contractors with little or no design input although some contractors were registered to ISO 9001 which possibly is an indication of the increase in the design and build method of procurement.

The survey questionnaires were addressed to the quality managers of each respondent organisation.

The questions were grouped as follows:

1. Company financial and quality background.
2. Motivation for achieving BS 5750.
3. Resources utilised.
4. Implementation methods used.
5. Perception of existing quality systems.
6. Post-accreditation behaviour.

57% of respondents indicated their willingness to participate in a subsequent structured interview programme which is planned by the authors as the next stage in their overall research programme.

The primary areas of investigation included:

- DTI policies and assistance.
- Staff utilisation in implementation.
- The correlations between approach adopted, company size, quality system size and staff motivation to utilise.
- Staff dissatisfactions and de-motivation and its implications for integrated quality programmes.
- The role of consultants and correlations linked to this.
- The two approaches to implementation and the correlations associated with each.

3. The results and discussion

Analysis of the results of the survey provided insights into the relationships between the companies' management and organisation and the ISO standard. The following discussion focuses upon a limited number of the questions and are grouped under the headings listed above.

3.1 The company's financial and quality background.

The respondents were found to be in the following categories:

Table 1: Nature and location of your business

Consultants	Private	33%
	Public	7%
Contracting	Private	49%
	Public	11%

The nature of a company's activity be it contracting or consulting is important in that each activity is different and the processes and control of quality in these processes will be different. Contracting stands alone because of the relative uniqueness of each project. Each site is different and therefore the conditions of that project will be different. There will also be central activities (i.e. head quarters) and project specific activities which will differ in nature and in how quality will be controlled. Consulting is somewhat of a hybrid because it "manufactures" designs and documentation but each project will be different although much of the data and certainly the documentation will be repetitive.

The number of companies in each classification was as follows:

Table 2: Number of employees

		No of respondents	**%**
0-99 employees	Small	22	36%
99-499 employees	Medium	21	34%
500+ employees	Large	18	30%

The answers to this question formed the basis for the analysis of the correlations between company size, the size of their quality procedures manuals and the approach to implementation they adopted.

Table 3: Annual turnover

Turnover	**No of Respondents**	**%**
Under £1 million	9	15
£1 million-£10 million	20	33
£10 million plus	32	52

This enabled some judgement on the scale and complexity of their operations.

Table 4: How long have you been registered with your accreditation body?

Period	**No of Respondents**	**%**
Pre - 1988	0	0
1988 - 1990	10	16
1190 - 1992	22	36

1992 - 1994	28	46
1995	1	2

The great majority of firms (82%) had achieved accreditation in the period 1990-94 i.e. the period that the DTI Grant Scheme was in operation.

3.2 Motivation for achieving accreditation.

Table 5: Do the clients you work for require certification?

	No of Respondents	%
Yes	51	84
No	10	16

This question identified external pressures on organisations to achieve accreditation to ISO 9000 e.g. the Ministry of Defence. Such pressure may influence the approach and motivation of an organisation in their implementation of a quality system. "Badge hunting" may consequently be the primary motivational force and this in turn may encourage a comprehensive method of implementation in which all corporate activities are documented regardless of their importance to a company's operations.

Table 6: Why did you decide to achieve accreditation?

	No of Respondents	%
Client pressure to achieve it	21	37
To increase staff motivation	0	0
Competitors achieving it	11	19
A need to systematically record your activities	3	5
A wish to improve your quality of service and reduce complaints	10	18
To lower your costs	0	0
A desire to improve the economic performance of your company	12	21

The confirmation by respondents of client pressures to achieve certification may well infer "badge hunting" or marketing motives in respondents achieving registration and although the answer to this question may not, on its own, confirm that a particular approach to implementation was adopted it does, the authors believe, provide proof that a desire to improve the economic performance of a company was not the only reason and maybe not even the primary reason, for a company to seek registration. A client specification for registration to ISO 9000 would in fact make badge hunting a corporate necessity.

The level of client pressure at 84% was found to be as high in the author's survey as in other earlier ones such as (Rayner and Porter, 1991) where 80% of respondents gave marketing considerations as their primary motivation and (Weston, 1995), of whose respondents "85% indicated that the customer was the driving force".

3.3 The resources used to develop QA system.

Table 7: After deciding to achieve registration to BS 5750 what resources did you use to formulate the necessary procedures?

Resources Used	No of Respondents	%
Consultants	10	17
Your own staff	24	39
Both	27	44

A majority of respondents (i.e. 61%) employed consultants and a significant minority, 17% stated that they only used consultants to formulate their procedure notes. This could indicate a complete divorce of these organisations from the implementation programme and an abdication of their role in implementation. The use of consultants only or even principally to formulate procedure notes given their role, often limited timescale and consequent lack of intimate knowledge of an organisation, must pose serious questions as to the quality of the resultant procedure notes.

Table 8: Was the DTI Quality Initiative Grant scheme utilised?

	No of Respondents	%
Yes	15	25
No	32	52
Do not know	14	23

The utilisation of DTI Quality Initiative Grants is a contentious issue and their use may have, in the authors' opinion, been a primary reason for the development of the comprehensive approach. Only 15 respondents out of 37 who were possibly eligible for DTI grant scheme aid had utilised it. The 41% take up would appear to the authors a low percentage**.**

Protracted analysis of a company's operations would only be partially financed by such a grant and therefore many firms would not commission this. Under the grant regime the use of standard procedure notes to comprehensively fulfil the requirements of BS 5750 may well have been the approach adopted. Such standard notes would take scant account of an individual firm's operational conditions. Although satisfying the letter of the law of BS 5750 it is very arguable if this approach is compatible with either the letter or the spirit of the revised standard ISO 9000: 1994.

A lack of knowledge of Q.A. will ensure the employment of consultants but this course of action may well result in a comprehensive approach which may initially be ineffectual in improving organisational performance.

Table 9: Did your consultants provide any standard procedure notes for you?

	No of Respondents	%
Yes	23	38
No	30	49
Do not know	8	13

The employment of consultants to aid in the implementation of a quality system, especially if employed under the DTI grant regime, may mitigate against stringent organisational analysis. The constraints of time and cost under this scheme may not allow analysis and consultants eager to please their clients may encourage the use of standard procedure notes to satisfy many of the clauses of BS 5750. This type of action would appear to be contrary to the philosophy of the revised standard ISO 9000: 1994 in particular Clauses 4.1.1 and 4.2.2 which stress relevance of a quality system to the organisation implementing it and its customers.

4. Implementation Methods Used

Table 10: Which of the different approaches would best describe yours in implementing a quality system?

	No of respondents	%
A comprehensive system covering all activities of the company	31	51
A more analytical approach which only covers the important activities of the company	30	49

(Weston, 1995) had tentatively identified the characteristics of two different approaches to implementation but not the implementation methods.
In common with earlier research (Dale and Duncalf, 1984), (Deshpande et al, 1986), (Rayner and Porter, 1991), (Street and Fernie, 1992), (Taylor, 1994), (Weston Jr., 1995) and (Whittington, 1989) two principal motives for achieving accreditation to ISO 9000 were identified:

1. Badge hunting or marketing reasons invariably prompted by client pressure to achieve accreditation.

2. To achieve improved organisational effectiveness.

The authors believe their study findings illustrate clear recognition by respondents of the defined characteristics of both approaches and identification with one or the other. The authors further believe that their findings indicate that the comprehensive approach, whilst legitimately followed for "Badge-hunting" or marketing reasons, does not lead to improved organisational effectiveness whereas the adoption of the analytical approach does.

The paper discusses the research and the major finding that the adoption of a comprehensive or badge hunting approach to implementation is merely a corporate tactic which may reduce effectiveness whereas the adoption of an analytical approach is likely to improve an organisations ability to satisfy a
clients needs.

The practical implications of the last point are illustrated by the different approaches to implementation. The analytical approaches favours strict analysis of an organisation and its activities which results in essential activities only being documented and therefore a reduction in paperwork. The comprehensive approach employs less discretion as to what to document and consequently creates a broader and larger system.

The philosophy of Q.A. requires a company to define, the what, why, when, how, where and who regarding their activities. They need to prescribe responsibility to the individual who performs a particular function and enshrine traceability in their organisation in order to meet client needs. An essential feature, spelt out more clearly in ISO 9000 is also that a system and its procedures should be selective and effective and only procedures which are actually required should be documented. The aim should be not to create a mountain of unnecessary paperwork. The documentation of a company's activities should allow analysis and rationalisation of these activities i.e. improved internal efficiency.

The danger of not following the philosophy of Q.A. by adopting an all embracing comprehensive approach directed simply at achieving ISO 9000 is that a paper mountain will be created which is ineffective in use because of its scale. This is perhaps the most often quoted perceived disadvantage of Q.A.

Concentration on important matters rather than a "blanket" approach should ensure an effective system. A "blanket" approach often occurs when a firm is motivated only to achieve certification rather than for internal organisational improvement as well.
In such cases a standard procedures manual may be used rather than by staff producing their own customised one. The use of standard procedures are viewed as a problem by a number of commentators.

(Hobbs, 1993) states:

> *Each system is unique and cannot be bought ready made.*

(Bradley, 1991) concurs with this and stresses the need to fit the standard to your business and not your business to the standard.

> *You cannot and should not try to impose procedures on your business simply to meet the needs of the standard.*

(Feltham, 1994) believes that ISO 9000:1994 further emphasises this point.

It allows a tailor made or customised approach to quality management.

It was discovered that the motives of an organisation in implementing a management system will affect their philosophical approach to implementation .The chosen approach then affects the scale of their system they develop which in turn is a major determinant of its eventual effectiveness.

5. Perceptions Of Existing Quality Systems

Table 11: Size of quality manual

Size of Quality Manual	No of Respondents	%
Large 150+ pages	7	11
Medium 50-150 pages	30	49
Small less than 50 pages	24	39

The final size of the procedures manual will have, in the author's opinion, a considerable effect on its effectiveness in use. The size should be in proportion to the company and to the diversity of its activities. This is the other source of data for correlation analysis. The sizes given were an hypothesis to be tested as to size and correlation to company size. Medium and small manual size were shown to be an accurate assessment.

Table 12: Do you find the size of your manual affects the willingness of your staff to use it?

	No of Respondents	%
Negatively	39	64
Positively	22	36

Perceptions of a quality system by the people using it may be crucial to its successful implementation and development.

If the scale of a system adversely affects its usability then staff perceptions, which may originally have been highly sceptical, will be affected. Positive staff perceptions are vital if a system is to be successful and a proprietary feeling toward the system must be encouraged at all costs.

A majority of the respondents (64%) found the size of their manuals negatively affected the willingness of their staff to use them. This scale of such dissatisfaction is disconcerting to the authors.

Only 36% of the survey found that the size of their quality manual positively affected staff willingness to use it. Small manuals tending to foster greater willingness.

6. Post-Accreditation Behaviour

Table 13: What percentage of procedures have had to be amended since the system was first registered?

% Amended Post-Accreditation	No of Respondents	%
50% plus	27	45
20-50%	13	22
0-20%	20	33

This question seeks to elicit any change in quality policy post-registration. If consultants wrote a lot of a company's procedures and post-registration they have had to change them this gives an indication of analysis being commissioned post-registration which may infer a change in their attitudes and

motivation i.e. from simply "badge hunting" to analysis for greater organisational effectiveness. It may also illustrate a change in implementation policy.

The author's survey does indicate that a post-accreditation analytical culture is developing with at least 67% of the respondents amending more than 20% of the procedures and nearly half the respondents i.e. 45% amending 50% or more of their procedures. These are extremely encouraging statistics for the development of an analytical approach to implementation which the author believes will result in organisational improvement and may be the optimum foundation for an integrated quality initiative such as TQM.

This is a significant growth in analytical culture post accreditation with only 40% of respondents having commissioned extensive organisational analysis pre-accreditation.

Following this examination the authors would argue that organisations which use accreditation to ISO 9000 as a pre-qualifier should recognise and acknowledge the different motivations that companies have in achieving accreditation and especially the effects different methods of implementation may have. They may improve quality more effectively by monitoring the approach adopted by their potential suppliers. An organisation's possession of the quality standard may not be enough rather how they implemented and achieved it may be the critical aspect. The following discussion will aim to show the importance of these aspects.

7 Discussion Of Results

Two system effectiveness measurement criteria were employed namely staff willingness to use their system and the scale of change in these procedures post accreditation and these indicated that:

Respondents who employed consultants have developed quality procedures manuals that are larger than the size of their companies would appear to warrant.

The analysis of the two system effectiveness measurement parameters identified certain implementation characteristics upon which consultants have not had a beneficial effect. Consultants influence tended to increase manual size and consequently did not positively affect staff motivation to use their systems. This links to a finding that quality procedure manual size would appear to have an influence on staff motivation to use them.

The provision of standard procedure notes by consultants appeared to have a de-motivating effect on staff willingness to use their quality produce manuals. This appeared to be because:-

a) These standard notes increased the overall size of quality systems.
b) The standard notes appeared to increase the unwillingness amongst staff to use the systems.

A large number of companies employing consultants have amended more than 50% of their procedures post-accreditation with the majority having amended more than 20% of their procedures post-accreditation.

The research identified characteristics upon which further investigation could aid the development of an optimum approach toward the development of quality management systems for use within the construction industry. These characteristics included:

1. Quality manual size would appear to have an influence on staff motivation to use them. Large manuals resulted in 50% less staff motivation than smaller manuals.

2. The comprehensive approach appear to increase quality manual size with a corresponding drop in staff motivation to use it.

3. The analytical approach appeared to foster a analytical culture, both pre and post-accreditation, which complements the characteristics of other integrated quality programmes such as T.Q.M.

4. The process of “bolting-on” either standard procedure notes provided by consultants or procedure notes from previous quality systems was rife and caused negative correlation’s between company size and quality procedures manuals size.

5. The provision of standard procedure notes by consultants appeared to be a de-motivating influence on staff willingness to utilise their quality procedures manuals. The authors believe this to be because:

    a) These notes increased the size of quality systems.

    b) The standard notes appeared to cause antagonism amongst staff perhaps because the imposition of standard notes might have been perceived as indirect criticism of their competence.

6. The incorporation of procedure notes from previous systems appeared to create very strong staff motivation to use their system. This may have been caused by:

    a) Staff familiarity with their system procedure notes.

    b) A proprietorial sense of ownership of these notes and which reflects well on their competence.
    c) Less work generated by the transfer of their notes from their previous system rather than drafting new notes.

7. The transfer of procedure notes from a previous system was often accompanied by a weak pre-accreditation analytical culture but a strong post-accreditation analytical culture. The respondents followed the “path of least resistance” to achieve accreditation, but developed a vigorous post-accreditation analytical culture, which bodes well for the future effectiveness of their systems.

8. A majority of firms with negative correlation between the size of their quality procedures manual and their company size and of those respondents who found the size of their quality manual negatively affected staff willingness to use it, had followed the comprehensive approach with the development of weak pre and post-accreditation analytical cultures.

The stringent adoption of the analytical approach had evidently produced , for a small minority of the respondents, an above average achievement of positive correlation between company size and quality procedures manual size and the stronger than average development of both pre- and post-accreditation analytical cultures.
However this approach had not achieved positive staff willingness to use their systems because of the smaller procedures manual size. The motivational challenge had been failed although other important effectiveness parameters had been satisfied.

The authors have progressively recognised that the stringent adoption of either the comprehensive or the analytical approach to implementation may not be the optimum solution and that elements from each approach, or at least adaptations of these elements, may be necessary to formulate the optimum implementation and development model.

This optimum implementation and development model will recognise the connection and compatibility between the analytical approach to implementation and other motivational quality initiatives such as T.Q.M.
This recognition that the use of the analytical approach to implementation and development with amendments (i.e. the optimum implementation and development model perhaps based on the path of least resistance model identified in the survey) may automatically develop strong staff motivation upon which the motivational techniques such as those espoused within T.Q.M. can subsequently

successfully be based. The optimum implementation and development model could then become an integrated strategy for quality not treating Q.A. or T.Q.M. as separate initiatives.

The optimum implementation and development model would also recognise that the Analytical Approach's objective is an improvement in organisational effectiveness whereas the comprehensive approach's objective is "badge-hunting". The former is a strategy i.e. annual improvement affecting both supply side (cost of production) and demand side (sales and revenue) over the long term whereas the latter is only a tactical initiative which may affect the demand side by retaining market share in the short term but does not affect the supply side and even the demand side effect becomes neutralised when ISO 9000 accreditation becomes the market norm or a minimum requirement.

In the authors' opinion the choice of implementation approach to be adopted is vital to the future corporate health of any organisation and implementation to ISO 9000 can be the optimum preparatory springboard for any corporate quality strategy.

The difference between the comprehensive approach and the analytical approach (or refined into the optimum implementation and development model) is that the former is a tactic whereas the latter is the basis of a strategy. The recognition of this difference is crucial, the authors believe, to successful implementation to achieve accreditation to ISO 9000 and subsequently for the development and implementation of a full quality strategy comprising the various other techniques.

Until recognition occurs that quality management system implementation and development is a strategic value-adding and cost reducing mechanism rather than an additional element of cost then staff perceptions of Q.A. as a vital element of an integrated quality programme will remain negative and few improvements to organisational effectiveness and consequently corporate profitability will accrue. Without a change of attitudes and perceptions towards Q.A. and its underlying philosophy the full benefits of implementation will not be gained. The importance of a full understanding of Quality Management and the correct choice in implementation and development approach cannot be overstated.

The authors would argue that organisations which use accreditation to ISO 9000 as a pre-qualifier should recognise and acknowledge the different motivations that companies have in achieving accreditation and especially the effects different methods of implementation may have. They may improve quality more effectively by monitoring the approach adopted by their potential suppliers. A supplier's possession of the quality standard may not be enough rather how they implemented and achieved it may be the critical aspect.

8 Bibliography

Bradley, R (1991). *Quality Assurance in the Industry* Estates Gazette, January, pp 151-154

Dale, B.G. and Duncalf, A.J. (1984). *A Study of Quality Assurance in Small Companies*. Proceedings of the Institution of Mechanical Engineers, Volume 198B, Number 6, pp. 135-139.

Deshpande, A.B., Dusting, F.P.J. and Younger, A. (1986). *A Co-operative Quality Management System for Small Companies*. International Journal of Quality and Reliability Management, Vol. 3, No. 1, pp. 38-47.

Feltham, S. (1994). *BS 5750:1994 The Changes*, Quality World, August, pp 520-521

Hobbs, C. (1993). *QA; How relevant is it to your practice?* Chartered Quantity Surveyor. February. p 17

Hughes, T.B. and Williams, T. (1995). *Quality Assurance - A framework to build on* (2nd Edition) Blackwell Scientific Publications, Oxford

Rayner, P. and Porter, L.J. (1991). *BS 5750/ISO9000 - The Experience of Small and Medium-Sized Firms* International Journal of Quality and Reliability Management. Vol. 8, No. 6, pp. 16-28.

Street, P.A. and Fernie, J.M. (1992). *BS 5750: The Industry View* International Journal of Quality and Reliability Management**,** Vol. 8, No. 6, p.p. 37-42.

Taylor, W.A. (1994). *Senior Executives and ISO9000. Attitudes, Behaviours and Commitment* International Journal of Quality and Reliability Management, Vol. 12, No. 4, pp. 40-57.

Weston, Jr., F.C. (1995). *What do Managers Really Think of the ISO9000 Registration Process* Quality Progress, October, pp. 67-73.

Whittington, D. (1989). *Some attitudes to BS 5750; A study* The International Journal of Quality and Reliability Management, Volume 6, Number 3, pp 54-58.