Perspectives

Does ISO 9000 accreditation make a profound difference to the way service quality is perceived and measured?

Gavin Dick
Kevin Gallimore and
Jane C. Brown

The authors

Gavin Dick is a Senior Lecturer at Staffordshire University Business School, Stoke on Trent, UK.
Kevin Gallimore is a Senior Lecturer, Manchester Metropolitan University, Crewe, UK.
Jane C. Brown is a Nurse Manager, North Staffordshire Combined Health Care NHS Trust, Stoke on Trent, UK.

Keywords

ISO 9000, Service industries, Measurement

Abstract

The article examines the usage and relative importance of quality measurements in the UK's largest service companies. The authors analyse the relationship of both internal and customer-based quality measurements to the importance placed on accreditation to an ISO 9000 standard. The effect of process structure is explored by categorising the service firms as being in front-room or back-room dominant service sectors. The authors find that the service firms, which consider accreditation to be important, have a different emphasis on quality than other service firms do. Significantly, their emphasis shifts from one that is in line with their process structure to a more balanced one, where both internal and customer-based quality measurements receive similar attention. This leads them to conclude that accreditation to an ISO 9000 standard can make a profound difference to the way quality is perceived and measured in large service firms.

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Introduction

The service literature views quality as predominately a measurement based on the customer's view of the service received, yet writers in the quality literature argue that services need to learn, from manufacturing, the ability to manage quality internally. The increasing number of registrations of service firms to an ISO 9000 standard suggests that this internal view of service quality is gaining ground. In service industries the world-wide take-up of quality management system registration to the ISO 9000 standard has increased rapidly, with more than 71,000 service organisations registered at the beginning of the year 2000. Service industries now account for over 26 per cent of all registrations and show the greatest growth. Some service sectors such as public administration, and hotels and restaurants have doubled their number of registrations in 1999, while others such as wholesale and retail have grown to become the fifth largest overall industry sector (ISO, 2000a). Although there is a considerable body of research exploring quality system accreditation in manufacturing, research, particularly empirical research in service industries, is limited. Given the increasing number of service organisations pursuing quality management system accreditation, it is clearly important to investigate whether or not it can make a profound difference to the way service quality is perceived and measured.

The research data analysed in this article were obtained by questionnaire survey of the chief executives of 270 large service companies. In this research, we examine differences in quality measurement emphasis and usage, and how these change relative to the importance placed on accreditation to an ISO 9000 standard. The effect of process structure is also explored by categorising service firms, as being in front – versus back-room dominant – industrial sectors.

The research finds empirical evidence that service firms which rate quality accreditation as important, have a balanced perspective where both internal and customer measurements of quality are used extensively. In contrast, service firms which do not rate quality accreditation as important emphasise quality measurement less. In the absence of quality accreditation, we find a clear

differentiation in the usage of quality measurement in front-room dominant versus back-room dominant industrial sectors.

The paper first examines how the process structure of service firms can affect the emphasis on quality measurement, and considers the implications of previous research on quality accreditation. The paper then goes on to formulate the research questions and explain the methodology used before examining and discussing the findings.

Previous research

Service process structure and quality emphasis

In some service industries, the pursuit of service efficiency has followed the path described by Chase (1981). He suggested that lowering the proportion of customer contact time, by standardising the product and transactions at the customer interface, lowered the uncertainty introduced, and, therefore, gave greater protection from unpredictability to the technical core. This protection of the technical core from unpredictability allows greater scope for the adoption of process structures with de-coupled back-room activities. Chase (1978) and Chase and Tansik (1983) argued that the logic of manufacturing organisations could be applied to these de-coupled back-room activities. The ultimate stage in this is Schemenner's (1986) service factory concept where the firms' products and processes are standardised and labour is leveraged by capital investment. Here customer interaction is low, and the process repetitive, so allowing the maximum scope for designing factory-like processes, including the use of technology and specialisation of labour.

However, manufacturing thinking has changed since the idea of service industrialisation was first suggested in the late 1970s. The focus is no longer on treating people as though they were machines. The emphasis is now on the elimination of non-added value activities, a focus on core activities and teamwork alongside employee empowerment. Bowen and Youngdahl (1998) argue that these "lean" changes mean that the production line approaches to service both do, and should, continue to transfer from manufacturing to service. Bowen and Youngdahl (1998) argue that many of the recent advances in service design and delivery that have been lauded as departures from service industrialisation in fact represent advancement in service industrialisation. They argue that successful service firms such as Taco Bell, Southwest Airlines and Shouldice Hospital do not represent a unique service industry approach but are the application of current "lean thinking" manufacturing ideas. As in manufacturing, the lack of slack in these lean systems makes a systematic approach to quality essential.

The pursuit of service efficiency described above has arguably resulted in an increase in back-room activity in many service industries (Beaumont *et al.*, 1997), along with efforts to standardise the product and transactions at the customer interface, a process vividly described as "McDonaldization" by Ritzer (1995). Recent advances in communication and information technology have accelerated this process. It appears that, although technology changes the way a service is delivered by redefining the location and boundaries of front-room activities, it does not undermine the logic of buffering the back-room from customer intervention.

Across the spectrum of service industries, we would expect variations in quality emphasis that relates to their front-room versus back-room structure. Firms with low levels of customer contact are classed as "quasi manufacturing" by Chase (1981). These have larger back-room activities that are de-coupled from the unpredictability of front-room activities. Here the service is standardised, making the specification and measurement of the service delivery process much easier. The de-coupling of front- and back-room processes allows the back-room activities to focus on measuring and controlling quality to meet the specification consistently (internal measurement), while the front-room activities will be more customer-service orientated and emphasise the quality of the service encounter and the customers' measurement of the service result (customer-based measurement).

The review above suggests that the balance between quality measurements will be dictated by the process structure of the service firm. Firms where a minority of staff has direct customer contact are likely to have large de-coupled back-room operations. In these firms there is likely to be an increased emphasis on the measurement of the quality

of the service-delivery process (internal). In contrast, service firms that have a majority of staff with direct customer contact will have fewer staff working in de-coupled back-room operations and so have less emphasis on internal quality measurement compared to measures of customer satisfaction.

What seems to be absent in the literature is research that informs us of whether service firms that pursue quality management system registration have a different emphasis on quality measurement compared to non-registered firms.

Quality accreditation

The ISO 9001:2000 quality management system standards claim to be applicable to any organisation, large or small, whatever its product – independent of whether its "product" is actually a service – in any sector of activity, and whether it is a business enterprise, a public administration, or a government department. The specification of quality criteria in ISO 9001:2000 refers to all those features of a product or a service that are required by the customer, while quality management in ISO 9001:2000 means what the organisation does to ensure that its products/services conform to the customer's requirements. A quality management system registration gained to an ISO 9000 standard means that an independent auditor has checked that the organisational processes influencing quality meet the relevant standard's requirements (ISO, 2000b).

Inferred in the pursuit of quality accreditation is the assumption that it is associated with improved quality management systems, leading to better quality and, hence, to better business performance. The expected links are shown in Table I. The model shows the approved quality management system bringing an increased emphasis on quality in the firm's processes, which leads to less waste or duplication of effort, and improved service quality. These improvements lower costs while the improved quality means fewer customer defections, leading to increased sales volume.

Support for the proposition that better quality has a positive relationship with business performance in service industries is provided by Capon *et al.* (1990), who identified 20 studies that found a positive relationship. In addition, Rust *et al.* (1994) came to a similar conclusion in their review of the marketing literature on service quality and financial returns. However, the research we now examine on the links between quality accreditation and improved performance reveals that the performance gains expected are not consistently achieved. Motives appear to be an important predictor of performance, which leads us to conclude that simply using possession of a quality management system registration, as a research variable is problematic.

Insights into the reasons for pursuing quality accreditation, and the effect this has on subsequent business performance, are provided by the Science and Engineering Policy Studies Unit (1994) study that reviewed 28 surveys relating to ISO 9000. It concluded that there appears to be a relationship between managers' motives for obtaining accreditation and gains achieved in business performance. Companies that cited customer pressure as their reason for pursuing accreditation were less likely to report improvements than those who gave other reasons for obtaining accreditation. Other studies (Gore, 1994) have suggested that organisations reacting to external pressure may see quality management system registration as the prime objective and adopt a minimalist approach to achieve it. These firms may have successfully obtained

Table I The expected links between ISO quality accreditation and business performance

ISO 9000 registration	Quality management system	Quality improvement focus	Business performance
Accredited to ISO 9000 standard	The approved quality management system brings an increased emphasis on quality in the firm's progress	*Internal quality measurement* Reduce waste and improve quality of service outputs	Reduced costs improve competitivenes
		Customer quality measurement Improve match of service quality to customers' expectations	Fewer customer defections so sales increase

accreditation of their quality management system but they do not value the quality management system that quality accreditation requires.

These studies infer that the motive for seeking accreditation is an important predictor of performance. Insights into this motivation variable are provided by an empirical study of 272 Australian firms by Jones *et al.* (1997). They found evidence that firms that sought quality accreditation because of externally imposed perceptions of the necessity to "be registered" were found to experience fewer beneficial outcomes of quality accreditation than firms which had a more "developmental" view of quality improvement. Firms with a more developmental orientation reported less waste and duplication of effort, fewer customer complaints and, to a lesser extent, more business and lower operating costs.

These developmental firms' motives included a desire to use quality accreditation to improve the company's internal processes, and/or help lower quality costs and increase customer focus. Support for this view is found in a survey of 192 Dutch firms where financial benefits were contingent on firms having internal reasons for pursuing accreditation (Singels *et al.*, 2001).

Overall, it would seem that quality management system registration has little or no explanatory power in terms of organisational performance, unless complex variables such as motives or orientations are taken into account (for a more detailed analysis see Dick (2000)).

A more direct variable that captures whether the ISO 9000 quality management system is embedded in the firm's thinking could have the potential to avoid these measurement problems. If a firm has an embedded quality management system and it is registered, then it could be expected that the firm would rate quality accreditation as important to the way it defines quality. In other words, the process of obtaining quality management system registration has changed the way the firm specifies its quality criteria. Therefore, in this research, the intent is to measure the "value" placed on quality accreditation's contribution to an organisation's definition of quality. How this is operationalised will be detailed in the methodology section.

Quality measurement

The service literature predominately views quality as a measure that is external to the firm, usually based on the customers' view of the service received. Yet, writers in the quality literature such as Gummesson (1991) argue that services need to learn from manufacturing the need for consistent quality, and the ability to manage quality internally. The increasing number of service firms pursuing accreditation to ISO 9000 standards suggests that this broader view of service quality is gaining ground amongst practitioners. The revised ISO 9001:2000 standard, published in December 2000, will no doubt accelerate this because the new standards will have a greater appeal to service firms, since they have less of a manufacturing bias and have, as their first principle, the customer-focused organisation. The new standards stress the importance of monitoring information on customer satisfaction as a measure of system performance, and the significance of people involvement and continual improvement in the service process. The standard describes the importance of both internal and customer-based measurement of quality, and emphasises that both are needed if service performance analysis of marketing, design and production/service delivery processes are to be effective (ISO, 2000b).

In this research the quality constructs resemble the concepts in ISO 9001:2000. We use the term "conformance" to describe the internal quality measurement of service-delivery process to the service specification, service delivery specification and quality control specification. The term "expectation gap" is used to describe measurement of the customer's satisfaction with the overall service result.

We therefore use in this research two broad quality measures. Conformance that reflects the dominant quality focus in back-room processes that is a measure of internal quality, and expectation gap that reflects customer-based measurement of quality performance (similarities and differences with SERVQUAL will be discussed later). The term "internal quality" needs to be explained carefully since the way the term is used in the quality literature differs from that in the service literature. It does not mean in this paper the "internal service quality" referred to by service researchers such as Schneider and

Bowen (1993), Reynoso and Moores (1995) or Gremler *et al.* (1994). Their "internal quality" relates to the quality experienced by internal employees from internal service providers using variations of the SERVQUAL model of quality. Clearly, their research is important to our understanding of how poor internal quality can affect employee attitudes and therefore customer satisfaction with the service, but it is not suitable as a measure in the context of accreditation to an ISO 9000 standard. Our internal quality dimension conformance takes the IS0 9001:2000 perspective, it refers to the firm's own monitoring of the conformance of internal processes to predetermined measures of quality. These predetermined quality measures reflect either the firm's understanding of a particular customer's service brief or more generic standards that reflect what all customers expect.

Conformance quality can be equated to the conformance dimension of Garvin (1987), while the expectation-gap measurement is similar to the "perceived service quality" in Parasuraman *et al.*'s (1988) SERVQUAL model. Thus, the expectation gap is a quality measure that is based on the customer's expectations of the service versus the service result and so represents the degree of success in meeting customers' performance expectations. Therefore, it goes beyond conformance quality since it also measures whether the service specification accurately reflects customers' expectations. Put another way, conformance quality measurement may confirm that the service system meets the service specification but the specification itself may not accurately reflect customer needs. So, the expectation-gap measure provides an essential feedback loop that informs marketing and design processes as well as service-delivery processes. Thus ISO 9001:2000 (ISO, 2000b) quality management systems articulate a balanced perspective where both an operations/internal perspective and marketing/customer perspective are combined.

In summary, we use in this research two quality measures that reflect the dominant quality focus in front-room and back-room processes. Conformance is used to describe the dimension that involves measuring/controlling service delivery processes to ensure that they meet specifications, and are likely to be dominant in back-room processes, while the other, termed expectation gap, describes the customers' overall satisfaction with the service result compared with their expectations.

Research question and methodology

Research questions

From the literature reviewed, it is clear that quality management system registration will only be associated with a greater emphasis on quality where firms value the quality management system that quality accreditation requires. We therefore frame the research questions used in the survey so as to distinguish respondents by their rating of the importance of quality accreditation in contributing to their definition of quality rather than by their accreditation. We term this variable "QCert value". High QCert value ratings will indicate higher degrees of importance of quality accreditation in contributing to the firm's definition of quality, which implies that their certified quality management system is making a valuable contribution to the way in which the firm manages quality. The framing of this critical QCert value question was difficult. Its final questionnaire form, "Please rate in importance the possession of a recognised quality certificate (e.g. BS 5750, ISO 9000) in contributing to your definition of quality", was arrived at after many internal debates on how to separate those who valued quality accreditation for only commercial reasons from those who valued the quality management system. Please note that in the UK the common business usage is "possessing a quality certificate" rather than "being quality registered", so this is the terminology used in the questionnaire.

A small pilot study was conducted to check that respondents understood this pivotal question and were giving appropriate responses to the other questions. The questionnaire was tested on senior managers from three different industries, with a researcher interviewing the respondents afterwards to ascertain whether the questions were understood and that the answers given in the questionnaire reflected the broader interview discussion of the variables. The pilot testing suggested that all the respondents understood the questions and were giving answers consistent with the objective.

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Derived from the literature we argue that, in the absence of higher ratings for QCert value, the quality measurement emphasis will be dictated by the process structure of the service firm. This is illustrated in Table II where it can be seen that service firms with low QCert values in back-room dominated industries will have a primary emphasis on conformance quality measurement and a lesser (secondary) emphasis on the expectation-gap quality measurement. In contrast, service firms in front-room dominated industries that have low QCert values will place much more emphasis on expectation-gap quality than conformance quality.

To analyse whether service firms that pursue quality accreditation have a different emphasis on quality measurement compared to non-certified firms, we put forward the following propositions. First, the emphasis on quality measurement will be greater in firms with higher QCert values. Second, the standardised approach to quality management required for quality accreditation is likely to result in firms having a more balanced emphasis between internal and customer measurements of quality. This is illustrated in Table II, where it can be seen that firms with high QCert values will have the greatest increase in quality measurement emphasis on the quality dimension that has a secondary emphasis in firms with low QCert values.

The effect of these two propositions will be that when the QCert value increases, the emphasis on conformance measurement will increase. This increase will be greater in firms in front-room dominated service industries as their process structure suggests they would normally place less emphasis on this measurement. In addition, when QCert value increases, the emphasis on the expectation-gap quality measurements will increase. This increase will be greater in back-room dominant service industries. Because of the dominance of the customer-centred view of quality in services, we predict that the increases in the expectation-gap measurement will be of a lower order than those of conformance quality measurement.

Table II Hypothesised quality measurement usage in front- and back-room dominant service sectors

	Front-room dominant usage	Back-room dominant usage
Conformance		
Low QCert value	Secondary[a]	Primary
High QCert value	Large increase	Small increase
Expectation gap		
Low QCert value	Primary[a]	Secondary
High QCert value	Small increase	Large increase

Note: [a]The difference between primary and secondary emphasis is expected to be large

An example of a large increase in quality measurement emphasis on conformance quality in a front-room dominated organisation that has accredited to an ISO 9000 standard would be a hotel chain. An illustration of an increase in conformance measurement would be a change in measurement of room quality from informal local checks by supervisors and a reliance on customer complaints, to the introduction of systematic daily measurement of room quality against formal quality standards, with weekly quality control statistics being reported and reviewed by management, and compliance to the standards and system being checked by regular audits by regional/head quarters staff.

An example of a significant increase in quality measurement emphasis on expectation-gap quality in a back-room dominated organisation that has accredited to an ISO 9000 standard would be a television broadcast company. An illustration of an increase in expectation-gap measurement would be change in the measurement of advertisers' satisfaction with broadcast quality, scheduling errors and side-by-side content (inappropriate products advertised before and after) from advertisers' complaints and indirect feedback from advertising agencies, to a systematic daily telephone survey of customer satisfaction, with weekly advertisers' satisfaction measurement statistics being reported and reviewed by management.

Based on the above, we define the following hypotheses for testing:

H1. Where firms have lower QCert values, conformance quality measurement usage will be greater in firms in back-room dominated industries than in front-room dominated industries (i.e. in line with their process structure).

H2. QCert value will be most strongly correlated with increases in the measurement of conformance quality in service industries with a front-room dominance (because the emphasis on

conformance quality measurement was lower before, a higher increase will be found)

H3. QCert value will be most strongly correlated with increases in the importance of expectation-gap quality measurement in service industries with a back-room dominance (because the emphasis on expectation-gap quality measurement was lower before, a higher increase will be found).

Methodology

The research data were obtained by a questionnaire survey of the UK's largest service companies. An examination of industrial classification of the UK's 1,000 largest companies by capital employed allowed us to identify a sample of 270 service organisations that gave nearly equal numbers of firms in each service industry sector. In practice this meant that in some smaller service sectors, e.g. insurance, all the firms were surveyed, while in sectors that had a large number of firms, e.g. stores, the organisations were selected to ensure that there was no bias towards larger or smaller size of firm.

To avoid any respondent's functional bias the cover letter requested completion of the questionnaire by the chief executive. Three reasons determined this decision. First, chief executives are more likely to provide objective responses because they are free from the functional bias of quality professionals. Second, the chief executive's views on quality accreditation and quality are likely to pervade the organisation. Finally, Hambrick (1981) strongly advises the use of only the CEO, should the researcher have no option but to access only a unique respondent. The questionnaire was addressed by name to the chief executive of each organisation surveyed. An analysis of the returns suggests that the vast majority of the questionnaires were actually completed by the named individuals. Many returns were either signed by the chief executive or had accompanying compliment slips, the latter often containing a handwritten note. In only a few returns was there any evidence that the questionnaire had been passed onto quality managers/directors or company secretaries.

Responses were received from 105 of the 270 surveyed. However, only 93 were complete, giving us a usable response rate of 34 per cent. Comparing the returns from the 13 service industry sectors against the sample frame showed that the response profile was representative of the sample frame (0.8 Spearman's Rho). Detail of the survey returns by service sector and staff employed can be found in Table III.

The degree of front- versus back-room activity was determined by asking respondents to choose the proportion of personnel involved in direct customer contact from a list of 10 per cent, 30 per cent, 50 per cent, 70 per cent, or 90 per cent. This was then used to classify the firms' industrial sectors, as front-room dominant if 50 per cent or more of personnel were involved in direct customer contact, or back-room dominant if the percentage was 30 per cent or less. To check the content validity of this classification of industrial sectors, an expert panel of seven management academics drawn from five UK business schools was asked to classify these service sectors as having a front- or back-room bias. The results mirrored the direct customer contact scale split of all industrial sectors surveyed except transport services. However, there was only partial agreement on the media and stores sectors. Overall, sufficient agreement exists to have confidence that the classification system, although crude, is valid.

We note that with only 93 cases to analyse we do not have sufficient power to find

Table III Survey returns by service sector, back-room/front-room classification and staff employed

		Staff employed (1000's)		
Service sector	**Returns**	**< 4**	**4 to 17**	**18 to 50**
Communications	3	1		2
Electricity	13	2	11	
Media	11	7	1	3
Transport services	15	4	4	7
Distribution	4	3	1	
Water	5	2	3	
Back-room dominant total	51	19	20	12
Business services	4	3	1	
Commodities	4	4		
Food retail and wholesale	13	3	2	8
Hotels and leisure	6		2	4
Insurance	3	1	2	
Miscellaneous services	1	1		
Stores	11		2	9
Front-room dominant total	42	12	9	21
Overall total	93	31	29	32

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correlations much below 0.3, which are statistically significant at the 5 per cent level (Cohen, 1988). However, our earlier research (Dick *et al.*, 2001) that examined 206 manufacturing and service cases suggested that sufficiently strong relationships between quality accreditation and the quality measurement variables were likely to be found in a smaller sample of service cases.

To allow the reliability of the results to be checked, correspondents were asked to answer two sets of questions relating to quality measurement, one that rated the importance of each quality measurement on a four-point Likert-type scale, ranging from "important" to "unimportant", while the other asked respondents to report their usage of the quality measurement. A listing of questionnaire items and their variable labels can be found in the Appendix.

Since we do not expect the chief executives of these large firms to have a grasp of the detail of these quality measurements, the questionnaire items simply ask whether failure rates in meeting conformance and expectation-gap quality are measured, and their rating of the importance of these measurements. The logic of the questions' wording is that if the quality failure rate is reported there must be systematic measurement of the quality variable.

Findings

H1. Where firms have lower QCert values, conformance quality measurement usage will be greater in firms in back-room dominated industries than in front-room dominated industries (i.e. in line with their process structure).

This is supported, for firms that have a lower QCert value, if conformance quality usage is greater in service firms with a back-room dominance than in those with a front-room dominance, with a significant *t*-test value. Lower QCert value is defined by firms scoring on the two points at the unimportant end of the scale.

The findings summarised in Table IV indicate that firms with a low QCert value in back-room dominant sectors do use conformance quality measurement much more frequently (0.71) than front-room dominant services (0.43). Our calculations show that the difference is statistically significant (*t*-test value = –2.062, $p = 0.045$). We note that the difference on the expectation-gap quality measurement usage for both front-room (0.61) and back-room (0.71) dominant firms with low QCert value is much smaller and is not statistically significant (*t*-test value = 0.785, $p = 0.43$). This suggests that firms with lower QCert values, usage of expectation-gap quality measurement is broadly similar regardless of their back-room/front-room sector split. In contrast, the back-room dominant service sectors show a substantially greater usage of conformance quality measurement than front-room dominant sectors. The results provide support for the hypothesis, but we note that process structure does not seem to determine the strength of usage of the expectation-gap measure.

Table IV Quality measurement usage scores

	Front-room dominant usage	Back-room dominant usage	t-value front- vs back-room
Number of cases	42	51	
Conformance			
Low QCert value	0.43	0.71	2.062*
High QCert value	0.78	0.74	0.297
Per cent increase	+81	+4	
t-value	2.348*	0.194	
Expectations gap			
Low QCert value	0.61	0.71	0.785
High QCert value	0.83	0.96	1.228
Per cent increase	+36	+35	
t-value	1.630	2.492	

Notes: *t*-test two-tail significance: * < 0.05.
The usage is the mean score for the quality measures. Since the questions were dichotomous, the mean score multiplied by 100 represents the percentage of firms using the quality measure.

H2. QCert value will be most strongly correlated with increases in the measurement of conformance quality in service industries with a front-room dominance (because the emphasis on conformance quality measurement was lower before, a higher increase will be found).

This is supported if a significant positive correlation exists between conformance quality measurement and QCert value. The correlation analysis used was Spearman's Rho with single-tail significance testing. The reliability of the result is tested by checking for consistency with an increased usage of the conformance quality measure.

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The analysis, which is summarised in Table V, shows front-room dominant firms (front-room dominant correlations are above the shaded diagonal) have a correlation of 0.402 between the conformance quality variable and QCert value ($p = 0.004$). The results indicate that, in those firms with a front-room dominance, the relationship between the emphasis on conformance quality measurement and QCert value is significant and strong. Examination of Table IV confirms the reliability of these findings, the front-room dominant column shows that the mean usage of conformance quality measurement in low QCert value firms is 0.43 compared to 0.78 in high QCert value firms – an increase of 81 per cent. The *t*-test for the conformance means differ significantly (*t*-test value = 2.348, $p = 0.024$).

In these front-room dominant firms, that have higher QCert values, the emphasis on conformance quality measurement is greatly increased. The results provide support for the hypothesis.

H3. QCert value will be most strongly correlated with increases in the importance of expectation-gap quality measurements in service industries with a back-room dominance (because the emphasis on expectation-gap quality measurement was lower before, a higher increase will be found).

This is supported if a significant positive correlation exists between the quality measurements expectation gap and QCert value. The reliability of the result is tested by checking for consistency with an increased usage of the expectation gap quality measure.

The findings in Table V (back-room dominant correlations are below the bold diagonal) show a correlation of 0.269 between the expectation-gap quality variable and QCert value for back-room dominant firms that is statistically significant ($p = 0.028$). The results indicate that the relationship between emphasis on expectation-gap quality measurement and QCert value is positive and significant in firms with a back-room dominance. Examination of the back-room dominant column of Table IV shows that the *t*-test for the usage means of expectation-gap quality measurement differ significantly (*t*-test value = 2.492, $p = 0.017$) between the low QCert value (0.71) and high QCert value groups (0.96), an increase in usage of 35 per cent. This result confirms reliability for the correlation found.

In these back-room dominant firms, that have higher QCert values, the emphasis on the measurement of expectation-gap quality is increased. The results provide support for the hypothesis.

Table V Correlation of QCert value with quality measurement emphasis (front-room dominant firms' correlations are above the bold diagonal and back-room firms' below the diagonal)

Quality variable	QCert value	Conformance	Expectation gap
QCert value	**1.00**	0.402**	0.262*
Conformance	0.102	**1.00**	0.189
Expectation gap	0.269*	0.323*	**1.00**

Note: Spearman's correlation coefficient is significant at the: 0.01 level **; 0.05 level *; single tailed

Discussion

The findings indicate that in the absence of quality accreditation the process structure of the service firms explains the level of usage of conformance quality measurement (the service's own measurement of a product's conformance to specification or criteria). Service firms, in industries with a front-room dominance, used conformance measurement much less than service firms with a back-room dominance.

We suggest several reasons. First, the front-room dominance implies that there will be greater customisation of the service product (Schemmener, 1986). This variety makes the exact specification of what is required of the service more difficult (Lovelock, 1984; Morris and Johnson, 1987). Second, often the customer knows when to intervene if the service is unsatisfactory but has difficulty in specifying what they want in the first instance (Kellogg *et al.*, 1997). This leads to a focus on the quality of the service encounter and greater customer tolerance of product quality failure as long as there is effective recovery (Hart *et al.*, 1990). Third, checking conformance to specification can be problematic; often only the front-line service provider has full information on the specification, making systematic quality measurement difficult.

In contrast to the different usage of conformance quality measurement the analysis showed that, in firms that did not value quality accreditation, the expectation-gap quality measure (the

customer's measurement of service received) had broadly similar levels of usage in both front-room and back-room dominant firms. If anything, it seems that back-room dominant industries use the expectation-gap measures more than front-room dominant industries. A plausible explanation is that back-room dominant firms need to use customer feedback measures more because of the need to check continually that conformance specifications are in line with customer expectations. While in contrast, front-room dominant firms are more reliant on individual customer complaint and service recovery instead of customer feedback measures.

The findings show that firms with high QCert values have a greater emphasis on quality measurement than firms with low QCert values. Back-room dominant firms showed the largest increase in their quality emphasis on the expectation-gap quality measurement while front-room dominant firms showed the largest increase in emphasis on the conformance quality measurement.

It is worth reflecting here on the different implications of the ISO 9001: 2000 quality standards compared with the SERVQUAL model that dominates the service literature. The SERVQUAL quality questionnaire (Parasuraman *et al.*, 1988, 1991) measures the gap between customers' expectations and their views of the actual quality experienced. SERVQUAL thus allows insight into customers' expectations and the gap in actual quality performance to be known. However, at best it provides only generic information on this quality gap. On the other hand, an ISO quality management system requires that customers' expectations are documented as specifications, methods of measurement are defined, and the service process is monitored and controlled to ensure that services conform to these specifications. ISO quality management system standards thus start with the need to define what customers' expectations are before moving on to the practicalities of how they may be measured and controlled so that actual quality meets specified customers expectations. However, there will be occasions when customers' actual expectations vary from what service providers believe are the customers' specifications, leading to conforming quality being unsatisfactory from the customer's viewpoint. Therefore, measuring the customer's satisfaction with the quality of the service result is essential and is a central principle in the ISO 9001:2000 standard. Customer-based measurement allows the gap between the provider's view of the specification and the customer's to be analysed and thus differs from the "expectation versus actual quality" gap that is measured with the SERVQUAL questionnaire.

We have found evidence that service firms embracing ISO 9000 standards do have the balanced quality measurement perspective suggested by the standard, since we have found similar levels of usage of conformance (internal) and expectations-gap (customer) measurements of quality in firms that value quality accreditation. It is significant that their emphasis shifts from one that is in line with their process structure to a more balanced one, where both conformance and expectation-gap quality measurements receive similar attention.

In summary, ISO 9001:2000 standards are about systems to achieve good quality while SERVQUAL is limited to only customer-based measurements of quality.
ISO 9001:2000 standards therefore tend to have a strong internal quality emphasis as well as a customer-based one, while SERVQUAL is customer orientated and does not consider internal processes at all. There is a body of service research that does consider "internal quality" (Schneider and Bowen, 1993; Reynoso and Moores 1995; Gremler *et al.*, 1994). This "internal quality" relates to the quality experienced by internal employees from internal service providers using variations of the SERVQUAL model of quality, but, like SERVQUAL, its focus is on measuring quality shortfalls, not on the practicalities of how process quality may be measured and controlled so that actual quality meets specified customer's expectations. Thus a service firm with a quality system certified to an ISO 9000 standard could use SERVQUAL as a measurement instrument for customer quality, but it would measure internal quality against specific quality attributes that reflect either the firm's understanding of a particular customer specification or more generic criteria that specify good practice.

Clearly, in this research, the service firms which consider quality accreditation important stand out as having a different outlook on quality measurement. Although

causality cannot be implied from the statistics, the findings taken as a whole suggest that it is quality accreditation that has brought about the change because we have observed a change of quality measurement usage and emphasis that is counter to that suggested by the process structure of the industry. Therefore, we conclude that the reason for this similarity of quality measurement emphasis, regardless of the firm's process structure, is the accreditation to an ISO 9000 standard, in particular the systematic approach to quality measurement that they dictate.

Conclusions

In this research, firms have been analysed by their rating of the importance of quality accreditation in contributing to their definition of quality rather than by their accreditation to an ISO 9000 standard. This QCert value has been found to be a significant variable. The variable is more a direct measure of a firm's view of quality accreditation than those used previously which have considered the firm's motives for registration (Jones *et al.*, 1997; Singles *et al.*, 2001). Although it has proven to be a significant variable, the limitation of a direct variable such as the one used here is that it provides no explanation for why firms consider quality accreditation important or not.

We have found, as predicted, that firms that do not consider ISO 9000 registration important have a quality measurement usage that reflects the process structure of the service firm. Service industry sectors where a majority of staff (70 per cent or more) have no customer contact are likely to have large de-coupled back-room operations. These we have classified as back-room dominant. In these service sectors, we have found that there is substantial usage of internal quality measurement (conformance) in addition to a usage of customer-based quality measurement (expectation gap). In contrast, service sectors that have a majority of staff (50 per cent or more) with direct customer contact that we have classified as front-room dominant are likely to have fewer staff working in de-coupled back-room operations and in these service sectors we have found that there is much higher usage of customer-based quality measurement (expectation gap) than internal quality measurement (conformance).

It was found that the service firms that consider quality accreditation to be important, have a different emphasis on quality than other service firms do. The survey found that these firms have an increased usage and emphasis on both the internal (conformance) and customer-based (expectation-gap) quality measures. However, the greatest difference in emphasis is found on the quality measure that is not favoured due to the firm's dominant process structure. Firms in back-room dominant service industry sectors increase their usage of customer-based quality measures by 35 per cent (expectation-gap measure usage), while front-room dominant sectors increased their usage of internal quality measures by 81 per cent (conformance measure usage). It is significant that their emphasis shifts from one that is in line with their process structure to a more balanced one, where both internal and customer-based quality measures receive similar attention. This leads us to believe that accreditation to ISO 9000 makes a profound difference to the way quality is perceived and measured in service firms.

As discussed in the methodology, the results must be considered in the light of the limitations of our survey. First, our respondents were chief executives, so we are relying on their views of quality emphasis in organisations that employ large numbers of people (the majority of firms employed over 5,000 full-time staff). A larger number of respondents per organisation would have enhanced reliability and the power of the tests. Second, we acknowledge that the quality measurement constructs we use may be confusing for those who are more familiar with the SERVQUAL definitions that dominate the service quality literature, but clearly the nature of this research dictates that we must use terms and definitions that relate to the way in which quality is conceptualised in the ISO 9001:2000 standards.

We also acknowledge that the method we use to categorise firms into front-room dominant or back-room dominant is crude, and its logic is being undermined by technological changes. Indeed, front-room and back-room as terms to describe the process structure of service firms is becoming increasingly inappropriate. Information technology is changing the

methods of managing the customer interface. By doing so it is moving, and blurring, the boundaries of the conventional front-/back-room model of process structure. Technology can allow front room activities that do not need the physical presence of the customer to be co-located with back-room activities and hence centralised. At its extreme (i.e. Internet shopping), the front room becomes a virtual one with no contact between the customer and the firm's staff, all interaction and transactions being through the computer system. In these circumstances there is no physical front room at all. However, there is still a sphere of activity where the customer interaction takes place. Clearly, the terms front room and back room are outmoded and there is a need for new classifications and definitions that capture the varied process structures of today's service systems. Therefore, we advocate that future research needs to be enriched by more sophisticated methods that capture the changed process structures that technology has brought about. Central to this is the impact of the change from direct to indirect server contact with the customer and how this changes quality emphasis and management.

Generalisation from the survey findings should be tempered by consideration of factors specific to large firms. The McDonaldization effect (Ritzer, 1995), and hence greater usage of internal quality measurement, is likely to be strongest in the largest service firms as these operate in mass markets. This suggests that we can generalise for other large service firms but not for smaller service enterprises.

To conclude, we have found that service firms that consider accreditation to an ISO 9000 quality standard as important to their definition of quality place much more emphasis on quality measurement than other service firms do. It is significant that their quality measurement emphasis shifts from one that is in line with their process structure to a more balanced one, where both internal and customer-based quality measurements receive similar attention.

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Appendix

All questionnaires were pre-coded to identify the respondent firms' industrial sector *(Author's comments in italics to show item's variable label)*.

Questionnaire items used in this paper
Which of the following are measured by the organisation (tick box):

- ☐ Failure rates in meeting production specifications, tolerances or standards *(conformance measurement usage)*
- ☐ Failure rates in meeting customer performance expectations *(expectation-gap measurement usage)*

What proportion of the organisation's personnel are involved in direct customer contact.

10(, 30(, 50(, 70(, or 90(
(used to define front-room and back-room dominant industries. Back room 10-30(, front room 50-90( ).

Approximately how many people are employed by the organisation?

The questions below were answered on a Likert four-point scale with polar labels "unimportant" and "important".
Please rate in importance the following quality measurements:

- Failure rate in meeting service production specifications, tolerances or standards *(Conformance measurement emphasis)*.
- Failure rates in meeting customer performance expectations *(expectation-gap measurement emphasis)*.

Please rate the importance of the possession of a recognised quality certificate (e.g. BS 5750, ISO 9000) in contributing to your definition of quality *(QCert value)*.