# Northumbria Research Link

# TQM enablers and business sustainability

## An empirical study of the service sector in the North East of England

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**Abstract** *The extent to which an organisation is successful can be influenced by a number of its strategies and business initiatives. This success can be measured internally, using traditional measures such as profitability, return on net assets and cash flow. Equally, this success can also be measured in terms of external measures such as growth, the competition and the impact of a changing business environment. This paper attempts to assess the association between the extent to which TQM initiatives have been successfully implemented and the changes in performance measures both internal and external. This has been done by analysing benchmarking data collected from nearly 450 service organisations from the North East of England. The survey results suggest that the TQM enablers have the greatest impact upon operational performance and then business performance, but only limited impact on external measures of sustainability such as business growth, competitive advantage and change management.*

## Introduction

In attempting to measure the impact of TQM, the authors provide a regional perspective on the role of TQM within the service sector. In the late 1990s (1996-1998), nearly 450 service organisations from the North East of England participated in a regional "benchmarking" project on best practice, which is described later in this paper. The sample of service organisations consisted of 26 per cent from the professional organisations, 22 per cent from the public services, 16 per cent were industrial services and 12 per cent came from the leisure and retail sector. The remainder of the sample were drawn in similar proportions from the consultancies, transport, finance and banking, law and the utilities. In terms of size, 36 per cent were micro organisations, 24 per cent small, 22 per cent medium sized and 18 per cent large organisations. Two thirds of the sample were independent, owner managed whilst over 90 per cent were domestically owned. A detailed statistical analysis of that study aims to identify the following:

- The main TQM enablers emerging from a wide range of business practices and strategies.

- The impact of these enablers on some measures of organisational performance.
- The impact of these enablers on aspects of business performance.
- The extent to which the TQM enablers support business sustainability, as measured in terms of growth, competitive advantage and the responsiveness to change.

Within the region the industrial and employment elements of the economy have witnessed a change in emphasis from manufacturing to service type organisations. The service sector now represents 75 per cent of the region's businesses and provides more than half of its employment (Northern Development Company, 1999). In this perspective the North East region is almost a microcosm of the UK, where the service sector accounts for 67 per cent of all businesses and 70 per cent of the employment (DTI, 2000).

With this movement towards an increasingly important service sector within the region, useful outcomes of this research will hopefully be an understanding of which internal business practices (TQM enablers) are associated with an organisation's ability to grow and sustain improvement. These findings could be used to map changes to the way in which the various support agencies within the region support its service organisations.

**Literature review**
There is a generally recognised understanding within business that investment in and attainment of high quality business practices has the potential to lead, eventually, to high quality operational and business performances. The results of research into the UK service sector by Voss and Johnson (1995) and their comparative study between the UK and USA (Voss *et al.*, 1997) confirms this hypothesis. More recently, two benchmarking surveys undertaken in the North East of England (Prabhu *et al.*, 2000a, b) have provided further evidence in support of this. Further afield, Terziovski and Samson (1999) have undertaken work within the manufacturing sector of Australia and New Zealand and have concluded that "a typical manufacturing organisation is more likely to achieve better performance in employee relations, customer satisfaction, operational performance and business performance, with TQM than without TQM". These conclusions are supported by Sun (2000) who found that "TQM criteria such as quality leadership, human resource development, quality information etc. contribute to the improvement of customer satisfaction and business performance". However, Sun (2000) tempered this argument by concluding "none of these TQM enablers can guarantee enhanced business performance. It is these enablers as a whole that contribute collectively to the improvement of performance". Moreover, Rahman (2001) concluded that the presence of ISO 9000 certification had no significant impact upon the levels of TQM implementation and organisational performance. Rahman commented that whilst certain Australian studies – Terziovski and Samson (1999) and Dow *et al.* (1999) – "found a significant relationship between quality management practices

and organisational performance, only a handful of 'soft' quality management practices have a positive relationship with organisational performance".

Within the UK, there is also an acceptance now that as well as enhancing organisational performance, TQM is now seen as a major driver for strengthening business organisations and thus facilitating their efforts to compete in world markets. In terms of the evolution of TQM, Liburd and Zairi (2001) have suggested over the last decade the focus of management has moved from an introspective emphasis that was product oriented, through service and then customer orientation to a market oriented focus.

Most research and literature concentrates on the relationships between TQM and performance. However, Ma (1999), when discussing sustainability, referred to the need for a constellation of competitive advantages being necessary for long-term viability. Appleby and Mitchell (2000), when comparing organisations with good performance but low deployment of good practices with those that had good practices but were not yet achieving high performance, suggested that to be successful in the longer term there are no shortcuts. This research attempts to investigate the additional relationships between TQM and sustainability in a similar way through the "grouping of factors" into a set of key TQM enablers.

## The data source – the North-East (of England) benchmarking project

The benchmarking project[1] involved co-operation between about 20 North-East business support organisations including universities, a number of local authorities, training and enterprise councils (TECs) and business links. The project involved evaluating both business practices and operational performance in both the manufacturing and service sectors. The benchmarking sponsors invited these organisations to participate and collectively they combined to form a quota sample of companies from the North-East region. The samples of participants from both sectors were considered to be representative in terms of business activity, organisation size (by number of staff) and geographical distribution within the region.

A diagnostic benchmarking methodology called PROBE ("PROmoting Business Excellence"), which is administered by the Confederation of British Industry was selected as the benchmarking tool. The PROBE tool has supported a number of "made in Europe" studies throughout the late 1990s and has led to published research relating to best practice in both the manufacturing and service sectors (Hanson et al., 1994, 1996, Voss et al., 1997, 1998).

The researchers in the North-East benchmarking study were expected to assess best practices in 700+ manufacturing and service organisations over a three-year period using a single benchmarking instrument. This required adjustments and simplifications to be made to the PROBE methodology and resulted in two simpler benchmarking tools called PILOT, one for manufacturing and one for the service sector. The data collected from PILOT

represented a scaled-down version of the PROBE questions, but used the original scales of practice and performance indicators. Through self-assessment, participants graded their practice and performance responses on a scale from 1 to 5, as illustrated by the sample in Figure 1. For each measure, this scale represented a continuum from the weakest to strongest levels of practice adoption or operational performance. The scales were annotated (by making use of recognised industrial or service standards) to provide participants with indicators to support their self-assessment (i.e. guidance notes).

The PILOT tools also incorporated other indicators of organisational performance, such as growth, competitive advantage and the impact of change. These indicators were measured using a simpler scale, with participants expressing their range of perceptions on a scale from "strongly disagree" and "strongly agree".

Given that data was collected on a self-assessment basis, its consistency and accuracy are critical to the reliability of any inferences drawn from its analysis. To ensure that the responses from each participant provided a realistic picture of their practice implementation and performance outcomes, participants' workshops were used to support the completion of the PILOT tool. In this forum, multiple participants supported by a facilitator justified their assessments, and by consensus, acceptance or change (upwards and downwards) of the various grades took place. Further analysis has also taken place to determine whether the nature of the responses (on an individual organisation basis) and the method of data preparation (individual, limited discussion or mass internal participation) existed. Whilst in a majority of cases, only one person per organisation tended to attend the workshops, the responses provided were typically an even split between those who had administered the benchmarking tool alone, those who had consulted a small number of colleagues and those who had involved a team. The usual role of the attendee was that of a senior/middle manager with job roles in quality or operations management. However, by seeking to engage a team within their organisation, the data collected via the facilitated tool had the potential to represent a consensus of opinion across the organisation's managerial

**PART 1: ORGANISATION & CULTURE**

| | | 1 | 2 | 3 | 4 | 5 | Score |
|---|---|---|---|---|---|---|---|
| 1. | Vision | Maximise product output, managers dictate direction, cost reduction key goal | | Customer service, emphasis on employee involvement, quality & cycle times are key drivers | | Leadership in quality & service, production balanced with customer needs, production cycle time less than order lead time | |
| 2. | Shared vision, mission & goals | Insufficient direction, no shared plan or vision statement, employees do not understand goals | | Management commitment to shared vision, written mission statement, some employee involvement | | Total employee involvement, published improvement plan, individuals and dept.'s have vision matching company's | |

Figure 1. Example of PILOT questions

hierarchy. This consensus considered their current use of business practices, levels of operational performance and opinions regarding trends in growth and competitiveness over a period of time. The latter is arguably a limitation given that it is based on perceived or measured trends rather than actual numbers and the tool is limited in that certain hard measures of business performance typically found in company reports were not considered. However, the survey had a mass response, and this was facilitated to ensure that the responses could be justified by the participants and as best as possible, were consistent between organisations. The data collected were subsequently compared with benchmarking data collected elsewhere in the UK (Robson and Yarrow, 2000) and this helped to confirm a satisfactory level of reliability.

## Analysis undertaken

Each service respondent considered 28 practice measures and a full list of them are provided in Prabhu et al. (2000b). To provide an initial framework for the analyses of such an extensive range of practices, the authors have considered the service management model adopted in the "Service in Britain" studies (Voss and Johnson, 1995), to provide a structure and a categorisation for the measures under consideration. This model suggests that the practices relate to aspects of leadership, people issues and a service's approach to service delivery and quality, service design and innovation and service value and measurement. Figure 2 shows the service management model.

Using this framework, the designers of PROBE (and indirectly the designers of PILOT) selected a range of practice and performance measures within each area of the service management model to represent the enablers and outcomes for each business process. Analysis has been undertaken in various service-based reports (Prabhu and Robson, 2001; Voss and Johnson, 1995) to measure the extent of the relationship between enabler and outcome. Within the framework chosen, leadership and people issues are considered to be important enablers of service delivery, design, value and measurement, as indicated by Figure 2. For each of the 28 practices, participants allocated a score from 1 to 5 inclusive. Scores below 3 implied poor to fair levels of practice adoption or performance outcomes, and where sizeable levels of improvement were possible. The role of leadership as a key enabler to quality services has been emphasised by Prabhu and Robson (2000). They (Prabhu
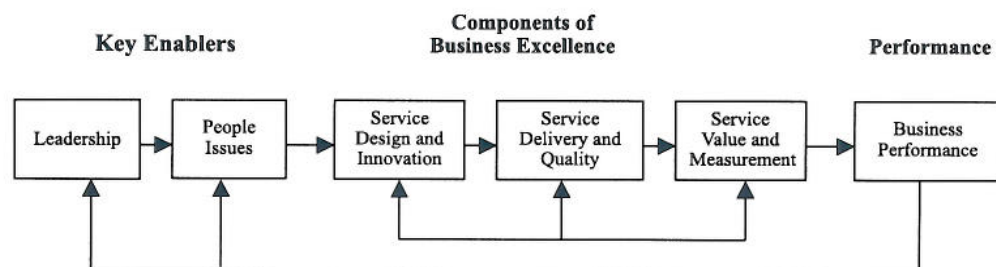


**Figure 2.**
The service
management model

and Robson 2001) also indicated that leading service organisations have key advantages within all of the key components of the service management model.

*Selection of independent factors (enablers)*
It would be impractical to consider the extent to which each individual practice measure impacts upon both performance and sustainability of an organisation. Moreover, it would also be useful to measure the relevance of the service management model to the service PILOT database. In other words, the authors are asking "does the PILOT data explain/support the key components suggested by the service management model?" and "to what extent can we reduce the number of practice measures without significant loss of data?". To answer these questions, the authors will seek to identify empirically the key total quality (TQ) components within the PILOT data, and by doing so, will assume that the underlying structure of the practice data can be defined in terms of a number of key measures. This data set, that consists of 450 responding organisations from the service sector, can be assumed as representative of the sector within the North-East region. To identify the underlying enablers within the 28 business practices considered, factor analysis was used to identify a group of independent TQM enablers. The factor analysis model was based on principal components analysis (PCA), which was used to identify the number of factors contained within the data. To ensure that the factors were statistically independent of each other (therefore representing independent aspects of total quality), the factors underwent orthogonal rotation (varimax rotation) in order to identify which measures (from the 28 practices) were most strongly correlated (or loaded) to each of the factors.

Table I displays the eight independent factors identified by the factor analysis. These factors combine to explain just over 63 per cent of the variation in the data. The variables that are correlated significantly to each factor have been listed and by considering the group of variables associated with each factor, the authors have allocated a description to each factor. A reasonable question to ask is "are the groups of variables suggested internally consistent?" and as such, "do they combine reasonably to represent an individual theme?". To measure this the Cronbach alpha coefficient was determined for each group of variables (excluding the last factor – competitive positioning, because it is a single measure, and as such, is measuring only one attribute of the organisation).

The alpha coefficients are measured on a scale between 0 and 1, inclusive, and can be interpreted in a similar way to Pearson's correlation coefficient. That is, the closer the coefficient is to 1, the greater the internal consistency within the individual measures. All of the multi-measure factors identified have a coefficient exceeding 0.5, although a number of authors such Bryman and Cramer (1994) suggest that ideally the coefficients should be at least 0.8, whilst Van de ven and Ferry (1979) suggest that the coefficients should ideally be

| Component | PILOT measures | % variance | % cumulative variance | Alpha coefficient |
|---|---|---|---|---|
| Quality and customer service | Customer orientation, recognition and reward, listening to the customer, quality mindset, use of customer complaint data, performance measurement and reporting, customer satisfaction measurement | 28.391 | 28.391 | 0.8423 |
| Organisational culture | Day to day teamwork, shared vision, mission and goals, skill, job training and education, employee involvement, listening to staff | 7.026 | 35.417 | 0.7966 |
| Service value and measurement | Problem solving, clarity of goals, visibility and communication of service standards, benchmarking | 6.014 | 41.431 | 0.6958 |
| Service process management | Role of leadership in developing service culture, role of support functions, management of business processes | 5.484 | 46.915 | 0.6080 |
| Service process development | Current use of information technology, new service design and development process, generation of innovative product concepts | 4.792 | 51.707 | 0.5388 |
| Quality systems and practice | Quality values, quality procedures and framework, elimination of "waste" | 4.102 | 55.809 | 0.5410 |
| Service delivery | Real time handling of service problems/ failures, workforce flexibility | 3.839 | 59.648 | 0.5880 |
| Competitive positioning | Competitive positioning | 3.642 | 63.290 | Not applicable |

**Table I.**
Internal consistency between measures for each service component

between 0.7 and 0.9. That said, Rahman (2001) has used a model with alpha coefficients that just exceed 0.6. Additional analysis of the alpha coefficients showed that only one of the factors identified, quality values and practice, would improve its reliability by removing one of the variables from the factor. This was achieved by removing "elimination of waste" from the factor and the alpha coefficient increased in size to 0.6250. This revised factor has been used in the subsequent analysis.

Based on the comments above, the authors believe it reasonable to accept the eight factors with the groupings of variables (including the one amendment described) suggested. In order to measure the extent to which each of these independent factors impacted upon the various indicators of business sustainability, a single variable score based on the group of correlated measures was required for each factor. This individual value was determined using multiple regression analysis, and was provided by SPSS.

*Interpretation of the individual factors (enablers).* Based on the loading of its group of practices (i.e. significant association of variables), each factor was named as shown in Table I. The extent to which the factor model maps onto the

service management model will be described later in the paper. Manly (1994) suggested that labelling factors needs a "degree of inventiveness and imagination!". The loadings of variables to each factor suggest:

- *Quality and customer service* is a set of seven variables that cover the practices of leadership, quality leadership, market insight and customer orientation. These reflect a culture in which leaders, staff and customers share clear awareness and visibility of the standards of service quality and reliability to be delivered within the organisation's service concept.

- *Organisational culture* comprises a group of five indices that include the way the organisation communicates with, develops, empowers and involves its staff. Together, these may affect how speed of development of products, services and processes and capacity for innovation may support market acuity and organisational responsiveness.

- *Service value and measurement* contains four variables that are practices indicative of managing performance in the delivery of service. The aspects of quality leadership, service standards, value orientation and market acuity are closely linked to these.

- *Service process management* is a construct of three practise variables that qualify how processes are owned, managed, supported and improved and which associate with results in service quality, delivery and value to customers.

- *Service process development* consists of three indices that make business processes more effective and lead to new ways of carrying -out business. Good practice in these areas involves and focuses on customers and leads to improved competitiveness.

- *Quality systems and practise* is constructed with two variables (after the amendment suggested earlier) that cover the quality culture and mindset of the organisation and how it organises itself for this. It relates to process management and the quality and delivery values of the service output.

- *Service delivery* is made up of two practices that are about the degree to which the organisation empowers its people and how they are structured to deliver the service. The results will show in the quality and responsiveness of delivery.

- *Competitive positioning* is a single variable that reflects how the organisation appraises its practises, processes and the performance outcomes it achieves. This may not only indicate how the organisation compares with those providing the same service but should allow it to improve through wider comparison with many other organisations that deploy processes similar in nature.

*Performance measures used*
The question of interest is to what extent are the various components of total quality associated to business sustainability? To represent the latter, five groups of measures have been considered for the service organisation. They primarily represent the data sources available from the benchmarking study and are:

(1) measures of operational performance;

(2) measures of business performance (cash flow, return on net assets etc.);

(3) growth characteristics of several indicators;

(4) competitive advantage;

(5) impact of change.

The different areas defined to represent business sustainability have been derived from the questions provided by the PROBE benchmarking tool, and subsequently by PILOT. The measures of operational and business performance map on to the components of the service management model, whilst PROBE measured additional characteristics of the organisation covering the areas listed above. Collectively, the measures of sustainability defined by the authors show consistency with the range of success measures considered by Liburd and Zairi (2001):

- *Measures of operational performance* contain 12 variables that demonstrate what its operational practices have achieved in result areas of service quality, customer retention and through altruistic values of employee "nurturing" to invoke the concept of a "cycle of virtue" that impacts on customer results. (For a full list, see row 1, Table II.)

- *Measures of business performance* are those indices of hard finance, efficiency and performance outcomes in the context of competitiveness and customer satisfaction. Consistent positivity here would indicate a degree of confidence in business sustainability. (For a full list, see row 1, Table III.)

- *Growth characteristics* is a set of indices that indicate the way the organisation has built a stable foundation from which to continue forward. (For a full list, see row 1, Table IV.)

- *Competitive advantage* are a set of measures from a balanced range of competitive result areas that indicate distinct gaps between themselves and others. (For a full list, see row 1, Table V.)

- *Impact of change* involves those indices that demonstrate the organisation's agility and preparedness to continue operations successfully into the future. (For a full list, see row 1, Table VI.)

Whilst the measures of operational performance are based on a scale from 1 to 5 inclusive (with attached statements and where a score 5 represents world class attainment), all other groups of measures use a scale from "declining" through "staying the same" to "increasing", as shown by Figure 3.

|  | Total quality enabler | | | | | | | |
| Service sector<br>Measures of operational performance | Quality and customer service | Organisational culture | Service value and measurement | Service process management | Service process development | Quality systems and practice | Service delivery | Competitive positioning |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *People issues* | | | | | | | | |
| Employee loyalty, relative to industry | | ** | | * | | ** | * | |
| Employee satisfaction | | *** | | *** | | *** | ** | |
| *Service delivery and quality* | | | | | | | | |
| Reliability | *** | * | ** | * | | *** | | |
| Quality performance, relative to industry | ** | | | | | | | |
| Staff responsiveness | ** | | *** | ** | | *** | * | |
| Accessibility | * | | | * | | | ** | |
| *Service design and innovation* | | | | | | | | |
| Innovativeness | * | *** | | | *** | *** | | |
| Clarity of service concept | ** | ** | *** | *** | | *** | | |
| Speed of development relative to competition | | | * | * | * | *** | * | *** |
| Service meeting customer needs | *** | | * | *** | | *** | * | |
| *Service value and measurement* | | | | | | | | |
| Customer retention | * | | | | | ** | ** | * |
| Level of customer satisfaction | *** | | *** | * | | *** | ** | |

**Notes:** *** Represents significant differences in mean scores at the 0.1 per cent level, ** at the 1 per cent level and * at the 5 per cent level

**Table II.**
Operational performance

| Total quality enabler | Service sector<br>Measures and business performance | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| | Value<br>(quality/price) | Market<br>share | Cash<br>flow | Overall<br>productivity | Return on<br>net assets | Operating<br>costs |
| Quality and customer service | * | | * | | | |
| Organisational culture | * | *** | | ** | * | * |
| Service value and measurement | | | | | | |
| Service process management | | * | | | | |
| Service process development | | | | | | |
| Quality systems and practice | *** | * | *** | ** | ** | |
| Service delivery | * | | * | | | |
| Competitive positioning | * | * | | | * | |

**Table III.**
Business performance

Notes: *** Represents significant differences in mean scores at the 0.1 per cent level, ** at the 1 per cent level and * at the 5 per cent level

| Total quality enabler | Service sector<br>Growth characteristics | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| | Sales<br>turnover | Number<br>of<br>employees | Profitability | Service/<br>product<br>range | Number<br>of<br>customers | Number<br>of<br>suppliers |
| Quality and customer service | | | | | | |
| Organisational culture | | * | * | * | *** | |
| Service value and measurement | | | | | | |
| Service process management | | | | | | |
| Service process development | | | | | | |
| Quality systems and practice | | | | ** | | |

**Table IV.**
Growth characteristics

Notes: *** Represents significant differences in mean scores at the 0.1 per cent level, ** at the 1 per cent level and * at the 5 per cent level

The central hypothesis of this paper is that one or more of the TQM enablers listed have an impact on each the areas of business sustainability. The authors aim to identify the extent to which this statement is true, and if so, show which of those factors or enablers have the greatest impact. Figure 4 represents diagrammatically the potential relationship between the TQM enablers and measures of performance and sustainability, which bears some similarity to that suggested by Rahman (2001).

Correlation analysis was used to measure the significance of any associations between the TQM enablers and a range of 14 operational performance measures. These measures covered a number of the key components illustrated in the service management model (see Figure 2). The

| Total quality enabler | Price | Service quality | Rapid response to customers | Reliability | Service/ product customisation |
|---|---|---|---|---|---|
| | | | **Service sector** Advantage relative to the competition | | |
| Quality and customer service | | | | ** | |
| Organisational culture | * | | | | |
| Service value and measurement | | | | * | |
| Service process management | | * | *** | | * |
| Service process development | | | | | |
| Quality systems and practice | | * | ** | *** | |
| Service delivery | * | | * | | |
| Competitive positioning | | | | | |

Notes: *** Represents significant differences in mean scores at the 0.1 per cent level, ** at the 1 per cent level and * at the 5 per cent level

Table V.
Competitive advantage

| Total quality enabler | Customer has changed significantly | Business environment has changed | Business environment likely to change | We are good at change |
|---|---|---|---|---|
| | **Service sector** Impact of change | | | |
| Quality and customer service | | | | |
| Organisational culture | * | | | ** |
| Service value and measurement | | | | |
| Service process management | | | | * |
| Service process development | | | | |
| Quality systems and practice | | | | ** |

Notes: *** Represents significant differences in mean scores at the 0.1 per cent level, ** at the 1 per cent level and * at the 5 per cent level
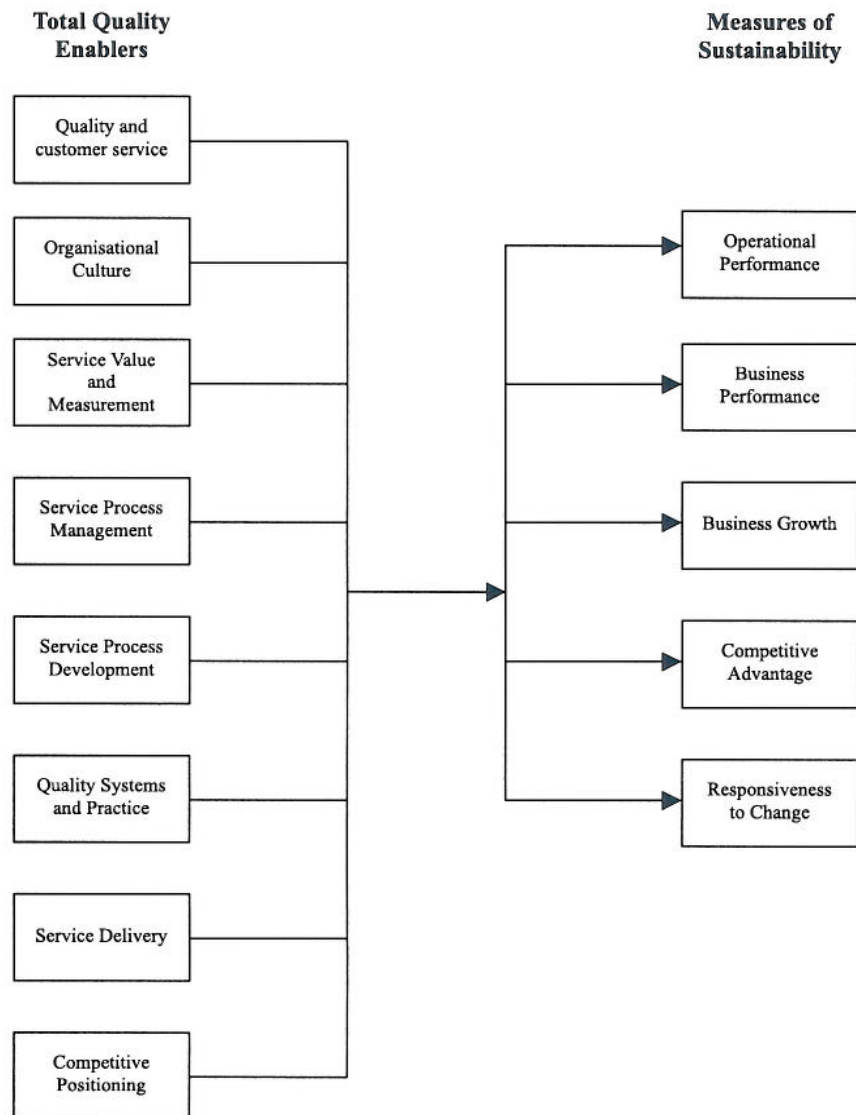
Table VI.
Impact of change

**COMPANY SIZE & CHARACTERISTICS**

| | | 1 | 2 | 3 | 4 | 5 | Score |
|---|---|---|---|---|---|---|---|
| 1 | Sales turnover | Declining rapidly | | Little change | | Growing rapidly | |
| 2 | Number of Employees | Declining rapidly | | Little change | | Growing rapidly | |
| 3 | Profitability | Declining rapidly | | Little change | | Growing rapidly | |

Figure 3.
Example of the sustainability questions used within PILOT

extent to which the total quality enablers related to the other measures of business performance and sustainability was measured using an independent samples t-test. This analysis has been used to identify whether the adoption of an individual TQM enabler has been significant amongst those companies which were growing or at an advantage in terms of the measure of

Quality and
customer service

Organisational
Culture

Service Value
and
Measurement

Service Process
Management

Service Process
Development

Quality Systems
and Practice

Service Delivery

Competitive
Positioning

Operational
Performance

Business
Performance

Business Growth

Competitive
Advantage

Responsiveness
to Change

**Figure 4.**
The conceptual model of
sustainability

sustainability compared with those service organisations which were either staying the same or at a disadvantage (hence the two independent groups). By performing this analysis, the conceptual model presented in Figure 4 can be reviewed and amended appropriately. In all of the subsequent tables, the statistical significance (if any) of the tests has been reported at the 5 per cent, 1 per cent or 0.1 per cent level.

## Research findings
### On operational performance and TQM enablers
There is plenty of evidence that high TQ adoption is associated with high operational performance. This association can be seen from Table II to be right across the various components of the service management model and each

TQM enabler identified and considered in this paper has a positive association with a number of operational performance measures. Furthermore, it is encouraging to note that evidence exists (and is indicated within Table II) that the high level of practice adoption (as indicated by each of the TQM enablers) is associated with high operational performance within an equivalent area of business excellence, as suggested by the service management model. Examples include the significant impact of the TQM enabler quality and customer service on four quality performance measures; reliability, quality performance – relative to industry – staff responsiveness and accessibility. Equally, the TQM enabler organisational culture has a positive impact upon employee loyalty and employee satisfaction. Initiatives related to service value/measurement are related at the 0.1 per cent level to customer satisfaction levels. The TQM enabler service process management shows significant association at this level with clarity of service concept and service meeting customer needs, whilst service process development shows association at the 0.1 per cent level with innovativeness. A significant association (0.1 per cent level) between the level of competitive positioning and the service's relative speed of development is observed. In practice, where organisations use market information to position and differentiate their services, they consistently beat their competition to the market.

*On business performance and TQM enablers*
There is reasonably clear evidence that high adoption levels of TQM enablers also associated with high business performance, in particular with respect to value for money, market share and cash flow, as indicated by Table III. However, the level of association is clearly not as high as that with measures of operational performance.

The main TQM enablers that impact upon business performance are organisational culture and quality systems and practice. To a lesser extent, quality and customer service, service delivery and competitive positioning also have a positive impact. Service value and measurement and the two enablers connected with service process (management and development) have little impact upon the wider business performance indicators. This is perhaps unsurprising in terms of the former, which deals principally with practices relating to internal measurement, whilst practices relating to innovation do invariably lag in terms of their positive impacts upon traditional business performance.

*On business growth and TQM enablers*
The main TQM enabler that has a significant association with the growth of the organisation is organisational culture. Those organisations that are growing in terms of number of employees, profitability, in the range of services/products offered and number of customers tend to have higher adoption levels in this TQM enabler than those in other service organisations which have little change or a decrease with regard to the growth measures listed. The level of adoption in quality systems and practice has an impact

upon the growth of the service/product range, where those service organisations that are increasing their range have a higher level of adoption of quality practices. Surprisingly, none of the TQM enablers identified have shown any impact on sales turnover, whether in terms of growth or decline.

*On competitive advantage and TQM enablers*
The main TQM enablers that impact upon competitive advantage are quality systems and practice, service process management and service delivery. Organisations with a competitive advantage in terms of service quality, rapid response to customers and service customisation have a higher level of practice adoption with respect to service process management. Interestingly, those companies which have competitive advantage in terms of reliability have significantly higher levels of practice adoption in terms of quality and customer service and service value and measurement.

*Impact of change and TQM enablers*
The main TQM enabler in providing a significant difference is organisational culture. Those who have changed significantly and those who believe themselves to be good at change tend to have a higher level of practice adoption in this area than those service organisations that have not. The proportions of service organisations whose business environments have changed or are likely to change are 75 per cent and 82 per cent respectively. Perhaps with such a high proportion of the sample being in agreement, it is highly unlikely and understandable that none of the TQM enablers showed a significant difference in adoption between the two groups.

## Discussion of the results
*TQM enablers and the service management model (Voss and Johnson, 1995)*
A number of issues arise from the analysis presented in this paper. The first involves considering how intuitive are the main TQM enablers (factors) identified through factor analysis. Figure 5 indicates how the factors identified through the analysis of the PILOT data map onto the service management model suggested by Voss and Johnson (1995).

The TQM enablers identified using factor analysis on the PILOT database map intuitively onto the theoretical framework provided by the service management model. One notable omission from the results of the factor analysis is an explicit factor grouping in the area of "leadership" or "strategic issues". The closest the model gets is the standalone variable "competitive positioning". The remaining measures that could reasonably have been defined as strategic issues have been separated into the various functional components of the service management process, rather than being defined as a separate, explicit driver of total quality. In contrast, the other key enabler "people issues" and the three components of service management – "service design and innovation", "service delivery and quality" and "service value and measurement" are represented in the model developed by the authors by one or

**Total Quality Enablers – Factor Analysis**

- Competitive Positioning
- Organisational Culture
- Service Process Management
- Service Process Development
- Quality and Customer Service
- Quality Systems and Practice
- Service Delivery
- Service Value and Measurement

**Service Management Model**

- Leadership
- People Issues
- Service Design and Innovation
- Service Delivery and Quality
- Service Value and Measurement
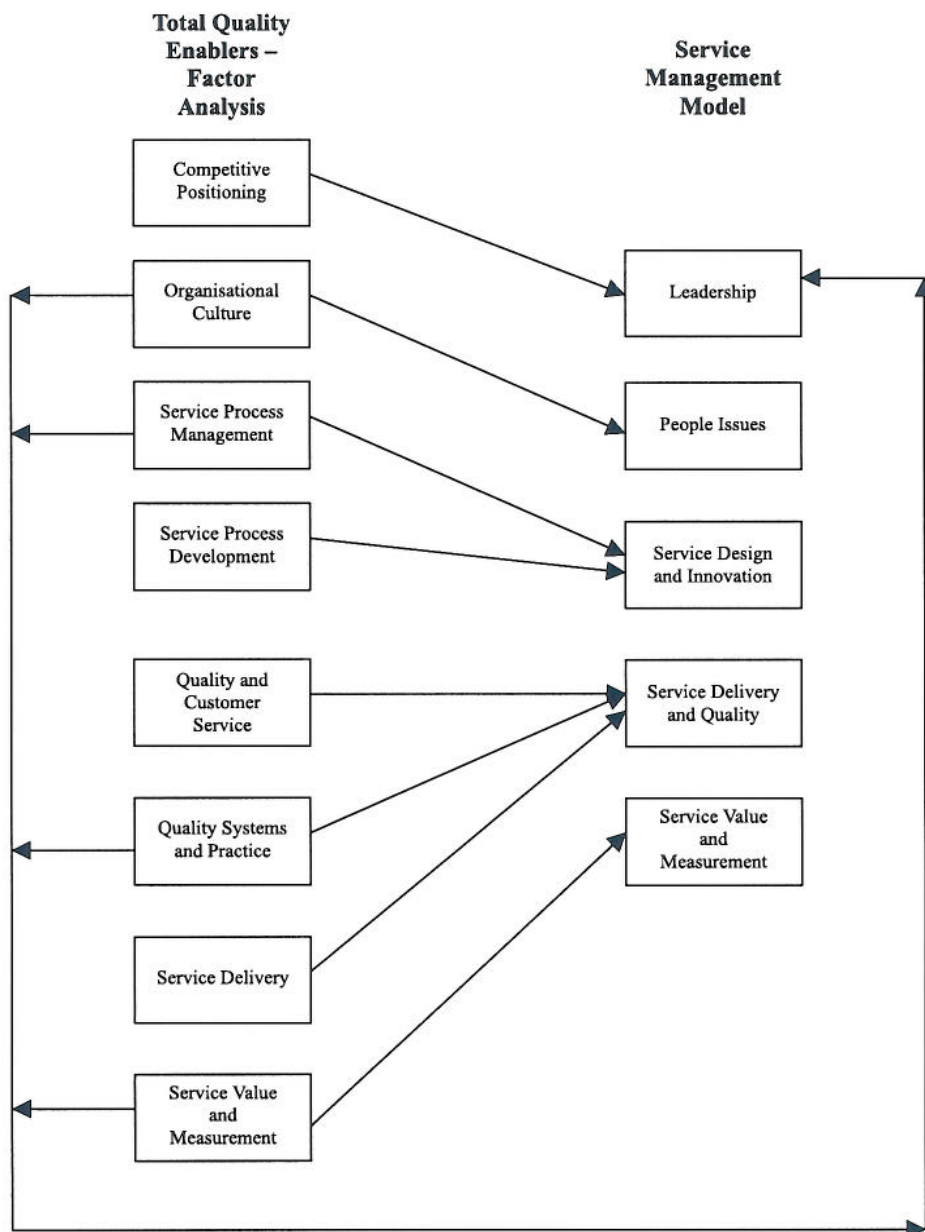
**Figure 5.**
The relationship between the factor analysis and the "service management model" of Voss and Johnson

more of the new groupings of variables. This suggests that the empirical evidence provided within this paper supports the theoretical framework suggested by the service management model.

*TQM enablers and measures of sustainability*
The impact of the total quality enablers (i.e. the factors identified) on business sustainability falls into two distinct groups. The impact of high practice

adoption on operational performance is significant, and the direct impact of practices in specific areas of the business on corresponding measures of operational performance is clear to see. Clearly the analysis shows that all of the total quality enablers have a positive impact upon operational performance, both in terms of the related performance indicators and other measures under consideration. To a lesser extent, the total quality enablers also have a positive impact upon business performance, in particular practices relating to organisational culture, quality systems and practice and competitive positioning. The lack of impact upon business performance would suggest that practices related to service value and measurement and service process development reflect the relatively low adoption levels in these areas across the sector.

In contrast, the impact of the total quality enablers on other measures of sustainability, namely business growth, competitive advantage and response to change are much less clear cut. Organisational culture is the one TQM enabler that has the biggest positive impact upon company growth, whilst service process management and quality systems and practice have the biggest impact upon the various indicators of competitive advantage.

In overall terms, organisational culture has been shown to be a key TQM enabler that has a wide impact upon performance and business sustainability. This is supported by Appleby and Mavin (2000) who concluded that organisations which have adopted an integrated HR strategy show better practice and performance in terms of a number of operational and business activities, sustainability and innovation included. Moreover, they have pointed to Porter's (1997) view that HR has a strategic role that crosses all activities.

Moreover, quality systems and practice have clear impact upon levels of operational and business performance, and this TQM enabler has also been shown to provide a positive effect in terms of an organisation's competitive advantage. Figure 6 provides a revised conceptual model to show the empirical relationships between TQM enablers and measures of business sustainability.

By identifying empirically a group of key TQM enablers from a service sector survey and identifying their association with groups of performance and sustainability measures, further research may be useful to determine their suitability to other sectors and locations.

*TQM enablers (combined) and sustainability*
In this paper the authors have looked at the association between TQM enablers and various measures of internal and external business performance. However, the ability to be sustainable is arguably not supported by the development of those individual TQM enablers in isolation from one another. In other words, if an organisation had a highly developed "quality and customer service" but had made little investment say in other TQM enablers such as "organisational culture" or "competitive positioning", to what extent can they be sustainable? In associated research, Prabhu and Robson (2001) have demonstrated that a service organisation's world-class status (defined in terms of overall practice and performance attainment) is significantly associated with the measures of
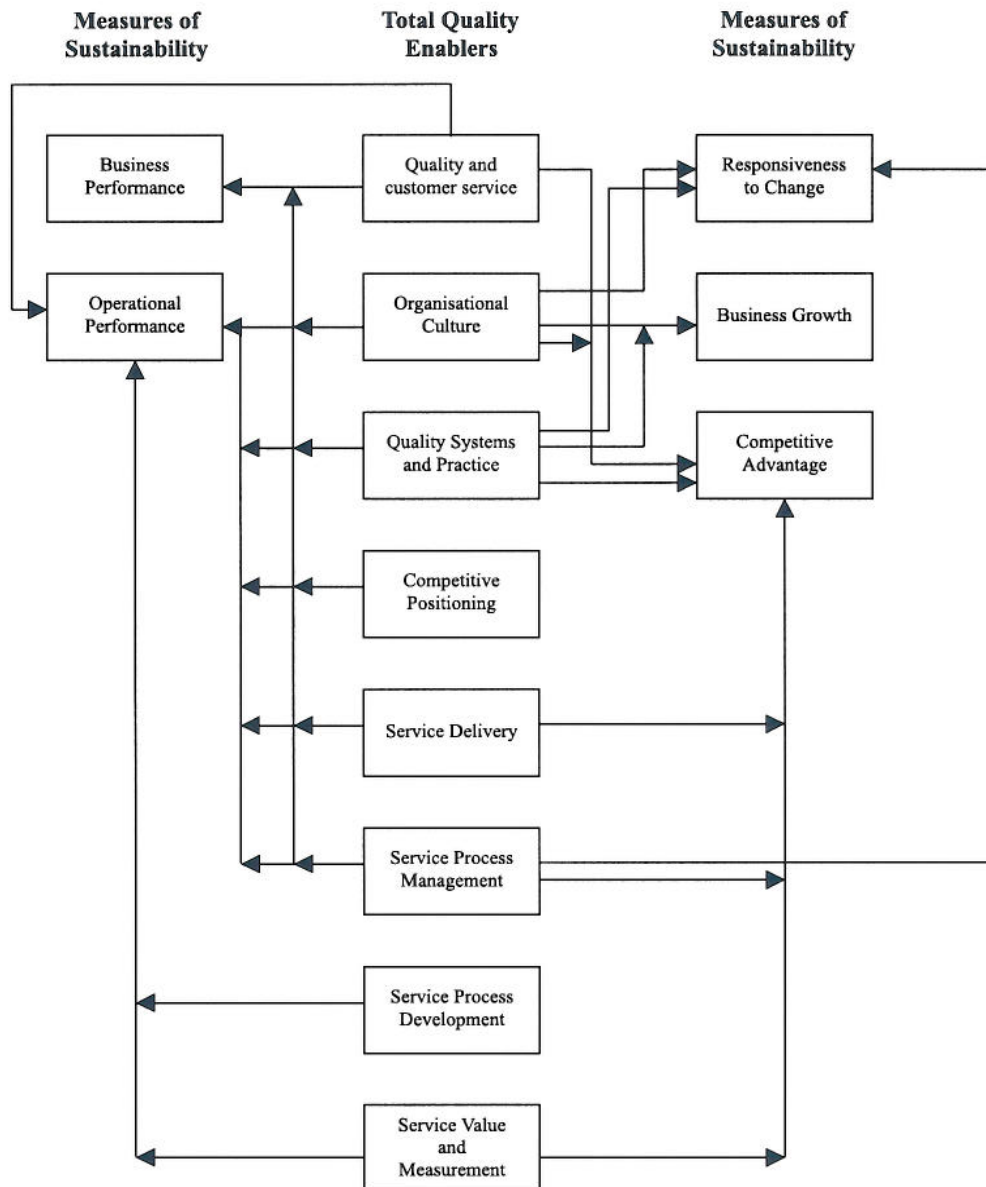
**Figure 6.**
The empirical model of
sustainability

sustainability discussed within this paper. As the authors have not analysed
the combined impact of all the TQM enablers within this paper on
sustainability, results of this earlier (Prabhu and Robson, 2001) analysis can be
used to demonstrate how internal attainment can be associated with external
performance.

Within this research (Prabhu and Robson, 2001), a clear association between
world-class status and growth amongst the service organisations has been
presented. Those categorised as "could do better" and "room for improvement"
(both of these groups have low average practice and performance levels) and

those described as "promising" (high average practice adoption, but low levels of operational performance) display growth rates that are below the sector average for each of the measures considered, as shown by Figure 7.

An exception involves the "could do betters" which exhibit a greater than average growth in supplier numbers. These three groups of service organisations have shown decreasing profitability, with the latter two also decreasing their number of employees. Vulnerable organisations (low levels of practice adoption, but high levels of operational performance) have growth rates that are at least as good as the sector average. Finally, the "potential winner/world-class" organisations (high levels of practice adoption and operational performance) display a clear advantage in terms of growth. Moreover, their relative growth compared to the service sector in terms of numbers of suppliers is only average, suggesting a movement towards leaner servicing.

There is also a clear association between world-class status and perceived competitive advantage. Again, the "potential winner/world-class" organisations lead on all measures of competitiveness, whilst the "could do better" and "room for improvement" services have recorded the worst relative levels of advantage for each measure considered. In absolute terms, these organisations are uncompetitive in terms of price. Despite their good record of best practice adoption, the "promising" services have below sector-average levels of competitiveness. Figure 8 indicates this association.

In terms of competitiveness perception, association with world-class status is significant at the 0.1 per cent level. The services that have "room for improvement" either do not know when they can compete or believe they can at best only partially compete. "Promising" services feel they can only compete partially, whilst the "potential winner/world-class" organisations typically believe they can compete successfully now. In terms of the time scale for competitiveness, association exists between perception and world-class status



**Growth - Comparison by World Class Status**
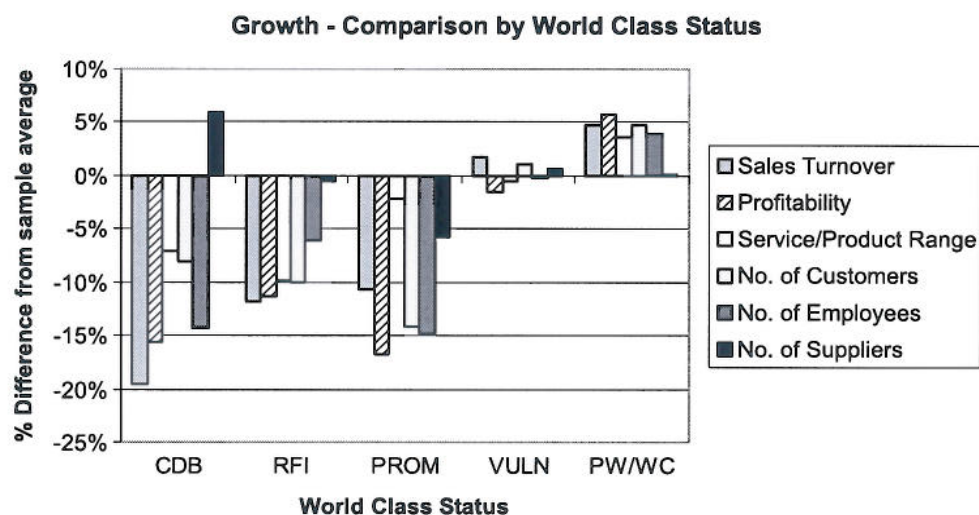
Figure 7.
Service growth by world-class status
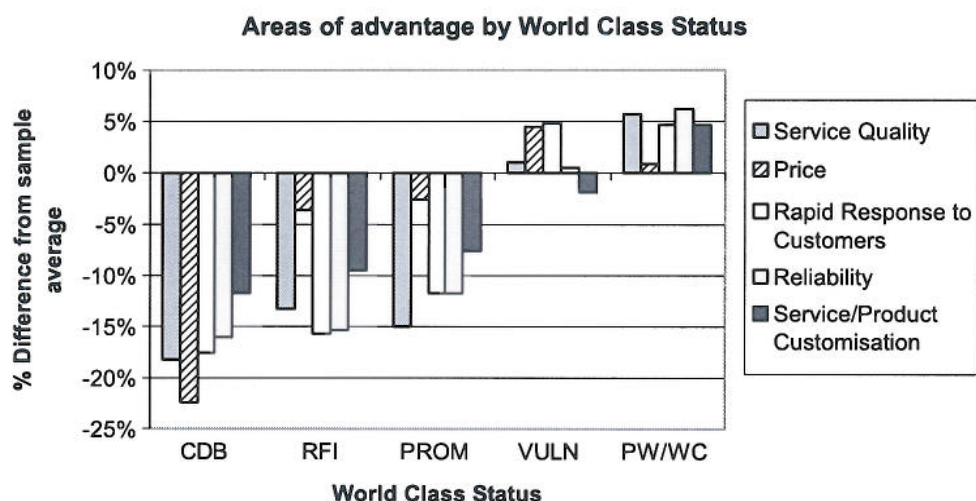
**Areas of advantage by World Class Status**

(5 per cent level). "Potential winner/world-class" organisations believe that they can currently compete with the best or will be able to do so in the next three years, whilst the weaker services believe that they will only become competitive (if at all) in the next five to ten years.

This research supports literature from previous findings in competitiveness and sustainability that suggest that all round excellence is needed to enable high, sustainable performance in key operational and overall business performance.

## Implications of the research results

This paper has presented the results of a statistical analysis undertaken on a large data set of service sector companies, representing 450 organisations in the North East of England. Each establishment had recently provided data on their adoption levels of some 28 different best management practices normally associated with world-class and TQM organisations, along with several indicators of business sustainability. These included 12 operational performance measures, six business performance measures, six growth characteristics, five measures of competitive advantage and four measures on the impact of change. The aim of the paper was to identify the main TQM enablers emerging from this empirical study and to gauge their impact on business sustainability.

A factor analysis of the various management practices adopted by the North East sample identified eight categories of factors or TQM enablers, which cumulatively accounted for 63 per cent of the total variance. However, practitioners in the North East service sector appear to have concentrated their TQM efforts in four specific areas for achieving greater impact on performance and sustainability. The first and most significant enabler, which the authors have called quality and customer service, represents the adoption of practices for achieving a total quality mindset and a strong customer focus amongst all employees in the design and implementation of their service standards, and accounts for 28 per cent of the total variance. The second factor, organisational

culture, relates to the establishment of practices for creating a supportive culture, enabling employees to deliver their best, and accounts for another 7 per cent of the total variance. Service value and measurement is the third factor, which represents practices that continuously measure and improve service value, and accounts for another 6 per cent of the total variance. The fourth important factor is quality systems and practice. It represents the adoption of formal quality procedures and TQM frameworks. Even though it accounts for only 4 per cent of the total variance, it is associated significantly with a range of business sustainability measures. In all, greatest attention appears to be paid by North East service providers to both "soft" enablers, namely customer orientation and a focus on employee needs, as well as the "hard" enablers of TQM such as implementing formal quality procedures/TQM frameworks and the measurement/improvement of service value.

The association between individual TQM enablers (especially the above four) and measures of "operational performance" is not only widespread but also highly significant given the size of the sample frame. It is also independent of the specific sector or size of the organisation concerned. As an indicator of the scale of this association, the analysis shows that 50 per cent of the TQM enablers identified are each associated significantly with 75 per cent or more of operational performance measures. In this context, the North East experience does appear to confirm the results of other studies reported in the literature review.

However, the extent of association between individual TQM enablers and business performance measures is limited to a smaller number of factors and measures, but nevertheless equally significant. For example two of the above-named enablers, organisational culture and quality systems and practice, have strong associations with over 80 per cent of the business performance measures. The same two enablers are also associated significantly with other business sustainability measures such as business growth, competitive advantage and impact of change. Finally, as again confirmed by the literature review, the combined impact of all TQM enablers, as measured in the North East sample through indices of world-class status, is associated highly significantly with sustainability measures such as business growth and competitive advantage.

Given the growing importance of the service sector not just in the North East but the rest of the UK, this analysis provides clear signposts for those organisations aspiring to become world-class by identifying those management practices that are strongly associated with the attainment of high operational and business performance. Also, in a region such as the North East of England, where considerable attention is focussed by business support and government agencies and on raising regional competitiveness, this analysis will assist in targeting limited resources on future interventions and development programmes in those areas that have shown to be linked with improved business performance and sustainability.

Finally, the analysis in this paper has been limited by the original data source, which provided business sustainability measures primarily through a

facilitated self-assessment process. The work could be enhanced to using independent measures of business sustainability as reported in company annual reports and any associations thus established would strengthen the argument even further.

**Note**

1. The Competitiveness Project (Ref. 196/90/11) was a Regional Challenge project (1996-1998), 50 per cent funded through the European Commission's European Regional Development Fund.

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