# THE EXTENT, CAUSES, AND IMPLICATIONS OF SKILL DEFICIENCIES

# MANAGERIAL QUALIFICATIONS AND ORGANISATIONAL PERFORMANCE: AN ANALYSIS OF ESS 1999

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**May 2002**

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**Acknowledgements**

This report provides results of further analyses of the Employers Skill Survey, 1999. It builds on earlier work in setting up, conducting and reporting on the survey, as well as research aimed at enhancing and extending the original data set.

It forms part of a wider programme of research into the extent, causes and implications of skill deficiencies, sponsored by DfES. This research programme has been carried out under the direction of Terence Hogarth and Rob Wilson and the Institute for Employment Research (IER) at the University of Warwick.

Fieldwork for ESS 1999 was undertaken by IFF Research Ltd under the direction of David Spilsbury and Jan Shury.

Thanks are due to Liz Bridges and Lynne Conaghan for assistance in preparing this document.

We are also grateful for the helpful comments provided by DfES officials at the design, analysis and drafting stages. Responsibility for the views expressed and for any remaining errors lie solely with the authors.

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## Executive Summary

*Background*

This document presents some new analysis of the links between managerial qualifications and proficiency, the strategies adopted by establishments and their economic performance. This is based on data from the Employers Skill Survey (ESS) for 1999. It extends earlier work which looked at links between proficiency and qualifications of the Workforce more generally and the goals and performance of the establishment in which they work.

It has been recognised for some time that managers play a particularly important role in such processes. The Government recently set up the Council for Excellence in Management and Leadership to explore such issues in greater depth. The present report represents a modest contribution to that debate, exploiting the results from the ESS 1999, which probed more deeply on such matters than any previous UK survey.

These questions are explored using a combination of descriptive statistics and multivariate regression analysis.

*Proficiency and qualifications of managers and those of the whole workforce*

The report begins by comparing the proficiency[1] and qualifications of managers with those of the Workforce more generally. There is some evidence of a positive correlation here between formal qualification requirements of managers and those of the workforce as a whole. Establishments with better qualified managers tend to have a better qualified workforce.

There is a less strong link with proficiency of the workforce as a whole. Workforce proficiency is highest in establishments with either very high management qualifications or with no required qualifications. This probably reflects the fact that the establishments with higher qualified managers probably have more proficient workforces even though they set more demanding goals, and the higher proficiency amongst establishments with no required qualifications of managers reflect the fact they set less demanding goals and are therefore less critical of their workforce.

There are no strong links between the proficiency of managers and the qualification requirements of the workforce. However, there seems to be a stronger positive correlation between management proficiency and proficiency of the workforce as a whole.

There are some interesting differences between single and multiple manager establishments. The single manager establishments are often small businesses, with a single owner manager, who may have rather different business objectives than larger enterprises. Generally the single manager establishments appear to be more likely to think that their staff in general (and managers in particular) are proficient than in multi manager establishments.

[1] Employers were asked what proportion of their staff within an occupational group were fully proficient at their current job. Using the answers to this question measures of proficiency and internal skill gaps were derived.

As far as qualifications are concerned there appears to be some polarisation, with qualified single manager establishments more likely to be associated with a well qualified workforce while those with no qualifications tend to be more likely to be associated with an unqualified workforce.

*Proficiency and qualifications of managers, goals and strategies*

This analysis suggests some links between qualifications of managers and high level goals or targets. There are clear distinctions between the qualification levels of the managers and the adoption of certain *high level goals*. For example, a productivity goal is much more likely than a sales one for those holding higher level BTEC or equivalent, while a quality of service goal is much more likely than sales amongst those holding a higher degree. Although it is quite possible that causality runs in both directions (i.e. goals determine the required qualifications and qualifications also drive goals), these differences can be expected to have implications for establishment behaviour and performance

Further important differences are found in the *product market strategies* adopted by managers with different qualifications. In particular, more qualified managers were more likely to adopt product quality oriented strategies, while the less qualified were more likely to focus on production costs and efficiency or to have no strategy at all.

These findings are further reinforced by the analysis of the *methods used by managers in achieving the establishments' product market strategy*. In particular, there was a distinction between the emphasis on any method, with more qualified managers more likely to use such methods. More importantly there was a clear distinction between the use of the 'cost reduction' method, which was relatively heavily stressed by less qualified managers, and the other three methods: 'new products and services', 'new technologies' and 'new work practices'. Of those three methods, more qualified managers were likely to place greatest relative emphasis on the 'introduction of new technologies'.

Regarding proficiency, there is some evidence that those establishments setting targets for *high level goals* such as efficiency or profit are less satisfied with their managers' proficiency than those setting other goals. When compared with different *product market strategies,* there appears to be an inverse relationship between the aspiration level of the establishment and the perceived proficiency of managers. This is particularly strong for those following an efficiency strategy. There was evidence that relatively less proficient managers tended to place more emphasis on the cost reduction *method of achieving the establishments' product market strategy*. The link between proficiency and other methods was, however, less clear, with some evidence of a bimodal relationship.

Again, there are some notable differences between single and multiple manager establishments in many of these relationships, especially for proficiency. There is a question mark about how single manager establishments have responded to the proficiency question and there are also some difficulties caused by very small sample sizes. Nevertheless, they suggest some polarisation in response by high and non-qualified managers.

*Multivariate Analysis*

The report also presents multivariate analysis linking, on the one hand, managerial qualifications and proficiency, and on the other hand, goals, strategies and the performance of the establishment. In each case this is done controlling for a host of other factors as in the original analysis by Bosworth *et al.* (2001). These other factors include, sector, size of establishment, external labour market differences etc. The multivariate results are also indicative of links between these various groups of variables, although they are sensitive to the precise detail of the econometric specification used.

In principle, there are a number of potential advantages in using a multivariable approach. In particular, this enables the analysis to control for the effects of other potentially important explanatory variables. However, this approach is not a panacea. In particular, it does not overcome some of the difficulties in measuring establishment performance.

The multivariate analysis confirms that there is evidence of a link between the minimum qualification of managers and the setting of various *high level goals* or targets, including cost reduction, profits and productivity. However, the results do not suggest a significant role for management proficiency in setting such goals.

The multivariate results, with regard to the influence of management qualifications and proficiency on the *adoption of product market strategies* were largely in line with the cross-tabular results. In particular, higher levels of qualification and a high proportion of managers holding the qualification appear to increase the probability of adopting both product orientated strategies of 'introducing new, higher quality products' and 'improving the quality of existing products', whilst having a negative relationship with 'increasing the efficiency of production of existing products'.

However, there is also evidence that the reverse relationship emerges with regard to management proficiency, with the product goals associated with lower proficiency and the efficiency goal associated with higher proficiency. One reason for this result might be that causality runs the other way in the case of proficiency. In other words, it is less easy to be successful for managers intent on product innovation than for those focusing upon cost savings and process innovation.

In the analysis of the *methods adopted by establishments to achieve their product market strategies* and, thereby, their higher level goals, there is little, if any, relationship between the management variables and the methods adopted. However, there are some consistencies between the results for the methods and the earlier results for goals, in particular the generally positive coefficient on management qualifications. However there is a positive coefficient on the perceived management proficiency, when a negative coefficient was expected (given the way proficiency is measured). This again raises the question of whether the direction of causality with respect to proficiency may run in the other direction, with attempts to 'do more' (i.e. set more demanding goals) resulting in lower perceived efficiency.

*Proficiency, the goals of managers and establishment performance*

The report notes how difficult it is to derive simple and meaningful results from the cross-tabular analysis, because of the difficulties in measuring *performance*. On *a priori* grounds, it is argued that the self reported performance measure is most useful. There appears to be only weak evidence of a link with management qualifications, using the self defined performance measure, while the other measures show a perverse negative relationship. It has been argued that this may be the result of more highly qualified managers, on balance, setting more demanding goals.

There appears to be a fairly strong link between self reported performance and the perceived proficiency of managers, with more proficient managers performing better by this measure. The continuous sales growth measure indicates a significantly higher mean growth rate for those establishments with nearly all or all managers, proficient than for other establishments. Other measures show little evidence of a link.

The multivariate analysis provides further evidence for a link between management proficiency and *performance*. However, there is little evidence for a direct link with qualifications. This may be because so many managers have acquired their skills in other ways and that qualifications is a poor measure of ability when looked at in such an aggregate way.

It appears that the main effects of more able managers on performance may show up through superior HRM (and other work practices) as identified in the earlier research reported in Bosworth *et al.* (2001). The present multivariate results suggest that there are only modest additional effects (at least on goals) not captured by those variables.

While it is possible to show that perceived management proficiency is positively related to performance, the results suggest that this is at least a two way relationship. In other words, management proficiency may, in part, be judged on the performance of the establishment. More worrying is that, the link between management qualifications and establishment performance often appears perverse in the present results. One possible explanation for this is that more qualified managers disproportionately set higher aspirations for the performance of the establishment which are significantly harder to achieve. This raises issues to do with latent skill gaps which lie beyond the scope of this report but which were partially addressed in Bosworth *et al.* (2001).

# 1. Introduction

## 1.1 Background

While there is continuing interest in the general level of skills in the UK and their impact on performance (Bosworth, Davies and Wilson, 2001), certain occupational groups stand out as crucial in determining economic performance. Of these, management plays a central role in its setting of goals and strategies of the enterprise, as well as its day to day control of the operations of the company. Despite this, to date, there have been few, if any, large-scale empirical studies of the role of management characteristics and qualifications on firm performance, research being confined to case studies and anecdotal evidence.

However, a recent study, based upon the Employer Skills Survey conducted in 1999 (ESS 1999) suggests that there are links between the qualifications and proficiency of managers and the goals and strategies of the enterprise (Bosworth *et al*. 2001).

The present analysis builds upon earlier work in Bosworth *et al. (2001)*, to offer a more comprehensive analysis of the impact of management on enterprise performance. Two main areas of new work are presented:

(i) further descriptive statistics, including simple cross-tabular material, including examination of the links between management qualifications and proficiency and the strategies adopted in different establishments and their performance.
(ii) extension of the econometric model of establishment performance to incorporate management qualifications and proficiency

## 1.2 Descriptive Statistics

The first step in the research is to conduct a simple statistical analysis using cross-tabular material. This involves examining whether:

(i) there is a link between management qualifications/proficiency and the general skills and proficiency of the whole workforce
(ii) there are any particular relationships between management qualifications/ proficiency, the goals and strategies of the establishment
(iii) an analogous analysis of links with the observed performance of the establishment

These results are presented in Chapters 2 - 4

## 1.3 Extension to the Econometric Model

The analysis then builds on the econometric model reported by Bosworth, *et al*. (2001) to establish whether management qualifications/proficiency are important drivers of the strategies adopted by establishments as well as their subsequent performance, holding all else equal. Full details of the model can

be found in the original report by Bosworth *et al*. (2001). In essence, this work estimated a function analogous to that reported by Youndt *et al*. (1996):

(1) $\Pi_i = \alpha + \beta E_i + \delta X_i + \phi S_i + \gamma HR_i + \lambda CP_i + \mu$

Where performance of the $i^{th}$ establishment is denoted as $\Pi_i$ (measured as sales growth, relative sales growth, future sales growth or a self-defined performance measure).

The explanatory variables include:

- establishment characteristics ($E_i$),
- external market characteristics ($X_i$),
- the qualifications and proficiency of staff ($S_i$),
- human resource measures employed within the establishment ($HR_i$)
- the current product strategy of the establishment ($CP_i$).

A new set of variables relating to management qualifications and/or proficiency is also examined here:

- the qualifications and proficiency of managers ($M_i$),

So the underlying equation becomes:

(2) $\Pi_i = \alpha + \beta E_i + \delta X_i + \phi S_i + \xi_i M_i + \gamma HR_i + \lambda CP_i + \mu$

A number of variants of this equation are tested (including an additional variable that explores the interaction between management skills and the more general skills of the establishment). The crucial hypothesis being tested is whether management skills are important to the performance of the establishment.

In addition, analogous specifications, but with the goals or strategies of the establishment as the dependent variable are also explored. These examine the hypothesis that the goals set, and strategies adopted by establishments, are influenced by management qualifications and /or proficiency.

These results are presented in Chapter 5

## 1.4 Definitions and Concepts

For the benefit of readers not familiar with the earlier work based on ESS 1999, it is helpful to rehearse some of the basic concepts and definitions used in the current analysis as well as the previous research.

*Managers:* The term managers is used to refer to all those employed in the Standard Occupational Classification, 1990, Major Group 1. This includes managers and proprietors of small businesses as well as corporate managers and administrators.

*Proficiency:* In order to measure internal skill gaps in ESS 1999, respondents were asked:

> What proportion of your existing staff at this establishment in (a particular occupation) would you regard as being fully proficient at their current job: all nearly all, over half, some but under half, very few?

In addition a supplementary question was put to about half the sample. This probed about the percentage signified by the responses to the first question. The results suggested that the "nearly all" response represented a median value of 85% fully proficient, while the "over half" response had a median value of 65%.[2] Using the answers to these questions measures of proficiency and skill gaps were derived.

In dealing with management proficiency, it is clear that single manager establishments often appear to give different responses than multiple manager establishments (for example they give more favourable views about management proficiency). This can be traced to several things. The relevant question is not phrased in a manner that single managers find easy to respond to. Firstly, in single manager establishments they are probably commenting about themselves, and this might make it difficult to admit that they are less than fully proficient. Secondly, as single managers they have no peer group within the establishment with which to compare themselves.

*Qualifications of Managers:* The qualifications of managers are considered through two variables. The first variable considers the current minimum qualification required of managers. This variable is based broadly upon NVQ equivalents:

| | |
|---|---|
| No qualifications | = 0 |
| NVQ level 1, BTEC Certificate, <5 GCSEs C+ | = 1 |
| NVQ level 2, BTEC Diploma, 5 GCSEs C+ | = 2 |
| NVQ level 3, BTEC National, A Levels | = 3 |
| NVQ level 4, BTEC Higher, Degree | = 4 |
| NVQ level 5, Higher Degree | = 5 |

The second qualification variable expresses the percentage of managers who possess the minimum qualification currently required.

*Establishment* (& Enterprise): The term establishment is used to refer to the main unit of observation used in ESS. This Unit corresponds broadly with what the Office for National Statistics (ONS) describes as a Business Enterprise, which is the smallest reporting unit of a company. Such a unit may be a single establishment enterprise or just one of a number of sites that comprise such an enterprise. Such a reporting unit should also not be confused with the enterprise or the group of companies (i.e. the parent and subsidiaries) that form the financial accounting unit for formal accounting purposes – which ONS refers to as the Enterprise Group. The latter term is

[2] Inter-quartile ranges of 80-90 and 60-70% respectively.

reserved here for the broader organisation of which an establishment may form a small part.

*Goals, Strategies and Methods used to achieve them*

A distinction needs to be made between three different pieces of information used in the survey:

i) "high level goals"
ii) "product market strategies"
iii) "methods used to achieve the product market strategies

*Goals:* This term is used to refer to the high level goals or targets of the establishment. These may include:

- Targets for sales, fees, revenues, turnover, income
- Meeting budgets/costs, cost management
- Profitability/Profit
- Productivity
- Number of customers, etc
- Quality of products or services

The "high level goals" information comes from QB32/33 (which specifies sales, costs, profits and productivity, with no other choice) and QB34/35 (which includes the above, but also allowed the respondent to specify other "performance measures or targets").

*Product Market Strategy*: This is the term used to describe general strategies used to pursue these targets or goals. These include:

- Introduce new higher quality products or services
- Increase quality of existing products or services
- Increase efficiency
- Move towards more basic products or services

The "product market strategies" information comes from C3(B&C), but also uses C13, C18 [current] and C22(B&C) [past three years].

*Methods used to achieve the product strategies*

Establishments report various methods used to achieve these strategies. These include:

- cost reduction,
- new products and services,
- new technologies
- new work practices

The “method of achieving product market strategies” come from C4, C14[current] and C23 [past three years].

P*erformance*: A number of different measures of establishment performance were developed in ESS 1999. These included:

- Self defined measure of performance
- Sales growth
- Relative sales growth
- Future sales growth

*Human Resource Management:* This term is used to refer to various policies and practices associated with improving the way work is managed and carried out. These include training as well as various other ways in which human resources are managed and deployed.

## 1.5 Overview of the Report

The analysis in this report focuses on various indicators of performance as well as the goals and strategies adopted by establishments. Many of these are only available in the face to face survey. Both the descriptive and the multivariate analysis presented here are therefore based just on the 4 thousand face to face interviews from ESS 1999. The analysis covers all sectors other than the public sector. Various cross-tabulations have been produced.

- management proficiency & qualifications and those of the remainder of the workforce
- management proficiency & qualifications and the goals and strategies of the establishment
- management proficiency & qualifications and the performance of the establishment

These results are discussed in turn in Chapters 2, 3 and 4 respectively. Chapter 5 then reports the results of a multivariate analysis of the relationships between:

- Goals, strategies and methods used to achieve them on the one hand and management proficiency and qualifications on the other.
- A similar analysis of establishment performance and management proficiency and qualifications.

## 2. Descriptive Statistics: Management Proficiency & Qualifications and those of the Remainder of the Workforce

### 2.1 General Results

A key issue is the extent to which better qualified and more proficient managers are associated with better-qualified and more proficient staff generally (or conversely). Initial analysis suggests some significant differences between responses on proficiency from single and multi-manager establishments. A particular concern is whether or not there are differences for single manager as opposed to multi-manager establishments.

Measures of management proficiency and qualifications are first both cross classified with corresponding measures for those of the remainder of the workforce. These are shown in Tables 2.1-2.4. To simplify the analysis the term qualifications is generally used to refer to "the minimum qualifications typically required", rather than the actual qualifications the managers of the workforce might (by accident) possess.

Those establishments with better qualified managers (NVQ levels 4 or 5) tend to have workforces who are generally better qualified (see Table 2.1). It can be seen that in establishments whose managers are not required to have any qualifications at all (first column) slightly over 60% of establishments report that they do not require any of workforce to be qualified. Conversely, establishments where managers are poorly qualified (NVQ level 1 or no formal qualifications) are more likely to have unqualified staff. The relationship is far from monotonic for the highest management qualification group. It can be seen that the average qualification level most frequently required of the workforce (about 43% of establishments) is between NVQ 3-4. This "inverse U shaped" relationship is not surprising – it would be exceptional if all workers in an establishment were required to have NVQ levels 4 or higher.

Table 2.2 presents a corresponding analysis of management qualifications versus proficiency for the whole workforce (the proficiency measure runs from 1 (all proficient) to 5 (very few staff proficient)). The highest percentages of proficiency scores of 1 are found in establishments with managers with very high qualifications (NVQ 5 = postgraduate qualifications), followed by those establishments whose managers have no formal qualifications. It is difficult to be certain as to the reasons for this finding. However, it seems likely that the explanation lies in the low level of skill demands placed upon the workforce by unqualified managers. While the skill demands placed upon the workforce increase with the qualifications of managers, so do the qualifications of the workforce generally (see Table 2.1) and therefore the ability of the workers to satisfy the demands placed upon them. Where more highly qualified managers are questioned about the proficiency of their workforce, they tend to be more highly critical.

Table 2.3 indicates that there are no strong links between the proficiency of managers and the qualification requirements for the workforce as a whole. However, it can be seen from the column relating to establishments whose managers are viewed as being fully proficient that the proportion of establishments requiring lower level qualifications is much greater than those requiring higher level qualifications amongst the workforce as a whole. On the other hand, an inverse U shaped relationship for workforce qualifications emerges, for example, down the column for establishments, where over half of all managers are fully proficient (sample numbers then fall away significantly for lower management proficiency establishments). There appears to be a stronger correlation between proficiency for managers and proficiency of the Workforce as a whole (see Table 2.4). In effect, establishments with proficient managers are also most likely to report proficient workforces. For example, in the case where all managers are viewed as proficient, around 85% of establishments view all, or nearly all, staff as being proficient. In comparison the final columns where some, but under half or very few managers are viewed as proficient, the modal value of workforce proficiency is between 'same but under half' and 'over half' (but less than nearly all).

## 2.2 Single versus Multi-manager Establishments

There are some interesting distinctions between single and multi-manager establishments. These are illustrated in Tables 2.5-2.8. Some care needs to be taken in interpreting the comparisons of single and multi-manager establishments, for the reasons set out in the discussion of proficiency in Chapter 1. Table 2.5 shows that qualified managers in single manager establishments are more likely to be associated with well qualified staff in other jobs, single managers without qualifications show a greater tendency to be associated with an unqualified workforce. Compare for example, the first column in the single managers half of the table (i.e. no management qualifications) with the overall total in the final column and, then, with the most highly qualified single manager establishments. It can be seen that the mode shifts from no qualifications required of the workforce for unqualified single managers to an average of between NVQ level 3 and 4 for the most highly qualified single manager establishments. The same pattern emerges for multiple manager establishments but the variation between the highest and lowest qualified managers is much smaller. In addition, the monotonic overall relationship for the qualifications of the whole workforce found in the final (total) column of the second half of the table is not quite as clear as in the corresponding column in the first half of the table

Single manager establishments are much more likely to be associated with a workforce that is perceived to be proficient as shown in Table 2.6. For simplicity, comparing the final column in the first and second half of the table, 83% of single manager establishments report that their workforce is 'all' or 'nearly all' proficient, compared with 72% of multi-manager establishments. Comparing the results for establishments whose managers do not require qualifications, the peak occurs in proficiency scores 1-2 for the multi-manager

establishments (first half of the table) and at 1 for the single manager establishments (second half of the table).

Comparison of manager proficiency *versus* workforce qualifications (Table 2.7) for single manager and multiple manager establishments does not reveal any major differences in pattern, although comparisons are made difficult by the small sample size for the most highly qualified single manager groups. Comparison of the final column in the first and second half of the tables suggests a monotonically declining proportion of establishments reporting higher qualifications of the workforce for single manager establishments, where there is some evidence of a higher modal value (up to NVQ 1) for the multiple manager establishments.

The comments on Table 2.8, which looks at proficiency, are very similar to that on Table 2.7. Again, the comparisons are largely restricted to the first and second halves of the final column of the table because of sample size problems. Both show an inverse U shaped relationship but multiple manager establishments are more likely on average to report lower proficiency of the whole workforce than the single manager establishments.

## 2.3 Conclusions

The following conclusions emerge from this analysis.

Establishments with better qualified managers tend to have a better qualified workforce. There is a less strong link with proficiency of the workforce as a whole. Workforce proficiency is highest in establishments with either very high management qualifications or with no management qualifications

There are no strong links between the proficiency of managers and the qualification requirements of the workforce. However, there seems to be a stronger correlation between management proficiency and proficiency of the workforce as a whole.

There are some interesting differences between single and multiple manager establishments. In general, the former seems to perceive a more proficient workforce but this may reflect limitations of the survey instrument as much as reality. As far as qualifications are concerned there appears to be some polarisation, with qualified single manager establishments more likely to be associated with a well qualified workforce while those with no qualifications tend to be more likely to be associated with an unqualified workforce.

**Table 2.1 Management qualifications (5 NVQ Equivalents across top) vs Qualifications of the Whole Workforce**

| | | | 1 | 2 | 3 | 4 | 5 | Total | |
|---|---|---|---|---|---|---|---|---|---|
| | | Col % | Col % | Col % | Col % | Col % | Col % | Count | Col % |
| **Qualification requirement bandwidths**[a] | **none** | 60 | | | | | | 822 | 25 |
| | **Up to NVQ level 1** | 24 | 82 | 39 | 34 | 16 | 8 | 825 | 25 |
| (Whole Workforce) | **between NVQ level 1 and 2** | 12 | 17 | 51 | 30 | 25 | 9 | 716 | 22 |
| | **between NVQ level 2 and 3** | 4 | 1 | 9 | 32 | 32 | 21 | 578 | 18 |
| | **between NVQ level 3 and 4** | 1 | 0 | 1 | 4 | 27 | 43 | 345 | 10 |
| | **between NVQ level 4 and 5** | 0 | 0 | 0 | 0 | 0 | 20 | 20 | 1 |
| **Total** | | 100 | 100 | 100 | 100 | 100 | 100 | | 100 |
| **Total count** | | 1362 | 82 | 257 | 460 | 1068 | 77 | 3306 | |

Source: Own estimates based on analysis of ESS 1999.

**Table 2.2 Management qualifications (5 NVQ Equivalents across top) vs Proficiency of the Whole Workforce**

| | | | 1 | 2 | 3 | 4 | 5 | Total | |
|---|---|---|---|---|---|---|---|---|---|
| | | Col % | Col % | Col % | Col % | Col % | Col % | Count | Col % |
| **Proficiency score bandwidths** | **All existing staff fully proficient** | 27 | 23 | 24 | 19 | 21 | 37 | 767 | 24 |
| | **Nearly all staff fully proficient** | 48 | 49 | 54 | 50 | 52 | 34 | 1597 | 50 |
| (Whole Workforce) | **Over half of all staff fully proficient** | 21 | 24 | 19 | 27 | 23 | 23 | 723 | 23 |
| | **Some, but under half fully proficient** | 3 | 5 | 2 | 4 | 4 | 6 | 113 | 4 |
| | **Very few staff fully proficient** | 1 | 0 | 1 | 1 | 0 | 0 | 17 | 1 |
| **Total** | | 100 | 100 | 100 | 100 | 100 | 100 | | 100 |
| **Total count** | | 1328 | 80 | 247 | 449 | 1040 | 73 | 3217 | |

Source: Own estimates based on analysis of ESS 1999

Notes a) The NVQ levels for the whole workforce are averages across different occupational groups. The qualifications of managers refer to single NVQ levels because these are a single qualification group.

## Table 2.3 Proficiency of managers versus qualifications of the whole workforce

| | | Proficiency of managers | | | | | Total | |
|---|---|---|---|---|---|---|---|---|
| | | All existing staff fully proficient | Nearly all staff fully proficient | Over half of all staff fully proficient | Some, but under half fully proficient | Very few staff fully proficient | Count | Col % |
| | | Col % | Col % | Col % | Col % | Col % | | |
| **Qualification requirement bandwidths**[a] (Whole Workforce) | **none** | 28 | 22 | 15 | 24 | 25 | 830 | 25 |
| | **Up to NVQ level 1** | 24 | 26 | 28 | 30 | 21 | 832 | 25 |
| | **between NVQ level 1 and 2** | 21 | 21 | 27 | 30 | 21 | 725 | 22 |
| | **between NVQ level 2 and 3** | 17 | 19 | 19 | 8 | 11 | 589 | 18 |
| | **between NVQ level 3 and 4** | 10 | 12 | 11 | 8 | 21 | 359 | 11 |
| | **between NVQ level 4 and 5** | 1 | 0 | 0 | 0 | 0 | 20 | 1 |
| **Total** | | 100 | 100 | 100 | 100 | 100 | | 100 |
| **Total count** | | 1937 | 950 | 237 | 50 | 28 | 3355 | |

Source: Own estimates based on analysis of ESS 1999

## Table 2.4 Proficiency of managers versus proficiency of the whole workforce

| | | Proficiency of managers | | | | | Total | |
|---|---|---|---|---|---|---|---|---|
| | | All existing staff fully proficient | Nearly all staff fully proficient | Over half of all staff fully proficient | Some, but under half fully proficient | Very few staff fully proficient | Count | Col % |
| | | Col % | Col % | Col % | Col % | Col % | | |
| **Proficiency score** bandwidths (Whole Workforce) | **All existing staff fully proficient** | 39 | 0 | 0 | 0 | 0 | 786 | 24 |
| | **Nearly all staff fully proficient** | 46 | 69 | 16 | 0 | 4 | 1629 | 50 |
| | **Over half of all staff fully proficient** | 12 | 28 | 74 | 48 | 50 | 729 | 22 |
| | **Some, but under half fully proficient** | 2 | 3 | 8 | 50 | 32 | 118 | 4 |
| | **Very few staff fully proficient** | 0 | 0 | 1 | 2 | 14 | 17 | 1 |
| **Total** | | 100 | 100 | 100 | 100 | 100 | | 100 |
| **Total count** | | 1947 | 954 | 238 | 50 | 28 | 3279 | |

Source: Own estimates based on analysis of ESS 1999

Notes a) The NVQ levels for the whole workforce are averages across different occupational groups. The qualifications of managers refer to single NVQ levels because these are a single qualification group.

## Table 2.5 Management qualifications vs Qualifications of the Whole Workforce

**Multi-manager establishments**

| | Qualifications of Managers (NVQ equivalents) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 0 | 1 | 2 | 3 | 4 | 5 | Total | |
| **Qualification requirements for all staff** [a] | **Col %** | **Col %** | **Col %** | **Col %** | **Col %** | **Col %** | **Count** | **Col %** |
| **None** | 58 | 0 | 0 | 0 | 0 | 0 | 688 | 24 |
| **Up to NVQ level 1** | 25 | 84 | 41 | 34 | 16 | 5 | 736 | 26 |
| **Between NVQ level 1 and 2** | 12 | 15 | 51 | 31 | 25 | 11 | 631 | 22 |
| **Between NVQ level 2 and 3** | 4 | 1 | 8 | 31 | 33 | 23 | 501 | 18 |
| **Between NVQ level 3 and 4** | 1 | 0 | 0 | 4 | 26 | 40 | 294 | 10 |
| **Between NVQ level 4 and 5** | 0 | 0 | 0 | 0 | 0 | 21 | 17 | 1 |
| **Total** | 100 | 100 | 100 | 100 | 100 | 100 | | 100 |
| **Total count** | 1180 | 69 | 225 | 396 | 940 | 57 | 2867 | |

**Single manager establishments**

| | Qualifications of Managers (NVQ equivalents) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 0 | 1 | 2 | 3 | 4 | 5 | Total | |
| **Qualification requirements for all staff** [a] | **Col %** | **Col %** | **Col %** | **Col %** | **Col %** | **Col %** | **Count** | **Col %** |
| **None** | 74 | 0 | 0 | 0 | 0 | 0 | 134 | 31 |
| **Up to NVQ level 1** | 12 | 69 | 25 | 34 | 20 | 15 | 89 | 20 |
| **Between NVQ level 1 and 2** | 9 | 31 | 56 | 25 | 23 | 5 | 85 | 19 |
| **Between NVQ level 2 and 3** | 4 | 0 | 16 | 41 | 28 | 15 | 77 | 18 |
| **Between NVQ level 3 and 4** | 1 | 0 | 3 | 0 | 30 | 50 | 51 | 12 |
| **Between NVQ level 4 and 5** | 0 | 0 | 0 | 0 | 0 | 15 | 3 | 1 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 | | 100 |
| **Total count** | 182 | 13 | 32 | 64 | 128 | 20 | 439 | |

Source: Own estimates based on analysis of ESS 1999

Notes a) The NVQ levels for the whole workforce are averages across different occupational groups. The qualifications of managers refer to single NVQ levels because these are a single qualification group.

## Table 2.6 Management qualifications (5 NVQ Equivalents across top) vs Proficiency of the Whole Workforce

### Multi-manager establishments

| | | Qualifications of Managers (NVQ equivalents) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | Total | |
| | | Col % | Col % | Col % | Col % | Col % | Col % | Count | Col % |
| **Proficiency score bandwidths** | **All existing staff fully proficient** | 25 | 18 | 21 | 17 | 19 | 33 | 598 | 22 |
| | **Nearly all staff fully proficient** | 49 | 48 | 56 | 50 | 52 | 35 | 1405 | 51 |
| (Whole Workforce) | **Over half of all staff fully proficient** | 23 | 28 | 20 | 28 | 25 | 27 | 667 | 24 |
| | **Some, but under half fully proficient** | 3 | 6 | 1 | 4 | 4 | 6 | 97 | 4 |
| | **Very few staff fully proficient** | 1 | 0 | 1 | 1 | 0 | 0 | 15 | 1 |
| **Total** | | 100 | 100 | 100 | 100 | 100 | 100 | | 100 |
| **Total count** | | 1147 | 67 | 215 | 385 | 913 | 55 | 2782 | |

### Single manager establishments

| | | Qualifications of Managers (NVQ equivalents) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | Total | |
| | | Col % | Col % | Col % | Col % | Col % | Col % | Count | Col % |
| **Proficiency score bandwidths** | **All existing staff fully proficient** | 44 | 46 | 44 | 31 | 32 | 50 | 169 | 39 |
| | **Nearly all staff fully proficient** | 41 | 54 | 38 | 45 | 50 | 33 | 192 | 44 |
| (Whole Workforce) | **Over half of all staff fully proficient** | 10 | 0 | 16 | 19 | 15 | 11 | 56 | 13 |
| | **Some, but under half fully proficient** | 4 | 0 | 3 | 3 | 3 | 6 | 16 | 4 |
| | **Very few staff fully proficient** | 0 | 0 | 0 | 2 | 1 | 0 | 2 | 1 |
| **Total** | | 100 | 100 | 100 | 100 | 100 | 100 | | 100 |
| **Total count** | | 181 | 13 | 32 | 64 | 127 | 18 | 435 | |

Source: Own estimates based on analysis of ESS 1999

## Table 2.7 Proficiency of managers versus qualifications of the whole workforce

### Multi-manager establishments

| | | Proficiency of Managers | | | | | Total | |
|---|---|---|---|---|---|---|---|---|
| | | All existing staff fully proficient Col % | Nearly all staff fully proficient Col % | Over half of all staff fully proficient Col % | Some, but under half fully proficient Col % | Very few staff fully proficient Col % | Count | Col % |
| Qualification requirements for all staff [a] | None | 27 | 21 | 14 | 24 | 30 | 695 | 24 |
| | Up to NVQ level 1 | 25 | 26 | 29 | 30 | 22 | 743 | 26 |
| | Between NVQ level 1 and 2 | 21 | 21 | 28 | 30 | 17 | 640 | 22 |
| | Between NVQ level 2 and 3 | 17 | 19 | 19 | 8 | 13 | 512 | 18 |
| | Between NVQ level 3 and 4 | 10 | 12 | 10 | 8 | 17 | 308 | 11 |
| | Between NVQ level 4 and 5 | 1 | 0 | 0 | 0 | 0 | 17 | 1 |
| Total | | 100 | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 1550 | 921 | 231 | 50 | 23 | 2915 | |

### Single manager establishments

| | | Proficiency of managers | | | | Total | |
|---|---|---|---|---|---|---|---|
| | | All existing staff fully proficient Col % | Nearly all staff fully proficient Col % | Over half of all staff fully proficient Col % | Very few staff fully proficient Col % | Count | Col % |
| Qualification requirements for all staff [a] | None | 30 | 41 | 50 | 0 | 135 | 31 |
| | Up to NVQ level 1 | 20 | 21 | 17 | 20 | 89 | 20 |
| | Between NVQ 1 and 2 | 20 | 14 | 17 | 40 | 85 | 19 |
| | Between NVQ 2 and 3 | 19 | 10 | 0 | 0 | 77 | 18 |
| | Between NVQ 3 and 4 | 11 | 14 | 17 | 40 | 51 | 12 |
| | Between NVQ 4 and 5 | 1 | 0 | 0 | 0 | 3 | 1 |
| Total | | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 387 | 29 | 6 | 5 | 440 | |

Source: Own estimates based on analysis of ESS 1999

Notes a) The NVQ levels for the whole workforce are averages across different occupational groups. The qualifications of managers refer to single NVQ levels because these are a single qualification group.

## Table 2.8 Proficiency of managers versus proficiency of the whole workforce

### Multi-manager establishments

| | | Proficiency of managers | | | | | Total | |
|---|---|---|---|---|---|---|---|---|
| | | All existing staff fully proficient Col % | Nearly all staff fully proficient Col % | Over half of all staff fully proficient Col % | Some, but under half fully proficient Col % | Very few staff fully proficient Col % | Count | Col % |
| **Proficiency score bandwidths** | **All existing staff fully proficient** | 38 | 0 | 0 | 0 | 0 | 617 | 22 |
| | **Nearly all staff fully proficient** | 48 | 69 | 15 | 0 | 0 | 1435 | 51 |
| (Whole Workforce) | **Over half of all staff fully proficient** | 12 | 28 | 76 | 48 | 48 | 672 | 24 |
| | **Some, but under half fully proficient** | 2 | 3 | 8 | 50 | 35 | 101 | 4 |
| | **Very few staff fully proficient** | 0 | 0 | 1 | 2 | 17 | 15 | 1 |
| **Total** | | 100 | 100 | 100 | 100 | 100 | | 100 |
| **Total count** | | 1558 | 924 | 232 | 50 | 23 | 2840 | |

### Single manager establishments

| | | Proficiency of managers | | | | Total | |
|---|---|---|---|---|---|---|---|
| | | All existing staff fully proficient Col % | Nearly all staff fully proficient Col % | Over half of all staff fully proficient Col % | Very few staff fully proficient Col % | Count | Col % |
| **Proficiency score bandwidths** | **All existing staff fully proficient** | 43 | 0 | 0 | 0 | 169 | 39 |
| | **Nearly all staff fully proficient** | 42 | 73 | 83 | 20 | 194 | 44 |
| (Whole Workforce) | **Over half of all staff fully proficient** | 12 | 20 | | 60 | 57 | 13 |
| | **Some, but under half fully proficient** | 3 | 7 | 17 | 20 | 17 | 4 |
| | **Very few staff fully proficient** | 1 | 0 | 0 | 0 | 2 | 1 |
| **Total** | | 100 | 100 | 100 | 100 | | 100 |
| **Total count** | | 389 | 30 | 6 | 5 | 439 | |

Source: Own estimates based on analysis of ESS 1999

# 3. Managerial Characteristics and the Goals and Strategies of the Establishment

## 3.1 Introduction

This chapter explores the information in ESS 1999 to see if there are any systematic relationships between the characteristics of managers and the goals and strategies adopted by the establishment. The results in this report are entirely from the face-to-face survey, and are restricted to the data available about the private sector. There are two principal questions concerned with the characteristics of managers, one deals with qualifications and the other with the perceived proficiency of managers. Goals and strategies, qualifications and proficiency have been described in Chapter 1.

## 3.2 Management Qualifications and High Level Goals

Tables 3.1 and 3.2 set out the detailed results for high-level goals.[3] These include:

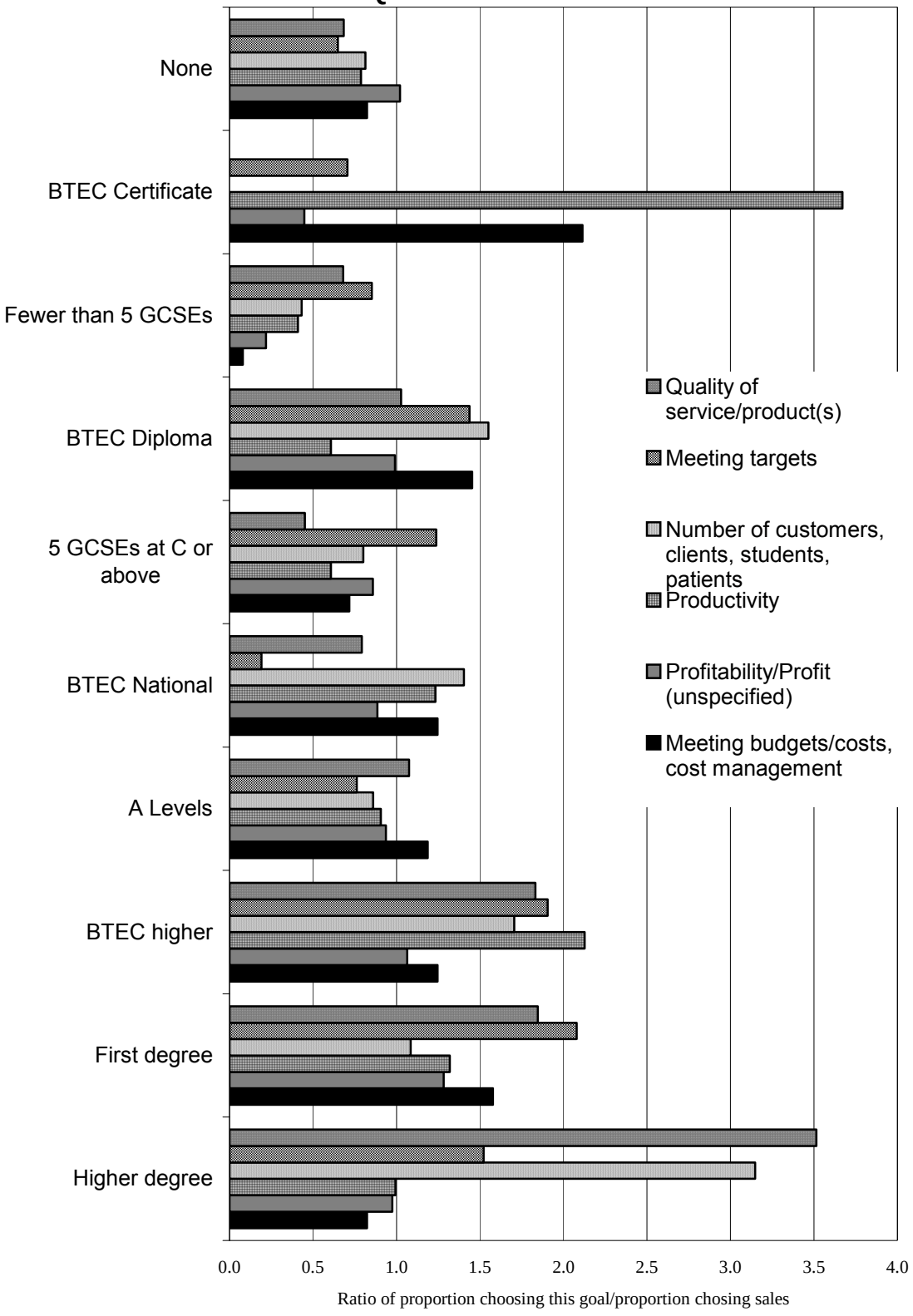
- Targets for sales
- Meeting budgets / costs, cost management
- Productivity
- Meeting other targets
- Profitability / profit
- Number of customers
- Quality of service / products

Table 3.1 reports the row percentages and Table 3.2 the column percentages. The distributions relate to the proportions of responses rather than establishments (i.e. there was a small element of multiple response by establishments).

In order to illustrate the magnitude of the differences between qualification groups, Figure 3.1 shows the ratio of the proportion choosing each of the goals relative to the proportion choosing sales as the high-level goal. Ratios less than unity (1) show that individuals choosing this goal are less likely to hold the qualification in question than those choosing the sales goal; ratios greater than unity indicate that individuals choosing this goal are more likely to hold this qualification than those choosing sales.

[3] This is a somewhat more extensive listing than appeared in Chapter 1. It is derived from a follow-up questionnaire that asks what (goal) would be the most appropriate measure of the performance of the firm.

**Figure 3.1 Probability of Choosing High Level Goals by Qualification**



## Table 3.1 Distribution of Qualifications by High-level Goals

| | Higher degree | First degree | BTEC higher | A Levels | BTEC National | 5 GCSEs at C or above | BTEC Diploma | Fewer than 5 GCSEs | BTEC Certificate | None | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sales, fees, revenues, turnover, income | 2 | 13 | 9 | 8 | 7 | 8 | 2 | 3 | 1 | 49 | 100 |
| Meeting budgets/costs, cost management | 1 | 20 | 11 | 10 | 8 | 6 | 3 | 0 | 1 | 40 | 100 |
| Profitability/Profit (unspecified) | 2 | 17 | 9 | 8 | 6 | 7 | 2 | 1 | 0 | 50 | 100 |
| Productivity | 2 | 17 | 18 | 7 | 8 | 5 | 1 | 1 | 2 | 39 | 100 |
| Number of customers, etc | 5 | 14 | 15 | 7 | 9 | 6 | 3 | 1 | 0 | 40 | 100 |
| Meeting targets | 2 | 27 | 16 | 6 | 1 | 10 | 3 | 3 | 0 | 32 | 100 |
| Quality of service/product(s) | 6 | 24 | 16 | 9 | 5 | 4 | 2 | 2 | 0 | 34 | 100 |
| Total | 2 | 16 | 11 | 8 | 7 | 7 | 2 | 2 | 1 | 45 | 100 |

## Table 3.2 Distribution of High-level Goals by the Qualification Level of Managers

| | Higher degree | First degree | BTEC higher | A Levels | BTEC National | 5 GCSEs at C or above | BTEC Diploma | Fewer than 5 GCSEs | BTEC Certificate | None | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sales, fees, revenues, turnover, income | 34 | 36 | 36 | 46 | 44 | 52 | 42 | 71 | 42 | 49 | 45 |
| Meeting budgets/costs, cost management | 7 | 14 | 11 | 13 | 14 | 9 | 15 | 1 | 22 | 10 | 11 |
| Profitability/Profit (unspecified) | 14 | 20 | 16 | 18 | 17 | 19 | 18 | 7 | 8 | 21 | 19 |
| Productivity | 6 | 8 | 13 | 7 | 9 | 5 | 4 | 5 | 26 | 6 | 8 |
| Number of customers, etc | 18 | 7 | 10 | 7 | 11 | 7 | 11 | 5 | 0 | 7 | 8 |
| Meeting targets | 3 | 5 | 4 | 2 | 1 | 4 | 4 | 4 | 2 | 2 | 3 |
| Quality of service/product(s) | 18 | 10 | 10 | 8 | 5 | 4 | 7 | 7 | 0 | 5 | 7 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

Taking the quality of service goal, individuals with no qualifications are less likely to choose this goal than the sales goal, but individuals with a degree or higher degree are much more likely to choose this goal than the sales goal. Likewise, taking the productivity goal, individuals with a lower-level BTEC or equivalent are significantly more likely to chose this goal than sales, but this is not the case for those with either no qualifications or, for example, a higher degree.

**Figure 3.2 Type of Qualification and High-level Goal**

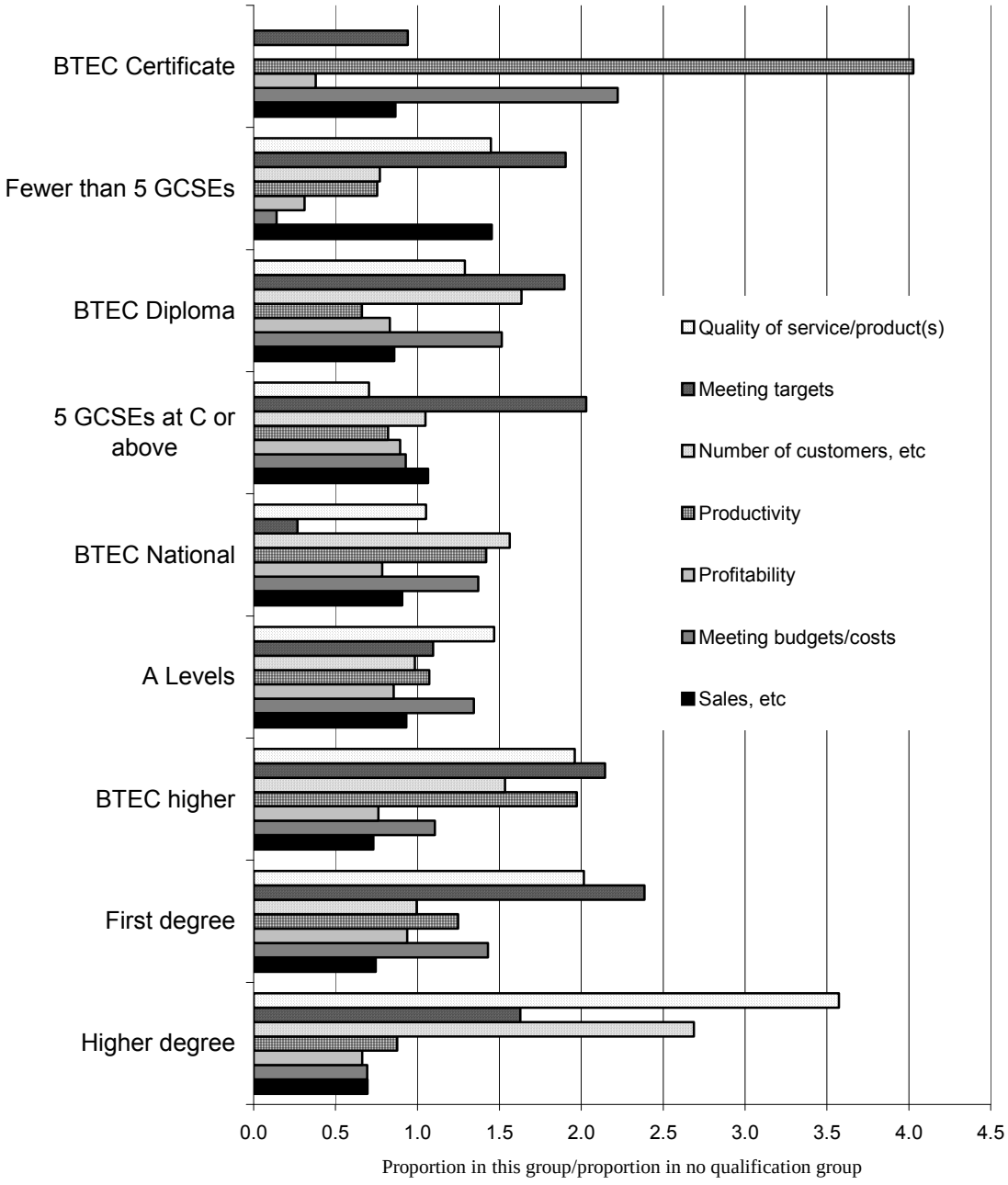


Figure 3.2 presents the results in terms of the ratio of the proportion of individuals in this qualification group choosing a particular goal to the proportion of individuals in the no qualification group choosing that goal. Ratios above unity show that individuals in this qualification group are more likely to choose the goal in question than those in the no qualification group, and ratios less than unity show the opposite. As expected, the new results confirm those obtained above. For example, individuals with higher degrees are much more likely to choose the quality of service/product goal than those with no qualification. Likewise, individuals in the low-level BTEC group are much more likely to choose the productivity goal than individuals with no qualifications.

### 3.3 Management Qualifications and Product Market Strategies

ESS 1999 distinguished various product market strategies which establishments might follow in order to achieve their goals. These strategies include:

- Introducing new higher quality products
- Improving existing products
- Increasing efficiency

Table 3.3 shows row percentages for each level of applicability reported with respect to the product market strategies, it shows the percentage of enterprises that indicate that level of qualification is typically required as a minimum.[4] The most obvious opening comment, reinforcing the results reported in Chapter 2 is that the vast majority of managers do not have a first degree or higher. Indeed, around 50 *per cent* do not even have the equivalent of 5 GCSEs or lower level BTEC qualifications. The second comment is that there is a negative relationship between the proportion of managers with fewer than 5 GCSEs and the applicability statements about the extent to which the enterprise is introducing new and higher quality products. The case of improving existing products is less clear cut, again there is some evidence of a positive relationship. However, this goal is given relatively greater emphasis by managers with qualifications in the 5GCSE – BTEC range. Again, there seems a link between the least likelihood of adopting this goal and the lack of management qualifications. Thus, it seems that managers with the least qualifications are least likely to adopt either of the product oriented goals. Turning to the final part of the table, it can be seen that the least qualified managers are more likely to adopt an efficiency improving goal.

A much clearer picture emerges in Table 3.4 when some further manipulation of the data is undertaken, showing the ratio of more to less highly qualified managers for each applicability ratio. While the relationships in the three parts of the table are not always monotonically increasing or decreasing, a clear pattern emerges that gives support for the earlier conclusion about the largely

[4] The precise question is, "Typically what would be the current minimum level of qualification you require of staff employed in each occupation?" [QD13]

positive relationship for the two product quality strategies, but negative for the increasing efficiency strategy.

**Table 3.3 Typical Minimum Management Qualifications, by Product Strategy**

*New higher quality products*

| Applicability | Degree or higher | A level or BTEC Higher | 5 GCSEs or Other BTEC | Fewer than 5 GCSEs | Row % Total |
|---|---|---|---|---|---|
| Very | 21 | 19 | 15 | 44 | 100 |
| Fairly | 20 | 23 | 13 | 44 | 100 |
| Not very | 14 | 17 | 19 | 51 | 100 |
| Not at all | 18 | 17 | 14 | 51 | 100 |
| Total | 18 | 19 | 15 | 48 | 100 |

*Improving existing products*

| Applicability | Degree or higher | A level or BTEC Higher | 5 GCSEs or Other BTEC | Fewer than 5 GCSEs | Total |
|---|---|---|---|---|---|
| Very | 19 | 21 | 16 | 44 | 100 |
| Fairly | 20 | 18 | 15 | 47 | 100 |
| Not very | 20 | 13 | 15 | 52 | 100 |
| Not at all | 13 | 17 | 13 | 56 | 100 |
| Total | 18 | 19 | 15 | 48 | 100 |

*Increasing efficiency*

| Applicability | Degree or higher | A level or BTEC Higher | 5 GCSEs or Other BTEC | Fewer than 5 GCSEs | Total |
|---|---|---|---|---|---|
| Very | 8 | 15 | 16 | 61 | 100 |
| Fairly | 19 | 13 | 17 | 51 | 100 |
| Not very | 16 | 13 | 15 | 56 | 100 |
| Not at all | 17 | 16 | 15 | 53 | 100 |
| Total | 15 | 14 | 15 | 56 | 100 |

**Table 3.4 Ratio of Higher to Lower Qualifications By Extent of Emphasis on Product Market Strategy (based on row %)**

*New higher quality products*

| | Degree or higher/ less than 5 GCSEs | A level or higher/ less than A level |
|---|---|---|
| Very applicable | 0.48 | 0.67 |
| Fairly applicable | 0.46 | 0.74 |
| Not very applicable | 0.28 | 0.45 |
| Not at all applicable | 0.36 | 0.54 |

*Improving existing products*

| | Degree or higher/ less than 5 GCSEs | A level or higher/ less than A level |
|---|---|---|
| Very applicable | 0.43 | 0.68 |
| Fairly applicable | 0.42 | 0.61 |
| Not very applicable | 0.38 | 0.49 |
| Not at all applicable | 0.23 | 0.43 |

*Increasing efficiency*

| | Degree or higher/ less than 5 GCSEs | A level or higher/ less than A level |
|---|---|---|
| Very applicable | 0.13 | 0.29 |
| Fairly applicable | 0.38 | 0.47 |
| Not very applicable | 0.28 | 0.41 |
| Not at all applicable | 0.32 | 0.48 |

Table 3.5 is the mirror image of the previous table. It shows the ratio of the importance attached to the various product market strategies, broken down by the level of qualification. Again the same result emerges. In the case of new higher quality products, there is a monotonic increase in the emphasis on this strategy with the level of qualification of the managers. With one exception, the same is true for improvement to existing products. Then, in the case of the efficiency strategy, the relationship reverses, with greater emphasis being given by less qualified managers.

**Table 3.5 Emphasis on Product Market Strategies, by Qualification Level (based on Row %)**

| **New higher quality products** | | | | |
|---|---|---|---|---|
| Ratio of emphasis | Degree or higher | A level or BTEC higher | 5 GCSEs or other BTEC | Fewer than 5 GCSEs |
| Very/not at all | 1.17 | 1.14 | 1.08 | 0.87 |
| Very or fairly/ not very or not at all | 1.27 | 1.25 | 0.87 | 0.87 |
| *Improving existing products* | | | | |
| Ratio of emphasis | Degree or higher | A level or BTEC higher | 5 GCSEs or other BTEC | Fewer than 5 GCSEs |
| Very/not at all | 1.43 | 1.26 | 1.18 | 0.78 |
| Very or fairly/ not very or not at all | 1.17 | 1.31 | 1.09 | 0.84 |
| *Increasing efficiency* | | | | |
| Ratio of emphasis | Degree or higher | A level or BTEC higher | 5 GCSEs or other BTEC | Fewer than 5 GCSEs |
| Very/not at all | 0.46 | 0.94 | 1.07 | 1.17 |
| Very or fairly/ not very or not at all | 0.83 | 0.95 | 1.11 | 1.03 |

Table 3.6 shows the column percentages corresponding to the row percentages reported in Table 3.3 above. The results reported here appear somewhat less clear-cut. The most obvious one is the greater emphasis placed on improvements to existing products by those enterprises whose managers typically requiring a first degree or higher, but this also appears to be true of those with fewer than 5 GCSEs.

**Table 3.6 Typical Minimum Qualification for Individuals in Management, by Product Strategy (Column %)**

**New higher quality products**

| Applicability | Degree or higher | A level or BTEC higher | 5 GCSEs or other BTEC | Fewer than 5 GCSEs | Total |
|---|---|---|---|---|---|
| Very | 28 | 25 | 25 | 22 | 24 |
| Fairly | 24 | 27 | 19 | 20 | 22 |
| Not very | 17 | 20 | 27 | 23 | 22 |
| Not at all | 29 | 27 | 28 | 31 | 29 |
| Total | 100 | 100 | 100 | 100 | 100 |

**Improving existing products**

| Applicability | Degree or higher | A level or BTEC higher | 5 GCSEs or other BTEC | Fewer than 5 GCSEs | Total |
|---|---|---|---|---|---|
| Very | 38 | 43 | 39 | 34 | 37 |
| Fairly | 35 | 33 | 33 | 32 | 33 |
| Not very | 15 | 10 | 14 | 15 | 14 |
| Not at all | 10 | 13 | 13 | 17 | 15 |
| Total | 100 | 100 | 100 | 100 | 100 |

**Increasing Efficiency**

| Applicability | Degree or higher | A level or BTEC higher | 5 GCSEs or other BTEC | Fewer than 5 GCSEs | Total |
|---|---|---|---|---|---|
| Very | 17 | 35 | 34 | 36 | 33 |
| Fairly | 42 | 30 | 36 | 30 | 32 |
| Not very | 19 | 18 | 18 | 19 | 19 |
| Not at all | 7 | 7 | 6 | 6 | 6 |
| Total | 100 | 100 | 100 | 100 | 100 |

In much the same way as the previous examples, a clearer picture emerges when the data have been manipulated. Table 3.7 shows the ratio of higher to lower qualifications, broken down by the emphasis placed on the three product market goals. Again, while not every ratio increases or decreases monotonically, the general relationships discussed above emerge again.

Table 3.8 is the mirror image of the previous table. It shows the ratio of the importance attached to the various product market strategies, broken down by the level of qualification. The same result again emerges, with a monotonic increase in the emphasis on both the product quality strategies with level of qualification of the managers. Finally the relationship reverses in the case of the efficiency strategy, with greater emphasis being given by less qualified managers.

**Table 3.7 Ratio of Higher to Lower Qualifications By Extent of Emphasis on Product Market Strategy (based on column %)**

*New higher quality products*

| Applicability | Degree or higher/ less than 5 GCSEs | A level or higher/ less than A level |
|---|---|---|
| Very | 1.25 | 1.12 |
| Fairly | 1.19 | 1.29 |
| Not very | 0.74 | 0.73 |
| Not at all | 0.94 | 0.95 |

*Improving existing products*

| Applicability | Degree or higher/ less than 5 GCSEs | A level or higher/ less than A level |
|---|---|---|
| Very | 1.13 | 1.11 |
| Fairly | 1.10 | 1.04 |
| Not very | 0.99 | 0.86 |
| Not at all | 0.61 | 0.79 |

*Efficiency*

| Applicability | Degree or higher/ less than 5 GCSEs | A level or higher/ less than A level |
|---|---|---|
| Very | 0.46 | 0.73 |
| Fairly | 1.39 | 1.09 |
| Not very | 1.02 | 1.01 |
| Not at all | 1.18 | 1.17 |

**Table 3.8 Emphasis on Product Market Strategies, by Qualification Level (based on column %)**

*New higher quality products*

| Ratio of emphasis | Degree or higher | A level or BTEC higher | 5 GCSEs or other BTEC | Fewer than 5 GCSES |
|---|---|---|---|---|
| Very/not at all | 0.96 | 0.94 | 0.90 | 0.72 |
| Very or fairly/ not very or not at all | 1.13 | 1.13 | 0.81 | 0.79 |

*Improving existing products*

| Ratio of emphasis | Degree or higher | A level or BTEC higher | 5 GCSEs or other BTEC | Fewer than 5 GCSES |
|---|---|---|---|---|
| Very/not at all | 3.65 | 3.23 | 3.02 | 1.98 |
| Very or fairly/ not very or not at all | 2.90 | 3.26 | 2.70 | 2.06 |

*Increasing efficiency*

| Ratio of emphasis | Degree or higher | A level or BTEC higher | 5 GCSEs or other BTEC | Fewer than 5 GCSES |
|---|---|---|---|---|
| Very/not at all | 2.41 | 4.95 | 5.61 | 6.15 |
| Very or fairly/ not very or not at all | 2.21 | 2.59 | 2.90 | 2.65 |

One final piece of information concerns whether all of the managers at the establishments have at least the stated minimum level of qualification.[5] The ratios in the first column of data in Table 3.9 show the proportion of establishments reporting that over 90 *per cent* of their managers have the

[5] The question asks, "Approximately what proportion of the establishment's (managers) possess that or a higher level qualification?".

specified (or a higher) level of qualification divided by the proportion reporting that less than 10 *per cent* have this level. Sample numbers become small in the case of the efficiency question. The second column repeats this exercise, but using the ratio of establishments that report that 50 *per cent* or more of managers have at least the minimum qualification, divided by those that report that less than 50 *per cent* are so qualified. While this does not change the main findings, neither does it help the small sample issue. Thus, the data are further combined in a final column of results by adding together 'not very' and 'not at all' categories, which rather tends to compress the ratios.

**Table 3.9 Ratio of Enterprises With and Without Required Managerial Qualifications, by Product Market Strategy**

| *New higher quality products* | | | | |
|---|---|---|---|---|
| Applicability | Ratio 90%+/10%- | Ratio 50%+/50%- | | Ratio 50%+/50%- |
| Very | 19.89 | 11.04 | Very and fairly | 9.02 |
| Fairly | 10.12 | 7.45 | Fairly and not very | 6.10 |
| Not very | 7.82 | 5.05 | Not very and not at all | 5.18 |
| Not at all | 7.02 | 5.28 | | |
| *Improving existing products* | | | | |
| Applicability | Ratio 90%+/10%- | Ratio 50%+/50%- | | Ratio 50%+/50%- |
| Very | 9.75 | 6.35 | Very and fairly | 7.15 |
| Fairly | 13.18 | 8.39 | Fairly and not very | 7.31 |
| Not very | 6.43 | 5.46 | Not very and not at all | 5.81 |
| Not at all | 7.49 | 6.23 | | |
| *Efficiency* | | | | |
| Applicability | Ratio 90%+/10%- | Ratio 50%+/50%- | | Ratio 50%+/50%- |
| Very | 3.43 | 3.06 | Very and fairly | 4.91 |
| Fairly | 8.61 | 8.56 | Fairly and not very | 6.91 |
| Not very | 6.34 | 5.00 | Not very and not at all | 6.91 |
| Not at all | 60.30 | 82.11 | | |

The results of this exercise accentuate the findings reported above. Not only do establishments that emphasise product innovation suggest higher minimum levels of management qualifications, but their managers are more likely to have these minimum levels. While the relationship is not monotonic and is affected by small number problems, the results suggest that the current relationship also reverses in the case of establishments that stress increased efficiency.

Table 3.10 provides the mirror image again, although efficiency is omitted because of small number problems. While the ratios are not quite monotonic, there is a general rise in the emphasis on product quality as the proportion of managers within the establishment possessing at least the minimum required qualification increases.[6] For example, compare the case of where none of the existing managers have the minimum qualification with that where they all possess that qualification level.

[6] Again, this was tested omitting single manager enterprises.

**Table 3.10 Product Market Strategy by Proportion of Managers with Required Qualification**

*New higher quality products*

| | *Per cent of managers > minimum* | | | | |
|---|---|---|---|---|---|
| Ratio of emphasis | None | 1-29% | 30-59% | 60-89% | 90-100% |
| Ratio very/ not at all | 0.26 | 0.80 | 0.76 | 1.66 | 1.00 |
| Ratio very and fairly/ not very and not at all | 0.48 | 0.62 | 1.03 | 1.52 | 1.02 |

*Improving existing products*

| | *Per cent of managers > minimum* | | | | |
|---|---|---|---|---|---|
| Ratio of emphasis | None | 1-29% | 30-59% | 60-89% | 90-100% |
| Ratio very/ not at all | 1.98 | 3.82 | 3.95 | 7.21 | 3.10 |
| Ratio very and fairly/ not very and not at all | 1.73 | 2.12 | 3.85 | 2.89 | 2.98 |

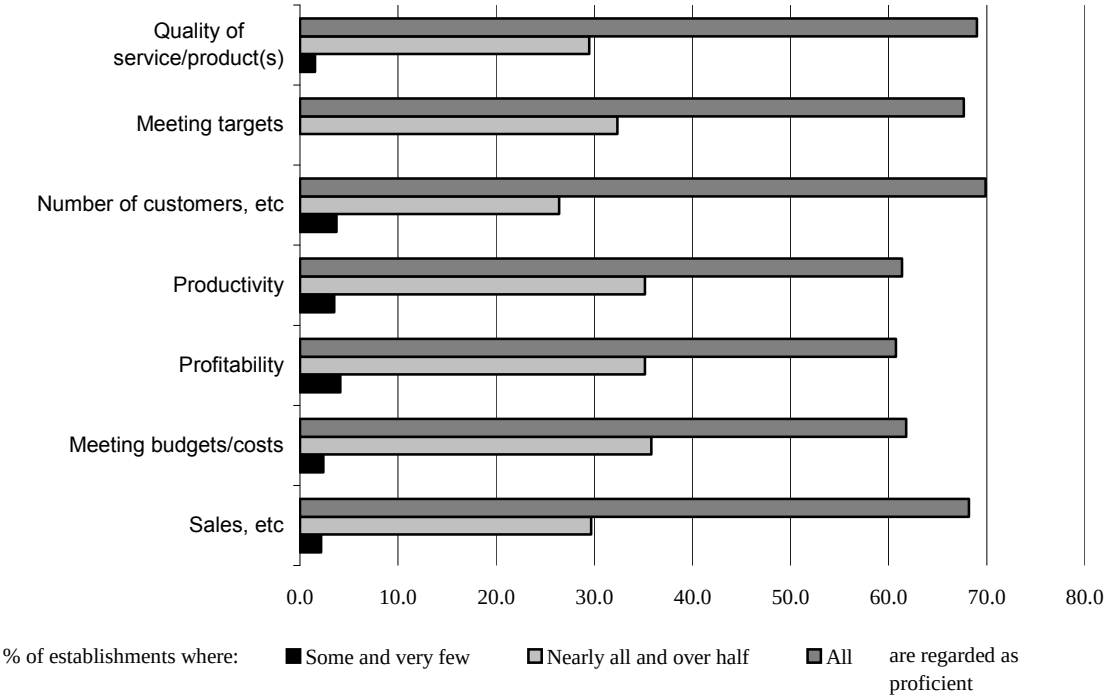
## 3.4 Management Proficiency and High-level Goals

The other data available about management skills concerns their proficiency. The majority of results in this section are for the sub-sample of establishments with more than one manager. The exception is Figure 3.5 where a comparison is made between single manager establishments and those with 5 or more managers. Single manager establishments appear to view their proficiency more highly than the multi-manager establishments (see the discussion of this issue in Chapter 1). Previous work suggests that the proficiency measure may be deficient, at least in the sense that establishments that set lower aspirations tend to be more satisfied with the proficiency of their workforce, and those that set higher aspirations are less satisfied. This earlier work, however, has examined the overall proficiency of the workforce and not that of particular occupational groups.

In the current context, the focus is on whether there is any link between the high-level goals set and perceived proficiency of managers. Figure 3.3 indicates that there are some differences across the various goals adopted in the percentage of establishments that believe all of their managers are fully proficient, although the differences are not very great. The results suggest that establishments setting efficiency (productivity and budget) and profit increasing goals are generally less satisfied with their managers' proficiency than those setting other types of goal.

In Figure 3.4, the process is reversed. In this case, given the proficiency of the managers, the distribution of goals set is examined. It can be seen that where relatively few managers are perceived as being proficient, a lower proportion of establishments set a sales goal than where they are all proficient and a higher proportion set a profitability goal than where they are all proficient. In this instance, the differences that emerge between the all proficient and low proficiency groups are in some instances quite large.

## Figure 3.3 Goals Adopted and Perceived Proficiency of Managers




## Figure 3.4 Proficiency of Managers and Distribution of High-level Goals

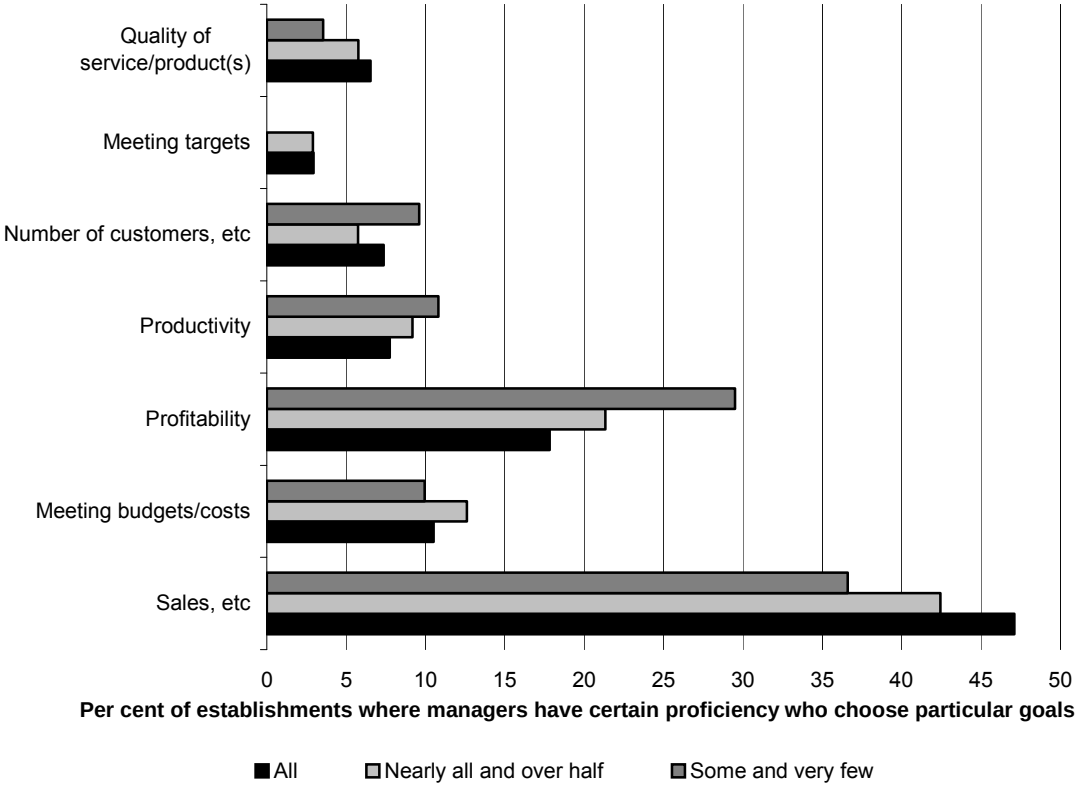
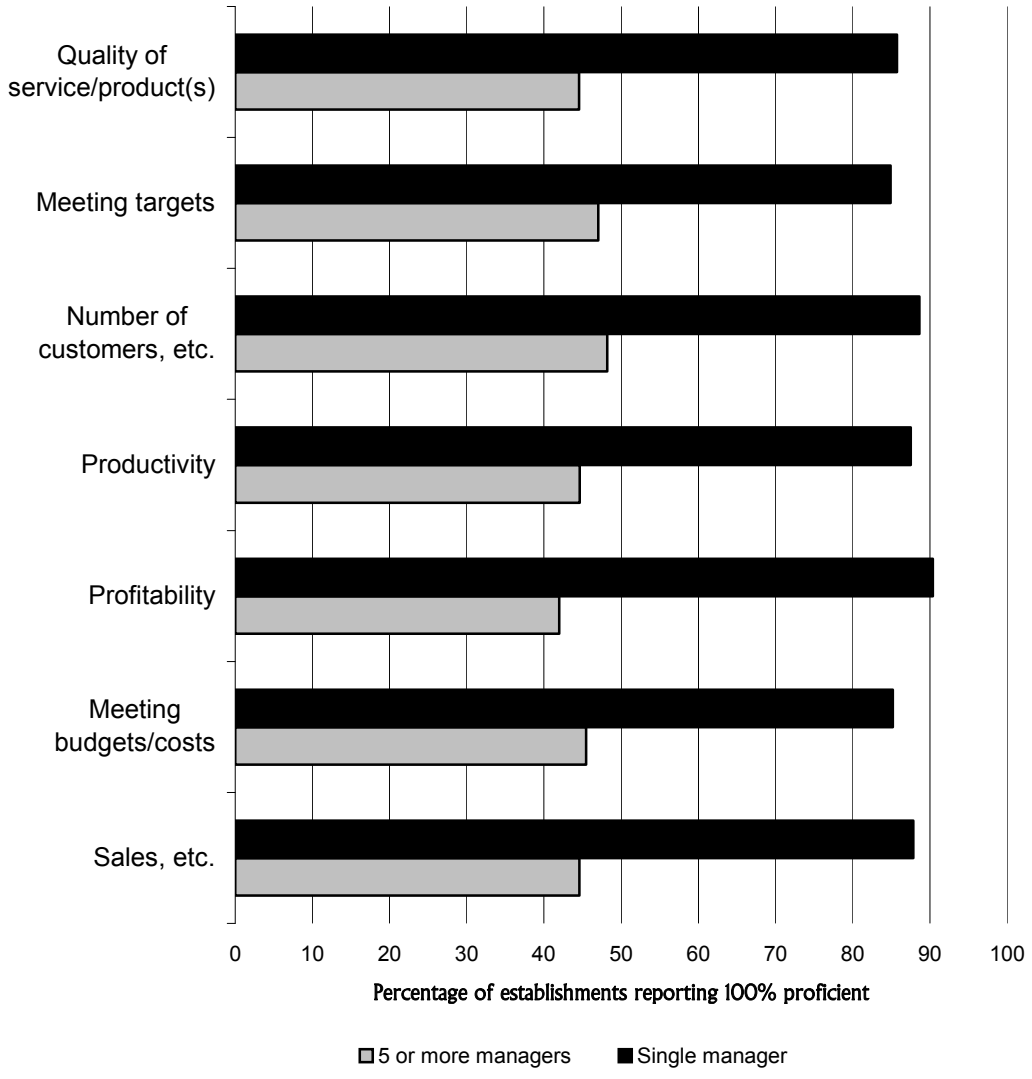


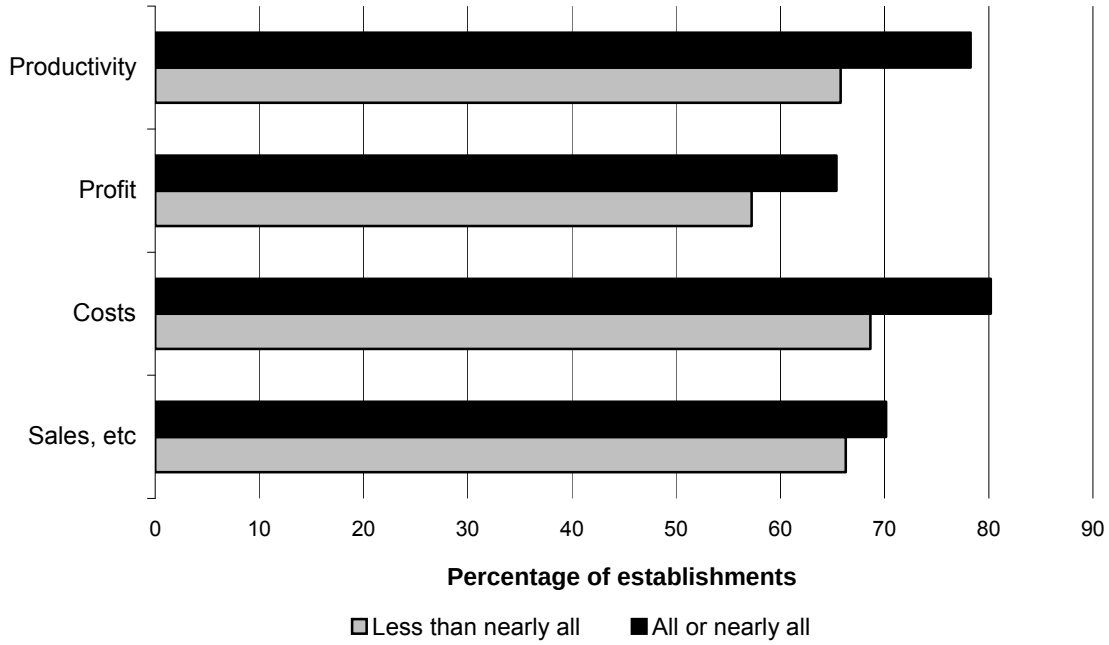
Figure 3.5 contrasts the differences between single manager and multi-manager establishments (with 5 or more managers), showing in each case the proportion of enterprises reporting their managers to be fully proficient. In practice, the differences in proficiency across the high-level goals appear relatively limited. However, the difference in perceived proficiency between the single and multi-manager establishments are extremely large. Indeed, the single manager establishments are about twice as likely to say that the management is fully proficient than those with five or more managers. Again, following the discussion of Chapter 1, there are a wide range of possible reasons for this: the phrasing of the question; the lack of peer group comparisons; the different goals and (possibly) lower demands placed on small establishments; the self reported (own-proficiency) aspect of the question.

**Figure 3.5 Management Proficiency and High-level Goals**



The question of whether those establishments that fulfil their goals report more proficient managers than those that do not is now addressed. Figure 3.6 is based on establishments with more than one manager[7], and shows the proportion of establishments that believe all of their managers are proficient. There are some differences in the proportion believing managers to all be proficient across the goals of the enterprise, but also it is clear that establishments that do not fulfil their goals report a lower proficiency of management. The profit goal stands out for both establishments that do and do not fulfil their goals as being associated with lower management proficiency.

**Figure 3.6 Fulfilling Goals and Proficiency of Managers**

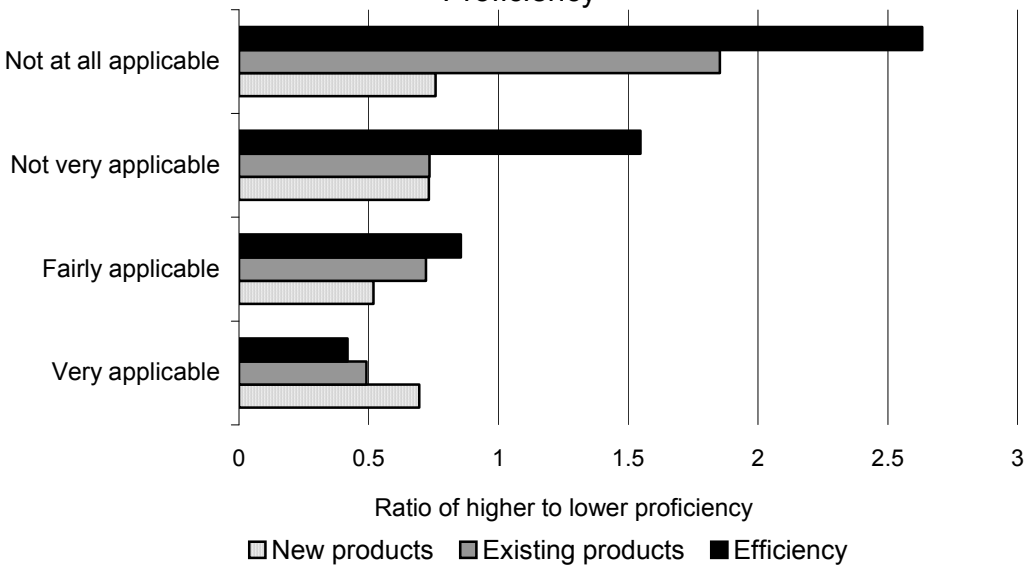



## 3.5 Product Market Strategy and Managerial Proficiency

In this section the relationship between perceived management proficiency and the product market strategies adopted is considered. Figure 3.7 demonstrates a clear relationship between the extent to which the enterprises are involved in product quality improvements and the perceived proficiency of the management. In Figure 3.7 all establishments in the private sector are included, regardless of number of managers. The ratio of higher to lower proficiency is constructed as the proportion of *all or nearly all proficient* divided by the proportion of *over half … very few proficient*.

[7] This is the source of differences with Figure 3.5 above.

Figure 3.7 Product Market Strategy and Management Proficiency




This confirms results that have been highlighted in earlier reports, notably that there is an inverse relationship between the aspiration level of the establishment and the perceived proficiency of employees (in the present case, managers). The clearest relationship occurs in the case of the increasing efficiency strategy, where there is a monotonic relationship, with higher proficiency amongst establishments reporting less emphasis on increasing efficiency. In effect, those establishments reporting not very or not at all applicable to the increasing efficiency strategy have no specified strategy at all. A similar though somewhat less distinct relationship occurs in the case of improvements to existing products, and the least clear relationship occurs in the case of the introduction of new, higher quality products.

## 3.6 Methods of Achieving Product Market Strategies

Attention is now focused on the follow-up question to that on the product market strategies. This looks at the establishment's use of various "methods" or "actions" that are used to pursue the product market strategies. These include:

- cost reduction,
- new products and services,
- new technologies
- new work practices

This question gives some insights, for example, about the extent to which establishments that are primarily pursuing a strategy of, say, improving existing product quality, are also involved, for example, in cost reduction and introducing new working practices. Unlike the previous sections, where the discussion of qualifications and proficiency were dealt with separately, these dimensions are covered here simultaneously. Tables 3.11(a) – 3.11(d) show

the results for the qualifications broken down by methods adopted in achieving product market strategies.

There is a clear distinction between the results for the cost reduction method (Table 3.11(a)) than the other methods (Tables 3.11(b) – 3.11(d)). To illustrate this point, Table 3.12 shows the ratio of the most to least (unqualified) qualified columns for each of the methods. A ratio greater than unity suggests that a higher proportion of qualified managers fell into this category than unqualified managers.

**Table 3.11 (a). Management Qualifications vs Methods of Achieving Product Market Strategies**

| | | 0 | 1 | 2 | 3 | 4 | 5 | Total | |
|---|---|---|---|---|---|---|---|---|---|
| | | Col % | Col % | Col % | Col % | Col % | Col % | Count | Col % |
| Meet goal by cost reduction | Don't know | 10 | 4 | 9 | 7 | 6 | 7 | 244 | 8 |
| | Not at all important | 6 | 5 | 4 | 5 | 7 | 10 | 190 | 6 |
| | Not very important | 11 | 6 | 9 | 12 | 14 | 11 | 355 | 12 |
| | Fairly important | 25 | 35 | 30 | 30 | 29 | 28 | 852 | 28 |
| | Very important | 48 | 50 | 48 | 45 | 45 | 44 | 1418 | 46 |
| Total | | 100 | 100 | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 1246 | 78 | 241 | 434 | 989 | 71 | 3059 | |

Source: Own estimates based on analysis of ESS 1999

**Table 3.11 (b). Management Qualifications vs Methods of Achieving Product Market Strategies**

| | | 0 | 1 | 2 | 3 | 4 | 5 | Total | |
|---|---|---|---|---|---|---|---|---|---|
| | | Col % | Col % | Col % | Col % | Col % | Col % | Count | Col % |
| Meet goal by introduction of new products or services | Don't know | 10 | 5 | 9 | 7 | 6 | 7 | 235 | 8 |
| | Not at all important | 6 | 8 | 4 | 4 | 5 | 3 | 158 | 5 |
| | Not very important | 9 | 6 | 8 | 7 | 10 | 9 | 278 | 9 |
| | Fairly important | 30 | 40 | 30 | 32 | 34 | 35 | 978 | 32 |
| | Very important | 46 | 41 | 50 | 49 | 45 | 47 | 1410 | 46 |
| Total | | 100 | 100 | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 1246 | 78 | 241 | 434 | 989 | 71 | 3059 | |

Source: Own estimates based on analysis of ESS 1999

**Table 3.11 (c). Management Qualifications vs Methods of Achieving Product Market Strategies**

| | | 0 | 1 | 2 | 3 | 4 | 5 | Total | |
|---|---|---|---|---|---|---|---|---|---|
| | | Col % | Col % | Col % | Col % | Col % | Col % | Count | Col % |
| **Meet goal by introduction of new technologies** | **Don't know** | 10 | 6 | 9 | 7 | 6 | 7 | 238 | 8 |
| | **Not at all important** | 11 | 12 | 8 | 8 | 8 | 3 | 277 | 9 |
| | **Not very important** | 17 | 17 | 20 | 13 | 16 | 14 | 489 | 16 |
| | **Fairly important** | 26 | 30 | 28 | 30 | 31 | 35 | 877 | 29 |
| | **Very important** | 37 | 36 | 35 | 42 | 40 | 41 | 1178 | 39 |
| **Total** | | 100 | 100 | 100 | 100 | 100 | 100 | | 100 |
| **Total count** | | 1246 | 78 | 241 | 434 | 989 | 71 | 3059 | |

Source: Own estimates based on analysis of ESS 1999

**Table 3.11 (d). Management Qualifications vs Methods of Achieving Product Market Strategies**

| | | 0 | 1 | 2 | 3 | 4 | 5 | Total | |
|---|---|---|---|---|---|---|---|---|---|
| | | Col % | Col % | Col % | Col % | Col % | Col % | Count | Col % |
| **Meet goal by new working practices** | Don't know | 10 | 5 | 8 | 8 | 6 | 7 | 239 | 8 |
| | **Not at all important** | 8 | 3 | 7 | 6 | 5 | 10 | 205 | 7 |
| | **Not very important** | 15 | 14 | 14 | 10 | 15 | 10 | 423 | 14 |
| | **Fairly important** | 32 | 42 | 34 | 36 | 39 | 24 | 1070 | 35 |
| | **Very important** | 35 | 36 | 38 | 40 | 37 | 49 | 1122 | 37 |
| **Total** | | 100 | 100 | 100 | 100 | 100 | 100 | | 100 |
| **Total count** | | 1246 | 78 | 241 | 434 | 989 | 71 | 3059 | |

Source: Own estimates based on analysis of ESS 1999

**Table 3.12 Ratio of Results for Most to Least (Un-) Qualified Managers: Methods of Achieving Product Market Strategies**

| | Cost Reduction | New Products or Services | New Technologies | New Work Practices |
|---|---|---|---|---|
| Not at all important | 1.6 | 0.5 | 0.3 | 0.6 |
| Not very important | 1.1 | 1.0 | 0.8 | 1.0 |
| Fairly important | 1.1 | 1.2 | 1.3 | 1.2 |
| Very important | 0.9 | 1.0 | 1.1 | 1.1 |

It can be seen that the more qualified managers are much more likely to suggest that cost reduction is relatively unimportant, while the other three methods are relatively important. Of these three, the most qualified managers are likely to place greatest relative emphasis on new technologies, slightly less emphasis on new work practices and new products and services (though still more than the unqualified managers) and least on cost reduction. Whilst confirming the earlier findings on the focus of the more qualified, this evidence represent new findings in terms of new working practices and new technologies.

Table 3.13(a)-3.13(d) set out the corresponding relationships for the perceived proficiency of managers, broken down by methods of achieving product market strategies. Examination of these tables suggest that there is a higher likelihood of reporting more emphasis than less emphasis on each of the methods, irrespective of the reported proficiency of managers. This can be seen quite easily from the final (total) column in each of the tables, where the percentages tend to rise from below 10 per cent for the *not at all important* categories to around the 35-46 *per cent* mark for each of the *very important* categories. Taking the ratios of less to more highly proficient, as shown in Table 3.14, the picture that emerges is much less clear cut than the corresponding table for management qualifications. In the present table ratios of more than unity indicate that greater emphasis is placed on this category by the "less" than the "more" proficient managers. In the case of cost reduction there is some evidence that relatively greater emphasis is placed on this method by the relatively less proficient managers. The other three methods, however, appear to offer some evidence of bi-modality, with the relatively less proficient managers replying either "*not very*" or "*very important*".

## Table 3.13 (a). Proficiency of Managers vs Methods of Achieving Product Market Strategies

| | | Proficiency of managers | | | | | | Total | |
|---|---|---|---|---|---|---|---|---|---|
| | | Missing | All existing staff fully proficient | Nearly all staff fully proficient | Over half of all staff fully proficient | Some, but under half fully proficient | Very few staff fully proficient | Count | Col % |
| | | Col % | Col % | Col % | Col % | Col % | Col % | | |
| Meet goal by cost reduction | Don't know | 13 | 9 | 7 | 4 | 4 | 4 | 261 | 8 |
| | Not at all important | 3 | 8 | 4 | 4 | 4 | 7 | 191 | 6 |
| | Not very important | 13 | 13 | 11 | 8 | 11 | 11 | 367 | 12 |
| | Fairly important | 30 | 27 | 29 | 30 | 36 | 21 | 867 | 28 |
| | Very important | 41 | 43 | 50 | 53 | 45 | 57 | 1436 | 46 |
| Total | | 100 | 100 | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 146 | 1759 | 911 | 231 | 47 | 28 | 3122 | |

Source: Own estimates based on analysis of ESS 1999

## Table 3.13 (b). Proficiency of Managers vs Methods of Achieving Product Market Strategies

| | | Proficiency of managers | | | | | | Total | |
|---|---|---|---|---|---|---|---|---|---|
| | | 0 | All existing staff fully proficient | Nearly all staff fully proficient | Over half of all staff fully proficient | Some, but under half fully proficient | Very few staff fully proficient | Count | Col % |
| | | Col % | Col % | Col % | Col % | Col % | Col % | | |
| Meet goal by introduction of new products or services | Don't know | 14 | 9 | 7 | 3 | 4 | 4 | 252 | 8 |
| | Not at all important | 6 | 6 | 4 | 3 | 4 | | 161 | 5 |
| | Not very important | 11 | 9 | 9 | 8 | 13 | 11 | 284 | 9 |
| | Fairly important | 27 | 31 | 33 | 39 | 30 | 36 | 995 | 32 |
| | Very important | 43 | 45 | 46 | 47 | 49 | 50 | 1430 | 46 |
| Total | | 100 | 100 | 100 | 100 | 100 | 100 | 3122 | 100 |
| Total count | | 146 | 1759 | 911 | 231 | 47 | 28 | 3122 | |

**Source: Own estimates based on analysis of ESS 1999**

## Table 3.13 (c). Proficiency of Managers vs Methods of Achieving Product Market Strategies

| | | Proficiency of managers | | | | | | Total | |
|---|---|---|---|---|---|---|---|---|---|
| | | 0 | All existing staff fully proficient | Nearly all staff fully proficient | Over half of all staff fully proficient | Some, but under half fully proficient | Very few staff fully proficient | Count | Col % |
| | | Col % | Col % | Col % | Col % | Col % | Col % | | |
| **Meet goal by introduction of new technologies** | **Don't know** | 12 | 9 | 7 | 3 | 4 | 4 | 254 | 8 |
| | **Not at all important** | 14 | 10 | 7 | 8 | 2 | 11 | 287 | 9 |
| | **Not very important** | 15 | 16 | 16 | 16 | 21 | 29 | 496 | 16 |
| | **Fairly important** | 21 | 29 | 28 | 32 | 28 | 21 | 893 | 29 |
| | **Very important** | 38 | 36 | 42 | 42 | 45 | 36 | 1192 | 38 |
| Total | | 100 | 100 | 100 | 100 | 100 | 100 | | 100 |
| **Total count** | | 146 | 1759 | 911 | 231 | 47 | 28 | 3122 | |

Source: Own estimates based on analysis of ESS 1999

## Table 3.13 (d). Proficiency of Managers vs Methods of Achieving Product Market Strategies

| | | Proficiency of managers | | | | | | Total | |
|---|---|---|---|---|---|---|---|---|---|
| | | 0 | All existing staff fully proficient | Nearly all staff fully proficient | Over half of all staff fully proficient | Some, but under half fully proficient | Very few staff fully proficient | Count | Col % |
| | | Col % | Col % | Col % | Col % | Col % | Col % | | |
| **Meet goal by new working practices** | **Don't know** | 12 | 9 | 7 | 3 | 4 | 4 | 255 | 8.20 |
| | **Not at all important** | 12 | 8 | 5 | 3 | 0 | 0 | 212 | 6.80 |
| | **Not very important** | 14 | 14 | 13 | 14 | 17 | 11 | 431 | 13.80 |
| | **Fairly important** | 29 | 34 | 36 | 39 | 30 | 50 | 1090 | 34.90 |
| | **Very important** | 34 | 34 | 40 | 42 | 49 | 36 | 1134 | 36.30 |
| **Total** | | 100 | 100 | 100 | 100 | 100 | 100 | 3122 | 100 |
| **Total count** | | 146 | 1759 | 911 | 231 | 47 | 28 | 3122 | |

Source: Own estimates based on analysis of ESS 1999

**Table 3.14 Ratio of Least to Most Proficient Managers: Methods of Achieving Product Market Strategies**

| | Cost Reduction | New Products or Services | New Technologies | New Work Practices |
|---|---|---|---|---|
| Not at all important | 0.56 (0.92) | 0.70 (-) | 0.20 (1.04) | - (-) |
| Not very important | 0.83 (0.84) | 1.43 (1.20) | 1.37 (1.83) | 1.19 (0.75 |
| Fairly important | 1.36 (0.80) | 0.98 (1.17) | 0.94 (0.73 | 0.87 (1.45) |
| Very important | 1.02 (1.32) | 1.07 (1.10) | 1.25 (1.01) | 1.45 (1.06) |

Note: The first figure is the ratio of *some, but under half* to those responding *fully proficient*. The figure in parenthesis is the ratio of the *very few* to *fully proficient* column (constructed from Tables 3.13(d)).

## 3.7 Single versus Multi-manager Establishments

This section reports on some of the main differences between the single and multiple manager establishments. Again, the results for both qualifications and proficiency breakdowns are presented.

Table 3.15(a) – 3.15(e) illustrate some further differences between single and multi-manager establishments in the product market strategies adopted broken down by management qualifications. A simple distinction is made between the adoption of the strategy (1=very and fairly important) and non adoption (0=otherwise). In a similar way Tables 3.16(a) – 3.16(e) examine the product market strategies of single *versus* multi-manager establishments, broken down by the manager proficiency measure. Again, a 1,0 variable is adopted for simplicity to show the adoption (1) or non adoptive (0) of the strategy. Given that sample sizes are small in some instances and, partly for this reason, simple monotonic relationships do not generally emerge, the analysis is simplified by comparing the no qualification group (0) with the higher qualification managers (either > 0, some form of qualification, or 4 and 5, depending on sample numbers).

Table 3.15(a) looks at the relationship between the 'required' management qualification and the extent of involvement with the introduction of new products. In practice, there is a clear distinction for the multi-manager establishments with a much lower proportion of no qualification managers (48 *per cent* involved) than in the case of high qualification managers (4=53 *per cent* and 5=67 *per cent*). For the single managers group the result is much less clear cut, although there is some indication that those with qualifications at level 3-5 are more likely to be involved than those with no qualification.

The results shown in Table 3.15(b) relate to involvement in modification of existing products. Here particularly for the single managers group, the results

are somewhat clearer. Again there is evidence from the multi-manager group of a distinction at least between the *no qualification* and the *qualification (>0)* groups (67 *per cent* for the 0 and over 72 *per cent* for the >0). If anything the gap between the less and more qualified single manager establishments is larger (65 *per cent* for the 0 and up to 85 per cent for >0 although the 85 is based on small sample numbers) than for the multiple manager group.

It is difficult to draw conclusions about the increasing efficiency results as the sample sizes are so small for the single manager establishments (see Table 3.15(c)). There is some evidence of a decline in the likelihood of adopting this strategy with qualification level amongst the multi-manager establishments. The same appears to be true amongst the single manager establishments (compare qualification categories 0 and 1, which both show over 20 *per cent* of establishments, with those categories with higher qualifications, which all show below 16 *per cent* of establishments.

Tables 3.15(d) and 3.15(e) are included for completeness (moving towards strategies involving more basic products and 'no known goal' respectively), but sample sizes for the adoption (1) categories are so small, particularly for the single manager establishments, that no attempt is made to interpret the results.

Tables 3.16(a) – 3.16(e) report the corresponding results for the reported proficiency of managers by product market strategy. Most of the tables are difficult to interpret because of the small number of establishments in some of the single manager establishment categories, but they are again included here for completeness.

## Table 3.15 (a). Management Qualifications and Product Market Strategy (Single versus Multi-manager Establishments)

### Multi-manager establishments

| | | Qualifications of Managers (NVQ Equivalents) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | Total | |
| | | Col % | Col % | Col % | Col % | Col % | Col % | Count | Col % |
| New higher quality product | 0 | 52 | 42 | 49 | 47 | 47 | 33 | 1406 | 49 |
| | 1 | 48 | 58 | 51 | 53 | 53 | 67 | 1461 | 51 |
| Total | | 100 | 100 | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 1180 | 69 | 225 | 396 | 940 | 57 | 2867 | |

### Single manager establishments

| | | Qualifications of Managers (NVQ Equivalents) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | Total | |
| | | Col % | Col % | Col % | Col % | Col % | Col % | Count | Col % |
| New higher quality product | 0 | 65 | 77 | 50 | 52 | 56 | 65 | 261 | 59.50 |
| | 1 | 35 | 23 | 50 | 48 | 45 | 35 | 178 | 40.50 |
| Total | | 100 | 100 | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 182 | 13 | 32 | 64 | 128 | 20 | 439 | |

Source: Own estimates based on analysis of ESS 1999

## 3.15 (b). Management Qualifications and Product Market Strategy (Single versus Multi-manager Establishments)

### Multi-manager establishments

| | | Qualifications of Managers (NVQ Equivalents) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | **0** | **1** | **2** | **3** | **4** | **5** | **Total** | |
| | | **Col %** | **Col %** | **Col %** | **Col %** | **Col %** | **Col %** | **Count** | **Col %** |
| **Increase quality of existing product** | **0** | 33 | 25 | 28 | 24 | 27 | 26 | 828 | 29 |
| | **1** | 67 | 75 | 72 | 77 | 74 | 74 | 2039 | 71 |
| **Total** | | 100 | 100 | 100 | 100 | 100 | 100 | | 100 |
| **Total count** | | 1180 | 69 | 225 | 396 | 940 | 57 | 2867 | |

### Single manager establishments

| | | Qualifications of Managers (NVQ Equivalents) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | **Total** | |
| | | **Col %** | **Col %** | **Col %** | **Col %** | **Col %** | **Col %** | **Count** | **Col %** |
| **Increase quality of existing product** | **0** | 35 | 31 | 22 | 27 | 29 | 15 | 132 | 30 |
| | **1** | 65 | 69 | 78 | 73 | 71 | 85 | 307 | 70 |
| **Total** | | 100 | 100 | 100 | 100 | 100 | 100 | | 100 |
| **Total count** | | 182 | 13 | 32 | 64 | 128 | 20 | 439 | |

Source: Own estimates based on analysis of ESS 1999

## Table 3.15(c). Management Qualifications and Product Market Strategy (Single versus Multi-manager Establishments)

**Multi-manager establishments**

| | | Qualifications of Managers (NVQ Equivalents) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | Total | |
| | | Col % | Col % | Col % | Col % | Col % | Col % | Count | Col % |
| **Increase efficiency with existing products** | **0** | 84 | 90 | 84 | 86 | 89 | 86 | 2458 | 86 |
| | **1** | 17 | 10 | 16 | 14 | 11 | 14 | 409 | 14 |
| **Total** | | 100 | 100 | 100 | 100 | 100 | 100 | | 100 |
| **Total count** | | 1180 | 69 | 225 | 396 | 940 | 57 | 2867 | |

**Single manager establishments**

| | | Qualifications of Managers (NVQ Equivalents) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | Total | |
| | | Col % | Col % | Col % | Col % | Col % | Col % | Count | Col % |
| **Increase efficiency with existing products** | **0** | 80 | 77 | 88 | 84 | 86 | 100 | 367 | 84 |
| | **1** | 20 | 23 | 13 | 16 | 14 | | 72 | 16 |
| **Total** | | 100 | 100 | 100 | 100 | 100 | 100 | | 100 |
| **Total count** | | 182 | 13 | 32 | 64 | 128 | 20 | 439 | |

Source: Own estimates based on analysis of ESS 1999

## Table 3.15 (d). Management Qualifications and Product Market Strategy (Single versus Multi-manager Establishments)

### Multi-manager establishments

| | | Qualifications of Managers (NVQ Equivalents) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | Total | |
| | | Col % | Col % | Col % | Col % | Col % | Col % | Count | Col % |
| Moving towards providing more basic products or services | 0 | 97 | 99 | 98 | 99 | 98 | 100 | 2799 | 98 |
| | 1 | 3 | 1 | 2 | 1 | 2 | 0 | 68 | 2 |
| Total | | 100 | 100 | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 1180 | 69 | 225 | 396 | 940 | 57 | 2867 | |

### Single manager establishments

| | | Qualifications of Managers (NVQ Equivalents) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | Total | |
| | | Col % | Col % | Col % | Col % | Col % | Col % | Count | Col % |
| Moving towards providing more basic products or services | 0 | 95 | 92 | 97 | 98 | 97 | 95 | 421 | 96 |
| | 1 | 6 | 8 | 3 | 2 | 3 | 5 | 18 | 4 |
| Total | | 100 | 100 | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 185 | 13 | 32 | 64 | 128 | 20 | 439 | |

Source: Own estimates based on analysis of ESS 1999

## Table 3.15 (e). Management Qualifications and Product Market Strategy (Single versus Multi-manager Establishments)

**Multi-manager establishments**

| | | Qualifications of Managers (NVQ Equivalents) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | Total | |
| | | Col % | Col % | Col % | Col % | Col % | Col % | Count | Col % |
| No known | 0 | 94 | 96 | 95 | 96 | 94 | 95 | 2702 | 94 |
| Goal | 1 | 6 | 4 | 5 | 4 | 6 | 5 | 165 | 6 |
| Total | | 100 | 100 | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 1180 | 69 | 225 | 396 | 940 | 57 | 2867 | |

**Single manager establishments**

| | | Qualifications of Managers (NVQ Equivalents) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | Total | |
| | | Col % | Col % | Col % | Col % | Col % | Col % | Count | Col % |
| No known | 0 | 91 | 92 | 97 | 91 | 94 | 90 | 404 | 92 |
| Goal | 1 | 9 | 8 | 3 | 9 | 6 | 10 | 35 | 8 |
| Total | | 100 | 100 | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 182 | 13 | 32 | 64 | 128 | 20 | 439 | |

Source: Own estimates based on analysis of ESS 1999

## Table 3.16 (a). Proficiency of Managers and Product Market Strategy (Single versus Multi-manager Establishments)

### Multi-manager establishments

| | | Proficiency of managers | | | | | Total | |
|---|---|---|---|---|---|---|---|---|
| | | All existing staff fully proficient | Nearly all staff fully proficient | Over half of all staff fully proficient | Some, but under half fully proficient | Very few staff fully proficient | Count | Col % |
| | | Col % | Col % | Col % | Col % | Col % | | |
| New higher quality product | 0 | 52 | 47 | 42 | 42 | 57 | 1448 | 49 |
| | 1 | 48 | 54 | 58 | 58 | 44 | 1482 | 51 |
| Total | | 100 | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 1558 | 924 | 232 | 50 | 23 | 2930 | |

### Single manager establishments

| | | Proficiency of managers | | | | Total | |
|---|---|---|---|---|---|---|---|
| | | All existing staff fully proficient | Nearly all staff fully proficient | Over half of all staff fully proficient | Very few staff fully proficient | Count | Col % |
| | | Col % | Col % | Col % | Col % | | |
| New higher quality product | 0 | 58 | 77 | 50 | 80 | 265 | 60 |
| | 1 | 42 | 23 | 50 | 20 | 179 | 40 |
| Total | | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 389 | 30 | 6 | 5 | 444 | |

Source: Own estimates based on analysis of ESS 1999

**Table 3.16 (b). Proficiency of Managers and Product Market Strategy (Single versus Multi-manager Establishments)**

## Multi-manager establishments

| | | Proficiency of managers | | | | | Total | |
|---|---|---|---|---|---|---|---|---|
| | | All existing staff fully proficient | Nearly all staff fully proficient | Over half of all staff fully proficient | Some, but under half fully proficient | Very few staff fully proficient | Count | Col % |
| | | Col % | Col % | Col % | Col % | Col % | | |
| Increase quality of existing product | 0 | 32 | 26 | 22 | 20 | 30 | 853 | 29 |
| | 1 | 68 | 74 | 78 | 80 | 70 | 2077 | 71 |
| Total | | 100 | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 1558 | 924 | 232 | 50 | 23 | 2930 | |

## Single manager establishments

| | | Proficiency of managers | | | | Total | |
|---|---|---|---|---|---|---|---|
| | | All existing staff fully proficient | Nearly all staff fully proficient | Over half of all staff fully proficient | Very few staff fully proficient | Count | Col % |
| | | Col % | Col % | Col % | Col % | | |
| Increase quality of existing product | 0 | 30 | 33 | 0 | 0 | 136 | 31 |
| | 1 | 70 | 67 | 100 | 100 | 308 | 69 |
| Total | | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 389 | 30 | 6 | 5 | 444 | |

Source: Own estimates based on analysis of ESS 1999

**Table 3.16 (c). Proficiency of Managers and Product Market Strategy (Single versus Multi-manager Establishments)**

**Multi-manager establishments**

| | | Proficiency of managers | | | | | Total | |
|---|---|---|---|---|---|---|---|---|
| | | All existing staff fully proficient | Nearly all staff fully proficient | Over half of all staff fully proficient | Some, but under half fully proficient | Very few staff fully proficient | Count | Col % |
| | | Col % | Col % | Col % | Col % | Col % | | |
| Increase efficiency with existing products | 0 | 85 | 86 | 91 | 94 | 83 | 2509 | 86 |
| | 1 | 16 | 14 | 9 | 6 | 17 | 421 | 14 |
| Total | | 100 | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 1558 | 924 | 232 | 50 | 23 | 2930 | |

**Single manager establishments**

| | | Proficiency of managers | | | | Total | |
|---|---|---|---|---|---|---|---|
| | | All existing staff fully proficient | Nearly all staff fully proficient | Over half of all staff fully proficient | Very few staff fully proficient | Count | Col % |
| | | Col % | Col % | Col % | Col % | | |
| Increase efficiency with existing products | 0 | 84 | 77 | 100 | 100 | 370 | 83 |
| | 1 | 16 | 23 | | | 74 | 17 |
| Total | | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 389 | 30 | 6 | 5 | 444 | |

Source: Own estimates based on analysis of ESS 1999

**Table 3.16 (d). Proficiency of Managers and Product Market Strategy (Single versus Multi-manager Establishments)**

## Multi-manager establishments

| | | Proficiency of managers | | | | | Total | |
|---|---|---|---|---|---|---|---|---|
| | | All existing staff fully proficient | Nearly all staff fully proficient | Over half of all staff fully proficient | Some, but under half fully proficient | Very few staff fully proficient | Count | Col % |
| | | Col % | Col % | Col % | Col % | Col % | | |
| Moving towards providing more basic products or services | 0 | 97 | 99 | 98 | 96 | 100 | 2862 | 98 |
| | 1 | 3 | 1 | 2 | 4 | 0 | 68 | 2 |
| Total | | 100 | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 1558 | 924 | 232 | 50 | 23 | 2930 | |

## Single manager establishments

| | | Proficiency of managers | | | | Total | |
|---|---|---|---|---|---|---|---|
| | | All existing staff fully proficient | Nearly all staff fully proficient | Over half of all staff fully proficient | Very few staff fully proficient | Count | Col % |
| | | Col % | Col % | Col % | Col % | | |
| Moving towards providing more basic products or services | 0 | 96 | 93 | 100 | 100 | 426 | 96 |
| | 1 | 4 | 7 | 0 | 0 | 18 | 4 |
| Total | | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 389 | 30 | 6 | 5 | 444 | |

Source: Own estimates based on analysis of ESS 1999

**Table 3.16 (e). Proficiency of Managers and Product Market Strategy (Single versus Multi-manager Establishments)**

**Multi-manager establishments**

| | | Proficiency of managers | | | | | Total | |
|---|---|---|---|---|---|---|---|---|
| | | All existing staff fully proficient | Nearly all staff fully proficient | Over half of all staff fully proficient | Some, but under half fully proficient | Very few staff fully proficient | Count | Col % |
| | | Col % | Col % | Col % | Col % | Col % | | |
| No known goal | 0 | 92 | 96 | 98 | 98 | 100 | 2761 | 94 |
| | 1 | 8 | 4 | 2 | 2 | | 169 | 6 |
| Total | | 100 | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 1558 | 924 | 232 | 50 | 23 | 2930 | |

**Single manager establishments**

| | | Proficiency of managers | | | | Total | |
|---|---|---|---|---|---|---|---|
| | | All existing staff fully proficient | Nearly all staff fully proficient | Over half of all staff fully proficient | Very few staff fully proficient | Count | Col % |
| | | Col % | Col % | Col % | Col % | | |
| No known goal | 0 | 92 | 93 | 100 | 100 | 408 | 92 |
| | 1 | 9 | 7 | 0 | 0 | 36 | 8 |
| Total | | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 389 | 30 | 6 | 5 | 444 | |

Source: Own estimates based on analysis of ESS 1999

Rather than dwell on an attempt to disentangle the results broken down by qualification or proficiency an aggregate comparison of the single and multi-manager outcomes is made. Table 3.17 provides a set of ratios obtained from the 1/0 results for both groups, broken down by strategy (this can be obtained from the final columns of either Table 3.15 or 3.16). The clearest results occur with regard to the two product quality variables. In both cases, multiple manager establishments are more likely to report a higher ratio adopting each strategy (i.e. a ratio >1), while in the single manager case, this is only true for improving the existing products.

**Table 3.17 Comparison of Different Strategies of Single and Multi-manager Establishments**

| | Multi-manager | Single Manager | Ratio Multi/Single |
|---|---|---|---|
| New Higher Quality Products | 1.1 | 0.7 | 1.5 |
| Improve Quality of existing Products | 2.4 | 2.3 | 1.1 |
| Increase efficiency with existing products | 0.2 | 0.2 | 0.9 |
| Moving to more basic products | 0.0 | 0.0 | 0.5 |
| No known goal | 0.1 | 0.1 | 0.7 |

For single manager establishments the ratio is >1 for existing products, but <1 for new products. Thus, while only marginally greater emphasis is placed on existing product improvements by multi as opposed to single manager establishments (a ratio of 2.4 compared to 2.3), the difference is much more significant for the emphasis placed on the introduction of new, higher quality products (a ratio of 1.0 compared with 0.7).

**Methods of Achieving Product Market Goals**

This section turns to investigate the main differences between the methods used by single and multi-manager establishments to achieve their product market goals and strategies. These methods include: cost reduction; introduction of new products or services, introduction of new technologies; new working practices. Again, as in the preceding section, sample numbers are too small to make a great deal of sense of the results broken down by the required qualification or perceived proficiency of managers. So the section simply compares the overall results, by method, for single and multi-manager establishments. The figures reported in Table 3.18 are the ratios of the proportion of establishments reporting ‘very’ or ‘fairly important’ to each goal, divided by the proportion that report ‘not very’, ‘not at all’ or ‘don’t know’. The

detailed results are shown in Tables 3.19(a) – 3.19(d) (for proficiency) and Tables 3.20(a) – 3.20(d) (for qualification).

The results suggest that multi-manager establishments are likely to place greater emphasis on all of the methods of achieving the product market goals than single manager establishments. However, the difference is smaller for cost reduction than, for example, new working practices.

**Table 3.18 Comparison of Different Methods of Achieving Product Market Goals, by Single and Multi-manager Establishments**

| | Multi-manager | Single Manager | Ratio Multi/Single |
|---|---|---|---|
| Cost Reduction | 2.2 | 1.8 | 1.2 |
| New Products or Services | 3.7 | 2.7 | 1.3 |
| New Technology | 2.2 | 1.5 | 1.5 |
| New Working Practices | 2.7 | 1.8 | 1.5 |

## 3.8 Conclusions

The cross-tabular analysis suggests a number of important links between the qualifications of managers and the high level goals or targets adopted. There is evidence, for example, that individuals with better qualifications are more likely to chose quality of service/product goals than those with no qualifications. The difference in goals adopted by, for example, managers holding higher level BTEC and those with higher degrees is so stark that it is difficult to imagine that this will not impact on establishment behaviour and performance.

Similarly, there is evidence of a positive relationship between the level of managers qualifications and some of the choices of product strategies adopted to achieve these goals. In particular, the introduction of both higher quality products and improving of existing products seem to be positively associated with management qualifications. Establishments which emphasise product innovation tend to have both higher minimum qualification requirements and their managers are more likely to have achieved this minimum requirement, although these relationships are not always monotonic. On the other hand, the link between qualification level and the adoption of the efficiency goal appears to reverse – with those holding lower qualifications more likely to adopt this goal.

Regarding proficiency, there is some evidence that those establishments setting targets for high level goals such as efficiency or profit are less satisfied with their managers' proficiency than those setting other goals. When compared with different product market strategies there appears to be an

inverse relationship between the aspiration level of the establishment and the perceived proficiency of managers. This is particularly strong for those following an efficiency strategy.

There are some notable differences between single and multiple manager establishments in many of these relationships, especially for proficiency. There is a question mark about how single manager establishments have responded to the proficiency question and there are also some difficulties caused by very small sample sizes. Nevertheless, they suggest some polarisation in response by high and non-qualified managers.

**Table 3.19 (a). Proficiency of Managers and Methods used (Single versus Multi-manager Establishments)**

**Multi-manager establishments**

| | | Proficiency of managers | | | | | Total | |
|---|---|---|---|---|---|---|---|---|
| | | All existing staff fully proficient | Nearly all staff fully proficient | Over half of all staff fully proficient | Some, but under half fully proficient | Very few staff fully proficient | | |
| | | Col % | Col % | Col % | Col % | Col % | Count | Col % |
| Meet goal by cost reduction | Don't know | 9 | 7 | 4 | 4 | 4 | 217 | 8 |
| | Not at all important | 7 | 4 | 4 | 4 | 9 | 157 | 6 |
| | Not very important | 12 | 10 | 8 | 11 | 9 | 302 | 11 |
| | Fairly important | 26 | 29 | 30 | 36 | 13 | 753 | 28 |
| | Very important | 45 | 50 | 53 | 45 | 65 | 1295 | 48 |
| Total | | 100 | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 1412 | 884 | 225 | 47 | 23 | 2724 | |

**Single manager establishments**

| | | Proficiency of managers | | | | Total | |
|---|---|---|---|---|---|---|---|
| | | All existing staff fully proficient | Nearly all staff fully proficient | Over half of all staff fully proficient | Very few staff fully proficient | Count | Col % |
| | | Col % | Col % | Col % | Col % | | |
| Meet goal by cost reduction | Don't know | 11 | 11 | 0 | 0 | 44 | 11 |
| | Not at all important | 9 | 7 | 0 | 0 | 34 | 9 |
| | Not very important | 15 | 33 | 0 | 20 | 65 | 16 |
| | Fairly important | 29 | 11 | 50 | 60 | 114 | 29 |
| | Very important | 36 | 37 | 50 | 20 | 141 | 35 |
| Total | | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 347 | 27 | 6 | 5 | 398 | |

Source: Own estimates based on analysis of ESS 1999

**Table 3.19 (b). Proficiency of Managers and Methods used (Single versus Multi-manager Establishments)**

**Multi-manager establishments**

| | | Proficiency of managers | | | | | Total | |
|---|---|---|---|---|---|---|---|---|
| | | All existing staff fully proficient | Nearly all staff fully proficient | Over half of all staff fully proficient | Some, but under half fully proficient | Very few staff fully proficient | | |
| | | Col % | Col % | Col % | Col % | Col % | Count | Co l% |
| Meet goal by introduction of new products or services | Don't know | 9 | 7 | 3 | 4 | 4 | 210 | 8 |
| | Not at all important | 6 | 4 | 3 | 4 | 0 | 135 | 5 |
| | Not very important | 9 | 9 | 8 | 13 | 13 | 243 | 9 |
| | Fairly important | 31 | 34 | 39 | 30 | 35 | 878 | 32 |
| | Very important | 46 | 46 | 48 | 49 | 48 | 1258 | 46 |
| Total | | 100 | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 1412 | 884 | 225 | 47 | 23 | 2724 | |

**Single manager establishments**

| | | Proficiency of managers | | | | Total | |
|---|---|---|---|---|---|---|---|
| | | All existing staff fully proficient | Nearly all staff fully proficient | Over half of all staff fully proficient | Very few staff fully proficient | Count | Col % |
| | | Col % | Col % | Col % | Col % | | |
| Meet goal by introduction of new products or services | Don't know | 10 | 11 | 0 | 0 | 42 | 11 |
| | Not at all important | 7 | 4 | 17 | 0 | 26 | 7 |
| | Not very important | 10 | 7 | 0 | 0 | 41 | 10 |
| | Fairly important | 29 | 30 | 67 | 40 | 117 | 29 |
| | Very important | 44 | 48 | 17 | 60 | 172 | 43 |
| Total | | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 347 | 27 | 6 | 5 | 398 | |

Source: Own estimates based on analysis of ESS 1999

## 3.19 (c) Proficiency of Managers and Methods used (Single versus Multi-manager Establishments)

**Multi-manager establishments**

| | | Proficiency of managers | | | | | Total | |
|---|---|---|---|---|---|---|---|---|
| | | All existing staff fully proficient | Nearly all staff fully proficient | Over half of all staff fully proficient | Some, but under half fully proficient | Very few staff fully proficient | Count | Col % |
| | | Col % | Col % | Col % | Col % | Col % | | |
| Meet goal by introduction of new technologies | Don't know | 9 | 7 | 3 | 4 | 4 | 213 | 8 |
| | Not at all important | 9 | 7 | 8 | 2 | 13 | 230 | 8 |
| | Not very important | 15 | 16 | 16 | 21 | 30 | 431 | 16 |
| | Fairly important | 30 | 28 | 32 | 28 | 22 | 788 | 29 |
| | Very important | 36 | 43 | 41 | 45 | 30 | 1062 | 39 |
| Total | | 100 | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 1412 | 884 | 225 | 47 | 23 | 2724 | |

**Single manager establishments**

| | | Proficiency of managers | | | | Total | |
|---|---|---|---|---|---|---|---|
| | | All existing staff fully proficient | Nearly all staff fully proficient | Over half of all staff fully proficient | Very few staff fully proficient | Count | Col % |
| | | Col % | Col % | Col % | Col % | | |
| Meet goal by introduction of new technologies | Don't know | 10 | 11 | 0 | 0 | 41 | 10 |
| | not at all important | 15 | 4 | 0 | 0 | 57 | 14 |
| | not very important | 16 | 11 | 33 | 20 | 65 | 16 |
| | fairly important | 26 | 41 | 17 | 20 | 105 | 26 |
| | very important | 33 | 33 | 50 | 60 | 130 | 33 |
| Total | | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 347 | 27 | 6 | 5 | 398 | |

Source: Own estimates based on analysis of ESS 1999

## Table 3.19 (d). Proficiency of Managers and Methods used (Single versus Multi-manager Establishments)

### Multi-manager establishments

| | | Proficiency of managers | | | | | Total | |
|---|---|---|---|---|---|---|---|---|
| | | All existing staff fully proficient | Nearly all staff fully proficient | Over half of all staff fully proficient | Some, but under half fully proficient | Very few staff fully proficient | Count | Col % |
| | | Col % | Col % | Col % | Col % | Col % | | |
| Meet goal by new working practices | Don't know | 9 | 7 | 3 | 4 | 4 | 214 | 8 |
| | Not at all important | 7 | 5 | 3 | 0 | 0 | 167 | 6 |
| | Not very important | 14 | 13 | 13 | 17 | 9 | 370 | 14 |
| | Fairly important | 35 | 36 | 39 | 30 | 52 | 962 | 35 |
| | Very important | 34 | 40 | 42 | 49 | 35 | 1011 | 37 |
| Total | | 100 | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 1412 | 884 | 225 | 47 | 23 | 2724 | |

### Single manager establishments

| | | Proficiency of managers | | | | Total | |
|---|---|---|---|---|---|---|---|
| | | All existing staff fully proficient | Nearly all staff fully proficient | Over half of all staff fully proficient | Very few staff fully proficient | Count | Col % |
| | | Col % | Col % | Col % | Col % | | |
| Meet goal by new working practices | Don't know | 10 | 11 | 0 | 0 | 41 | 10 |
| | Not at all important | 12 | 11 | 0 | 0 | 45 | 11 |
| | Not very important | 15 | 11 | 33 | 20 | 61 | 15 |
| | Fairly important | 32 | 44 | 33 | 40 | 128 | 32 |
| | Very important | 32 | 22 | 33 | 40 | 123 | 31 |
| Total | | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 347 | 27 | 6 | 5 | 398 | |

Source: Own estimates based on analysis of ESS 1999

## Table 3.20 (a). Management Qualifications and Methods used (Single & Multi-Manager Establishments)

**Multi-manager establishments**

| | | Qualifications of Managers (NVQ Equivalents) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | Total | |
| | | Col % | Col % | Col % | Col % | Col % | Col % | Count | Col % |
| Meet goal by cost reduction | Don't know | 10 | 5 | 10 | 7 | 5 | 7 | 203 | 8 |
| | Not at all important | 6 | 5 | 3 | 5 | 6 | 9 | 156 | 6 |
| | Not very important | 10 | 8 | 8 | 12 | 14 | 6 | 291 | 11 |
| | Fairly important | 25 | 35 | 30 | 30 | 29 | 30 | 738 | 28 |
| | Very important | 50 | 49 | 50 | 47 | 46 | 48 | 1277 | 48 |
| Total | | 100 | 100 | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 1087 | 66 | 211 | 376 | 871 | 54 | 2665 | |

**Single manager establishments**

| | | Qualifications of Managers (NVQ Equivalents) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | Total | |
| | | Col % | Col % | Col % | Col % | Col % | Col % | Count | Col % |
| Meet goal by cost reduction | Don't know | 13 | 0 | 7 | 12 | 9 | 6 | 41 | 10 |
| | Not at all important | 6 | 8 | 10 | 7 | 12 | 12 | 34 | 9 |
| | Not very important | 18 | 0 | 17 | 16 | 14 | 29 | 64 | 16 |
| | Fairly important | 30 | 33 | 30 | 29 | 28 | 24 | 114 | 29 |
| | Very important | 33 | 58 | 37 | 36 | 37 | 29 | 141 | 36 |
| Total | | 100 | 100 | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 159 | 12 | 30 | 58 | 118 | 17 | 394 | |

Source: Own estimates based on analysis of ESS 1999

## Table 3.20 (b). Management Qualifications and Methods used (Single & Multi-Manager Establishments)

**Multi-manager establishments**

| | | Qualifications of Managers (NVQ Equivalents) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | Total | |
| | | Col % | Col % | Col % | Col % | Col % | Col % | Count | Col % |
| Meet goal by introduction of new products or services | Don't know | 9 | 6 | 9 | 6 | 5 | 7 | 196 | 7 |
| | Not at all important | 5 | 5 | 4 | 4 | 5 | 4 | 132 | 5 |
| | Not very important | 10 | 6 | 8 | 7 | 10 | 9 | 237 | 9 |
| | Fairly important | 30 | 39 | 30 | 33 | 35 | 33 | 862 | 32 |
| | Very important | 46 | 44 | 49 | 50 | 45 | 46 | 1238 | 47 |
| Total | | 100 | 100 | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 1087 | 66 | 211 | 376 | 871 | 54 | 2665 | |

**Single manager establishments**

| | | Qualifications of Managers (NVQ Equivalents) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | Total | |
| | | Col % | Col % | Col % | Col % | Col % | Col % | Count | Col % |
| Meet goal by introduction of new products or services | Don't know | 12 | 0 | 7 | 14 | 8 | 6 | 39 | 10 |
| | Not at all important | 9 | 25 | 3 | 5 | 4 | 0 | 26 | 7 |
| | Not very important | 8 | 8 | 7 | 12 | 15 | 6 | 41 | 10 |
| | Fairly important | 27 | 42 | 30 | 28 | 31 | 41 | 116 | 29 |
| | Very important | 45 | 25 | 53 | 41 | 42 | 47 | 172 | 44 |
| Total | | 100 | 100 | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 159 | 12 | 30 | 58 | 118 | 17 | 394 | |

Source: Own estimates based on analysis of ESS 1999

## Table 3.20 (c). Management Qualifications and Methods used (Single & Multi-Manager Establishments)

### Multi-manager establishments

| | | Qualifications of Managers (NVQ Equivalents) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | Total | |
| | | Col % | Col % | Col % | Col % | Col % | Col % | Count | Col % |
| Meet goal by introduction of new technologies | Don't know | 9 | 8 | 9 | 6 | 5 | 7 | 200 | 8 |
| | Not at all important | 10 | 8 | 7 | 7 | 8 | 2 | 221 | 8 |
| | Not very important | 17 | 18 | 19 | 13 | 16 | 17 | 424 | 16 |
| | Fairly important | 27 | 29 | 30 | 30 | 31 | 32 | 772 | 29 |
| | Very important | 38 | 38 | 35 | 43 | 41 | 43 | 1048 | 39 |
| Total | | 100 | 100 | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 1087 | 66 | 211 | 376 | 871 | 54 | 2665 | |

### Single manager establishments

### Qualifications of Managers (NVQ Equivalents)

| | | 0 | 1 | 2 | 3 | 4 | 5 | Total | |
|---|---|---|---|---|---|---|---|---|---|
| | | Col % | Col % | Col % | Col % | Col % | Col % | Count | Col % |
| Meet goal by introduction of new technologies | Don't know | 11 | 0 | 7 | 14 | 8 | 6 | 38 | 10 |
| | Not at all important | 16 | 33 | 20 | 12 | 11 | 6 | 56 | 14 |
| | Not very important | 18 | 8 | 23 | 12 | 17 | 6 | 65 | 17 |
| | Fairly important | 25 | 33 | 17 | 26 | 29 | 47 | 105 | 27 |
| | Very important | 30 | 25 | 33 | 36 | 36 | 35 | 130 | 33 |
| Total | | 100 | 100 | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 159 | 12 | 30 | 58 | 118 | 17 | 394 | |

Source: Own estimates based on analysis of ESS 1999

## Table 3.20 (d). Management Qualifications and Methods used (Single & Multi-Manager Establishments)

### Multi-manager establishments

| | | Qualifications of Managers (NVQ Equivalents) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | Total | |
| | | Col % | Col % | Col % | Col % | Col % | Col % | Count | Col % |
| Meet goal by new working practices | Don't know | 10 | 6 | 9 | 7 | 5 | 7 | 201 | 8 |
| | Not at all important | 8 | 0 | 6 | 6 | 5 | 7 | 161 | 6 |
| | Not very important | 14 | 14 | 13 | 10 | 15 | 7 | 362 | 14 |
| | Fairly important | 33 | 42 | 33 | 36 | 39 | 22 | 942 | 35 |
| | Very important | 36 | 38 | 39 | 40 | 36 | 56 | 999 | 38 |
| Total | | 100 | 100 | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 1087 | 66 | 211 | 376 | 871 | 54 | 2665 | |

### Single manager establishments

| | | Qualifications of Managers (NVQ Equivalents) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | Total | |
| | | Col % | Col % | Col % | Col % | Col % | Col % | Count | Col % |
| Meet goal by new working practices | Don't know | 12 | 0 | 7 | 14 | 7 | 6 | 38 | 10 |
| | Not at all important | 15 | 17 | 13 | 9 | 6 | 18 | 44 | 11 |
| | Not very important | 18 | 17 | 17 | 10 | 14 | 18 | 61 | 16 |
| | Fairly important | 30 | 42 | 37 | 33 | 34 | 29 | 128 | 33 |
| | Very important | 25 | 25 | 27 | 35 | 40 | 29 | 123 | 31 |
| Total | | 100 | 100 | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 159 | 12 | 30 | 58 | 118 | 17 | 394 | |

Source: Own estimates based on analysis of ESS 1999

# 4. Management Proficiency, Qualifications and the Performance of the Establishment

## 4.1 Definition of Measures Adopted

In this chapter, the focus is on links between management characteristics and performance. As in the previous sections of this report, the former includes both formal qualifications as well as the measure of proficiency. The latter are as defined in Chapter 1 and include:

- Self Defined Performance Measure (SSP)
- Sales Growth (SG)
- Relative Sales Growth Categories (RSGC)
- Future Sales Growth Categories (FSGC)

This descriptive cross-tabular analysis begins by outlining a number of the problems that look likely to form a barrier to finding any simple relationships. The first is that different establishments set quite different high level goals, as well as product market strategies and methods of actioning the goals. In the survey, however, the main focus in terms of high level goals is on sales performance, for which there are three different measures (see above). Chapter 3 has already demonstrated that establishments with more highly qualified managers place less emphasis on the sales goal than the corresponding establishment with less qualified managers (see Table 3.2). There is one measure that is largely independent of this problem – the self defined performance measure. However, this variable is more of an 'unknown', for example, are different goals ranked similarly in terms of perceived performance (i.e. if the goal includes sales for some establishments and quality for others there is a question mark in saying the establishments that report 'very well' are performing equally well independent of what their actual high level goal is).

A second, but related problem, is that establishments will differ according to the extent to which a given goal is less or more demanding. As already noted establishments that set less demanding goals are more likely to be satisfied than those that set more demanding goals. Importantly from the current perspective the degree to which goals are more or less demanding and the extent to which they are satisfied are unlikely to be independent of management qualifications or perceived management proficiency. Unfortunately, it is not possible to distinguish the extent to which the goals set are demanding or not (i.e. the aspiration levels of different managers).

A third problem, related to the second issue discussed above, is the failure of the cross-tabular descriptive statistics to control for the effects of other causal variables. This issue is addressed in Chapter 5, but note here that the earlier two groups of measurement issues are not resolved by adopting a multi variate approach.

## 4.2 Qualifications of managers

The links between managerial qualifications and performance are explored in Tables 4.1a-4.1d. These compare the various performance measures with the measure of qualifications held by managers.

Better qualified managers appear to be associated with a marginally greater likelihood of responding that self defined performance was going very well (Table 4.1(a)). However, taking the results overall, there is no clear cut evidence that moving from the least to more qualified managers is associated with better self-reported performance. Compare, for example, the no-qualification column (column 0) with column 4. While 37 per cent of establishments report performing very well in column 4 compared with 35 per cent in column 0, only 52 per cent report fairly well compared with 53 per cent in column 0. Indeed the proportion reporting very poorly is slightly higher for column 4 than for column 0. However, if we were to draw any conclusion from those results, it would be that there appears to be no striking difference between the self reported performance achievements of establishments with differently qualified managers. This, we believe, is because managers with higher qualifications perhaps on average set more demanding goals than less qualified managers.

The result for relative sales growth appears to suggest that the less qualified management establishments do better than the more qualified. Looking at the no qualifications (column 0) in Table 4.1(b), 53 per cent of establishments report 'better' or 'very much better' (column 0), compared with only 49 per cent in column 4 and 40 per cent in column 5.

Broadly the same result is found in the case of expected future sales growth (Table 4.1(c)). Examining the no qualification column (column 0), 76 per cent of establishments report future sales will increase 'a little' or 'a great deal', this compares with 71 per cent in column 4 and only 66 per cent of establishments in column 5. Again, if anything, the more qualified manager establishments are suggesting marginally slower future growth performance. It is difficult to establish why this is the case, although it might reflect the economic slow-down, especially in the "higher technology" and "dot com" companies.

The continuous sales growth measure used in Table 4.1 d indicates a significantly higher mean growth rate for those establishments with managers holding NVQ 4 or 5 level qualifications than for those with lower level qualifications. However, those establishments reporting that managers had no qualifications did better than almost all other categories.[8]

[8] This was by far the largest group, although it may include some cases where the qualifications for managers were not known by the respondent but where they may have replied none.

## 4.3 Proficiency of managers

The evidence from Table 4.2(a) suggests that management proficiency is positively related with self defined establishment performance. The proportion of managers in the fully proficient category reporting *fairly* or *very good* to the establishment performance question is slightly over 90 per cent, compared with 83 per cent in the lease efficient two categories of managers. The lack of sensitivity of the managers proficiency to performance is perhaps not surprising as managers may not be (or may not perceive themselves to be) the source of the establishment's problems.

Table 4.2(b) which focuses on relative sales growth, largely explains this finding. A comparison of the 'all proficient' and the final two proficiency columns reveals that the first column is much more likely to report relative sales to be 'better' or 'very much better' (50 per cent of establishments compared to 32 per cent in the penultimate proficiency category and 40 per cent in the final category where the numbers observations is very small). The slightly higher value for the 'nearly all proficient' than the 'all proficient' column perhaps reflects the dynamism of such establishments – those growing fastest in relative terms may find more problems with their managers.

Table 4.2(c) examines the corresponding results for future sales growth. There is little if any evidence here of a positive correlation between current perceived management proficiency and future performance. Indeed a look at the 'increase a great deal' now suggests that there is an inverse relationship with the associated percentage of establishments from 22 per cent in the 'all proficient' category to 39 per in the 'very few' proficient column. This result may simply reflect the fact that the goals being set by more proficient managers are not consistent with higher future sales growth. At this time, many firms are still downsizing and divesting in order to consolidate on core business, which is, at least in the short term, inconsistent with higher sales growth.

## 4.4 Single *versus* Multi-manager Establishments

Further dis-aggregation to attempt to explore the differences between single and multi-manager establishments was not very useful because of the very small sample sizes, particularly in the single manager category. Hence, there is no attempt here to present a detailed discussion of these results although they are reported in the tables to give a complete picture (see Tables 4.3 and 4.4).

## 4.5 Conclusions

The introduction to this chapter noted how difficult it might be to derive simple and meaningful results from this cross tabular analysis. This has proved to be the case. On *a priori* grounds, it is possible to argue a preference for the self reported performance measure (i.e. it is at least, consistent with the high level goals the establishment sets for itself). While there appears to be only weak evidence of a link with management qualifications, using the self defined performance measure, the other measures show a perverse negative

relationship. It has been argued that this was likely to be the result of more highly qualified managers, on balance, setting more demanding goals.

There appears to be a fairly strong link between self reported performance and the perceived proficiency of managers, with more proficient managers performing better by this measure. The continuous sales growth measure indicates a significantly higher mean growth rate for those establishments with nearly all or all managers proficient than other for establishments. Other measures show little evidence of a link.

## Table 4.1 (a). Management Qualifications and Self Selected Performance

| | | Management Qualification Requirements (NVQ level) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | Total | |
| | | Col % | Col % | Col % | Col % | Col % | Col % | Count | Col % |
| Self selected performance | Very poorly | 2 | 0 | 2 | 2 | 3 | 0 | 59 | 2 |
| | Fairly poorly | 11 | 9 | 7 | 9 | 11 | 6 | 321 | 10 |
| | Fairly well | 53 | 51 | 56 | 54 | 50 | 52 | 1647 | 52 |
| | Very well | 35 | 40 | 35 | 35 | 37 | 43 | 1126 | 36 |
| Total | | 100 | 100 | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 1292 | 80 | 247 | 445 | 1016 | 73 | 3153 | |

Source: Own estimates based on analysis of ESS 1999

## Table 4.1 (b). Management Qualifications and Relative Sales Growth Category

| | | Management Qualification Requirements (NVQ level) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | Total | |
| | | Col % | Col % | Col % | Col % | Col % | Col % | Count | Col % |
| Relative sales growth category | Very much worse | 1 | 0 | 0 | 0 | 1 | 0 | 18 | 1 |
| | Worse | 9 | 9 | 7 | 9 | 7 | 6 | 220 | 8 |
| | Same | 37 | 41 | 47 | 44 | 43 | 54 | 1118 | 41 |
| | Better | 40 | 39 | 34 | 35 | 38 | 26 | 1021 | 38 |
| | Very much better | 14 | 11 | 12 | 12 | 11 | 14 | 337 | 12 |
| Total | | 100 | 100 | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 1109 | 70 | 224 | 385 | 876 | 50 | 2714 | |

Source: Own estimates based on analysis of ESS 1999

## 4.1 (c). Management Qualifications and Future Sales Growth Category

| | | Management Qualification Requirements (NVQ level) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | Total | |
| | | Col % | Col % | Col % | Col % | Col % | Col % | Count | Col % |
| Future sales growth category | Decrease a great deal | 0 | 0 | 0 | 0 | 0 | 0 | 40 | 0 |
| | Decrease a little | 6 | 4 | 2 | 5 | 6 | 6 | 178 | 6 |
| | Stay the same | 17 | 18 | 19 | 23 | 22 | 25 | 622 | 20 |
| | Increase a little | 53 | 55 | 58 | 54 | 48 | 42 | 1639 | 52 |
| | Increase a great deal | 23 | 24 | 21 | 17 | 23 | 24 | 700 | 22 |
| Total | | 100 | 100 | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 1316 | 80 | 254 | 441 | 1017 | 71 | 3179 | |

Source: Own estimates based on analysis of ESS 1999

## Table 4.1 (d). Management Qualifications and Sales Growth (continuous)

| | | Management Qualification Requirements (NVQ level) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | Total |
| | | Col % | Col % | Col % | Col % | Col % | Col % | Col % |
| Sales growth – average percentage change | Mean | 8 | 4 | 7 | 6 | 8 | 7 | 8 |
| | N | 1346 | 81 | 254 | 453 | 1058 | 77 | 3269 |

Source: Own estimates based on analysis of ESS 1999

## Table 4.2 (a) Management Proficiency and Self Selected Performance

| | | Proficiency of managers | | | | | Total | |
|---|---|---|---|---|---|---|---|---|
| | | All existing staff fully proficient | Nearly all staff fully proficient | Over half of all staff fully proficient | Some, but under half fully proficient | Very few staff fully proficient | | |
| | | Col % | Col % | Col % | Col % | Col % | Count | Col % |
| Self selected performance | Very poorly | 2 | 1 | 6 | 2 | 0 | 61 | 2 |
| | Fairly poorly | 8 | 12 | 14 | 15 | 17 | 324 | 10 |
| | Fairly well | 50 | 56 | 57 | 48 | 50 | 1687 | 53 |
| | Very well | 40 | 31 | 24 | 35 | 33 | 1144 | 36 |
| Total | | 100 | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 1853 | 916 | 230 | 48 | 24 | 3216 | |

Source: Own estimates based on analysis of ESS 1999

## Table 4.2 (b) Management Proficiency and Relative Sales Growth Category

| | | Proficiency of managers | | | | | Total | |
|---|---|---|---|---|---|---|---|---|
| | | All existing staff fully proficient | Nearly all staff fully proficient | Over half of all staff fully proficient | Some, but under half fully proficient | Very few staff fully proficient | | |
| | | Col % | Col % | Col % | Col % | Col % | Count | Col % |
| Relative sales growth category | Very much worse | 1 | 1 | 1 | 0 | 5 | 20 | 1 |
| | Worse | 7 | 8 | 14 | 13 | 18 | 223 | 8 |
| | Same | 43 | 37 | 41 | 44 | 36 | 1148 | 42 |
| | Better | 37 | 40 | 34 | 29 | 36 | 1032 | 37 |
| | Very much better | 13 | 14 | 10 | 13 | 5 | 344 | 12 |
| Total | | 100 | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 1554 | 813 | 207 | 45 | 22 | 2767 | |

Source: Own estimates based on analysis of ESS 1999

## Table 4.2 c. Management Proficiency and Future Sales Growth Category

| | | Proficiency of managers | | | | | Total | |
|---|---|---|---|---|---|---|---|---|
| | | All existing staff fully proficient | Nearly all staff fully proficient | Over half of all staff fully proficient | Some, but under half fully proficient | Very few staff fully proficient | | |
| | | Col % | Col % | Col % | Col % | Col % | Count | Col % |
| **Future sales growth category** | **Decrease a great deal** | 1 | 1 | 1 | 2 | 0 | 42 | 1 |
| | **Decrease a little** | 5 | 6 | 8 | 6 | 7 | 184 | 6 |
| | **Stay the same** | 20 | 21 | 15 | 16 | 18 | 641 | 20 |
| | **Increase a little** | 52 | 51 | 52 | 39 | 36 | 1667 | 51 |
| | **Increase a great deal** | 22 | 21 | 25 | 37 | 39 | 709 | 22 |
| Total | | 100 | 100 | 100 | 100 | 100 | | 100 |
| **Total count** | | 1862 | 926 | 232 | 49 | 28 | 3243 | |

Source: Own estimates based on analysis of ESS 1999

## Table 4.2 d. Management Proficiency and Sales Growth

| | | Proficiency of managers | | | | | Total |
|---|---|---|---|---|---|---|---|
| | | All existing staff fully proficient | Nearly all staff fully proficient | Over half of all staff fully proficient | Some, but under half fully proficient | Very few staff fully proficient | |
| | | Col % | Col % | Col % | Col % | Col % | Col % |
| **Sales growth – average percentage change** | Mean | 8 | 7 | 6 | 7 | 6 | 8 |
| | N | 1929 | 937 | 236 | 50 | 28 | 3336 |

Source: Own estimates based on analysis of ESS 1999

**Table 4.3 (a). Management Qualifications and Self Selected Performance**

**Multi-manager establishments**

| | | Management Qualification Requirements (NVQ level) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | Total | |
| | | Col % | Col % | Col % | Col % | Col % | Col % | Count | Col % |
| Self selected performance | Very poorly | 2 | 0 | 2 | 2 | 3 | 0 | 52 | 2 |
| | Fairly poorly | 11 | 8 | 7 | 10 | 11 | 7 | 283 | 10 |
| | Fairly well | 54 | 52 | 57 | 55 | 50 | 52 | 1451 | 53 |
| | Very well | 33 | 40 | 34 | 34 | 37 | 41 | 951 | 35 |
| Total | | 100 | 100 | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 1121 | 67 | 217 | 385 | 893 | 54 | 2737 | |

Source: Own estimates based on analysis of ESS 1999

**Single manager establishments**

| | | Management Qualification Requirements (NVQ level) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | Total | |
| | | Col % | Col % | Col % | Col % | Col % | Col % | Count | Col% |
| Self selected performance | Very poorly | 2 | 0 | 0 | 0 | 3 | 0 | 7 | 2 |
| | Fairly poorly | 9 | 15 | 10 | 8 | 11 | 0 | 38 | 9 |
| | Fairly well | 44 | 46 | 47 | 50 | 49 | 53 | 196 | 47 |
| | Very well | 45 | 39 | 43 | 42 | 37 | 47 | 175 | 42 |
| Total | | 100 | 100 | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 171 | 13 | 30 | 60 | 123 | 19 | 416 | |

Source: Own estimates based on analysis of ESS 1999

**Table 4.3 (b). Management Qualifications and Relative Sales Growth Category**

**Multi-manager establishments**

| | | Management Qualification Requirements (NVQ level) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | **0** | 1 | 2 | 3 | 4 | 5 | **Total** | |
| | | **Col %** | **Col %** | **Col %** | **Col %** | **Col %** | **Col %** | **Count** | **Col %** |
| **Relative sales growth category** | **Very much worse** | 1 | 0 | 1 | 0 | 1 | 0 | 14 | 1 |
| | **Worse** | 9 | 7 | 7 | 10 | 7 | 8 | 192 | 8 |
| | **Same** | 37 | 42 | 47 | 44 | 42 | 53 | 972 | 41 |
| | **Better** | 39 | 38 | 33 | 34 | 39 | 24 | 902 | 38 |
| | **Very much better** | 14 | 13 | 13 | 13 | 11 | 16 | 305 | 13 |
| **Total** | | 100 | 100 | 100 | 100 | 100 | 100 | | 100 |
| **Total count** | | 975 | 60 | 198 | 337 | 777 | 38 | 2385 | |

Source: Own estimates based on analysis of ESS 1999

**Single manager establishments**

| | | Management Qualification Requirements (NVQ level) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | **Total** | |
| | | **Col %** | **Col %** | **Col %** | **Col %** | **Col %** | **Col %** | **Count** | **Col %** |
| **Relative sales growth category** | **Very much worse** | 1 | 0 | 0 | 0 | 3 | 0 | 4 | 1 |
| | **Worse** | 8 | 20 | 4 | 2 | 13 | 0 | 28 | 9 |
| | **Same** | 39 | 40 | 50 | 46 | 49 | 58 | 146 | 44 |
| | **Better** | 40 | 40 | 42 | 44 | 25 | 33 | 119 | 36 |
| | **Very much better** | 12 | | 4 | 8 | 10 | 8 | 32 | 10 |
| **Total** | | 100 | 100 | 100 | 100 | 100 | 100 | | 100 |
| **Total count** | | 134 | 10 | 26 | 48 | 99 | 12 | 329 | |

Source: Own estimates based on analysis of ESS 1999

**Table 4.3 (c). Management Qualifications and Future Sales Growth Category**

**Multi-manager establishments**

| | | Management Qualification Requirements (NVQ level) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | Total | |
| | | Col % | Col % | Col % | Col % | Col % | Col % | Count | Col % |
| Future sales growth category | Decrease a great deal | 1 | 0 | 1 | 1 | 2 | 4 | 31 | 1 |
| | Decrease a little | 6 | 5 | 2 | 6 | 7 | 4 | 159 | 6 |
| | Stay the same | 17 | 13 | 18 | 23 | 21 | 29 | 531 | 19 |
| | Increase a little | 53 | 58 | 58 | 54 | 48 | 44 | 1432 | 52 |
| | Increase a great deal | 24 | 24 | 21 | 16 | 23 | 20 | 614 | 22 |
| Total | | 100 | 100 | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 1142 | 67 | 225 | 380 | 898 | 55 | 2767 | |

Source: Own estimates based on analysis of ESS 1999

**Single manager establishments**

| | | Management Qualification Requirements (NVQ level) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | Total | |
| | | Col % | Col % | Col % | Col % | Col % | Col % | Count | Col % |
| Future sales growth category | Decrease a great deal | 3 | 0 | 0 | 2 | 2 | 0 | 9 | 2 |
| | Decrease a little | 5 | 0 | 3 | 5 | 4 | 13 | 19 | 5 |
| | Stay the same | 18 | 39 | 21 | 20 | 29 | 13 | 91 | 22 |
| | Increase a little | 52 | 39 | 62 | 54 | 46 | 38 | 207 | 50 |
| | Increase a great deal | 22 | 23 | 14 | 20 | 19 | 38 | 86 | 21 |
| Total | | 100 | 100 | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 174 | 13 | 29 | 61 | 119 | 16 | 412 | |

Source: Own estimates based on analysis of ESS 1999

**Table 4.3 (d). Management Qualifications and Sales Growth (continuous)**

**Multi-manager establishments**

| | | Management Qualification Requirements (NVQ level) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | **0** | **1** | **2** | **3** | **4** | **5** | **Total** |
| | | Col % | Col % | Col % | Col % | Col % | Col % | Col % |
| **Sales growth – average percentage change** | Mean | 8 | 4 | 7 | 6 | 9 | 6 | 8 |
| | N | 1164 | 68 | 222 | 389 | 931 | 57 | 2831 |

**Single manager establishments**

| | | Management Qualification Requirements (NVQ level) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | **0** | **1** | **2** | **3** | **4** | **5** | **Total** |
| | | Col % | Col % | Col % | Col % | Col % | Col % | Col % |
| **Sales growth – average percentage change** | Mean | 10.65 | 4 | 6 | 5 | 6 | 11 | 8 |
| | N | 182 | 13 | 32 | 64 | 127 | 20 | 438 |

Source: Own estimates based on analysis of ESS 1999

**Table 4.4 (a) Management Proficiency and Self Selected Performance**

**Multi-manager establishments**

| | | Proficiency of managers | | | | | Total | |
|---|---|---|---|---|---|---|---|---|
| | | All existing staff fully proficient | Nearly all staff fully proficient | Over half of all staff fully proficient | Some, but under half fully proficient | Very few staff fully proficient | Count | Col % |
| | | Col % | Col % | Col % | Col % | Col % | | |
| Self selected performance | Very poorly | 2 | 1 | 6 | 2 | 0 | 54 | 2 |
| | Fairly poorly | 8 | 12 | 14 | 15 | 18 | 286 | 10 |
| | Fairly well | 51 | 56 | 56 | 48 | 50 | 1487 | 53 |
| | Very well | 39 | 31 | 24 | 35 | 32 | 968 | 35 |
| Total | | 100 | 100 | 100 | 100 | 100 | | 100 |
| **Total count** | | 1482 | 887 | 224 | 48 | 22 | 2795 | |

**Single manager establishments**

| | | Proficiency of managers | | | | Total | |
|---|---|---|---|---|---|---|---|
| | | All existing staff fully proficient | Nearly all staff fully proficient | Over half of all staff fully proficient | Very few staff fully proficient | Count | Col % |
| | | Col % | Col % | Col % | Col % | | |
| Self selected performance | Very poorly | 1 | 3 | 0 | 0 | 7 | 2 |
| | Fairly poorly | 9 | 10 | 17 | 0 | 38 | 9 |
| | Fairly well | 46 | 59 | 83 | 50 | 200 | 48 |
| | Very well | 44 | 28 | 0 | 50 | 176 | 42 |
| **Total** | | 100 | 100 | 100 | 100 | | 100 |
| **Total count** | | 371 | 29 | 6 | 2 | 421 | |

Source: Own estimates based on analysis of ESS 1999

## Table 4.4 (b) Management Proficiency and Relative Sales Growth Category

### Multi-manager establishments

| | | Proficiency of managers | | | | | Total | |
|---|---|---|---|---|---|---|---|---|
| | | All existing staff fully proficient Col % | Nearly all staff fully proficient Col % | Over half of all staff fully proficient Col % | Some, but under half fully proficient Col % | Very few staff fully proficient Col % | Count | Col % |
| Relative sales growth category | Very much worse | 0 | 1 | 1 | 0 | 5 | 16 | 1 |
| | Worse | 6 | 8 | 14 | 13 | 19 | 195 | 8 |
| | Same | 43 | 37 | 41 | 44 | 38 | 1000 | 41 |
| | Better | 38 | 40 | 34 | 29 | 33 | 913 | 38 |
| | Very much better | 13 | 14 | 10 | 13 | 5 | 310 | 13 |
| Total | | 100 | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 1264 | 789 | 201 | 45 | 21 | 2434 | |

### Single manager establishments

| | | Proficiency of managers | | | | Total | |
|---|---|---|---|---|---|---|---|
| | | All existing staff fully proficient Col % | Nearly all staff fully proficient Col % | Over half of all staff fully proficient Col % | Very few staff fully proficient Col % | Count | Col % |
| Relative sales growth category | Very much worse | 1 | 4 | 0 | 0 | 4 | 1 |
| | Worse | 9 | 0 | 0 | 0 | 28 | 8 |
| | Same | 44 | 42 | 50 | 0 | 148 | 44 |
| | Better | 35 | 42 | 50 | 100 | 119 | 36 |
| | Very much better | 11 | 13 | 0 | 0 | 34 | 10 |
| Total | | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 290 | 24 | 6 | 1 | 333 | |

Source: Own estimates based on analysis of ESS 1999

## Table 4.4 c. Management Proficiency and Future Sales Growth Category

### Multi-manager establishments

| | | Proficiency of managers | | | | | Total | |
|---|---|---|---|---|---|---|---|---|
| | | All existing staff fully proficient | Nearly all staff fully proficient | Over half of all staff fully proficient | Some, but under half fully proficient | Very few staff fully proficient | Count | Col % |
| | | Col % | Col % | Col % | Col % | Col % | | |
| Future sales growth category | Decrease a great deal | 1 | 1 | 1 | 2 | 0 | 33 | 1 |
| | Decrease a little | 5 | 6 | 8 | 6 | 9 | 165 | 6 |
| | Stay the same | 19 | 21 | 15 | 16 | 17 | 548 | 19 |
| | Increase a little | 53 | 51 | 53 | 39 | 39 | 1457 | 52 |
| | Increase a great deal | 22 | 21 | 24 | 37 | 35 | 623 | 22 |
| Total | | 100 | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 1498 | 896 | 226 | 49 | 23 | 2826 | |

### Single manager establishments

| | | Proficiency of managers | | | | Total | |
|---|---|---|---|---|---|---|---|
| | | All existing staff fully proficient | Nearly all staff fully proficient | Over half of all staff fully proficient | Very few staff fully proficient | Count | Col % |
| | | Col % | Col % | Col % | Col % | | |
| Future sales growth category | Decrease a great deal | 2 | 3 | 0 | 0 | 9 | 2 |
| | Decrease a little | 4 | 7 | 17 | 0 | 19 | 5 |
| | Stay the same | 22 | 10 | 17 | 20 | 93 | 22 |
| | Increase a little | 52 | 53 | 33 | 20 | 210 | 50 |
| | Increase a great deal | 19 | 27 | 33 | 60 | 86 | 21 |
| Total | | 100 | 100 | 100 | 100 | | 100 |
| Total count | | 364 | 30 | 6 | 5 | 417 | |

Source: Own estimates based on analysis of ESS 1999

## Table 4.4 d. Management Proficiency and Sales Growth

### Multi-manager establishments

| | | Proficiency of managers | | | | | Total |
|---|---|---|---|---|---|---|---|
| | | All existing staff fully proficient | Nearly all staff fully proficient | Over half of all staff fully proficient | Some, but under half fully proficient | Very few staff fully proficient | |
| | | Col % | Col % | Col % | Col % | Col % | Col % |
| **sales growth – average percentage change** | Mean | 8 | 7 | 6 | 7 | 6 | 8 |
| | N | 1540 | 908 | 230 | 50 | 23 | 2893 |

### Single manager establishments

| | | Proficiency of managers | | | | |
|---|---|---|---|---|---|---|
| | | All existing staff fully proficient | Nearly all staff fully proficient | Over half of all staff fully proficient | Very few staff fully proficient | |
| | | Col % | Col % | Col % | Col % | Col % |
| **sales growth – average percentage change** | **Mean** | 8 | 7 | 5 | 4 | 8 |
| | N | 389 | 29 | 6 | 5 | 443 |

Source: Own estimates based on analysis of ESS 1999

## 5. Multivariate Analysis

### 5.1 Rationale

While indicative, the cross-tabular analysis presented so far may be misleading in that it fails to control for differences in other characteristics not included in the tables. The only way to address such concerns is to undertake multivariate analysis, which then allows the marginal effects to be assessed, *ceteris paribus.* However, as noted in Chapter 4, simply adopting a multivariate approach does not overcome all of the inherent problems, such as the issues of measuring performance and the unmeasured standards demanded by different establishments with differently qualified (or proficient) managers. Future employer skill surveys need to obtain some benchmark measures in order to overcome these problems.

The various measures of managerial qualifications and skills (including the $M_i$ variables described in Chapter 1 and already used in the previous chapters), have been added as derived variables to the data files used for the econometric analysis and incorporated in the specifications as set out in Chapter 1. Two main sets of regressions have been undertaken:

a) using strategies and goals as dependent variables
b) using measures of performance as dependent variables

Because many of the variables used in previous econometric work may themselves be a consequence of managerial policy and behaviour, some regressions have been run including the various human resource management (HRM) indicators developed by Bosworth *et al.* (2001) using factor analysis, while a second set excludes these indicators. These indicators are intended to measure a range of high level policies and practices concerned with the use and development of human resources

### 5.2 New Variables Added to Regressions

*Management Proficiency*

The effect of staff proficiency amongst managers upon firm performance is considered through the inclusion of a manager proficiency score (profgp1). Establishments were asked about the level of proficiency across occupations. These responses were converted into the following score for each occupation as follows.

| | |
|---|---|
| all existing staff fully proficient | = 1 |
| nearly all staff fully proficient | = 2 |
| over half of all staff fully proficient | = 3 |
| some but under half fully proficient | = 4 |
| very few staff fully proficient | = 5 |

*Qualifications of Managers*
The qualifications of managers are considered through two variables. The first variable considers the current minimum qualification required of managers (redqhld1). This variable is based broadly upon NVQ equivalents:

| | |
|---|---|
| No qualifications | = 0 |
| NVQ level 1, BTEC Certificate, <5 GCSEs C+ | = 1 |
| NVQ level 2, BTEC Diploma, 5 GCSEs C+ | = 2 |
| NVQ level 3, BTEC National, A Levels | = 3 |
| NVQ level 4, BTEC Higher, Degree | = 4 |
| NVQ level 5, Higher Degree | = 5 |

The second qualification variable (rqrateg1) expresses the average qualifications actually held by managers as a percentage of the minimum qualification required by managers. This variable is based upon question D14, which asks the percentage of managers who possess the minimum qualification currently required. The difference between D14 is that if no qualifications are required of managers, then by definition all managers are assumed to possess the qualifications required.

## 5.3 Format of Regressions

All regressions contain variables that consider current strategies (as opposed to those adopted over the past 5 years). Also, some of the regressions consider the direct influence of the factor component scores on performance. However, the regressions that considered the interactions of these factor scores with strategy variables, as carried out in Bosworth *et al.* (2001), are not regarded as of interest to the current work.

Various sets of regressions were estimated based on goals or performance as the dependent variables. These were repeated both including and excluding HRM variables. Initially five regressions were run for each of the main sets. The five basic specifications explored were as follows:

1. Original regression – as in Bosworth *et al.* (2001). This includes the all employee proficiency score (prof) and qualifications held as a percentage of current requirements across all occupations (redqrate) as well as the average qualification level (redavq)
2. Regression 1 + qualification rate for managers (rqrateg1) + proficiency score for managers (profgp1) and the current minimum qualification required of managers (redqhld1) but excluding the corresponding variable for the whole workforce.
3. Regression 2, but including the whole workforce variables.

In addition, further regressions repeated the content of regression 2 and 3, with the exception that they exclude the all employee proficiency score (prof) and qualifications held as a percentage of current requirements (redqrate) respectively. The idea behind this was that multi-collinearity may lead to

difficulties in including both sets of variables (e.g. including the all employee proficiency score and the manager proficiency score – the manager score will form part of the employee score).

In practice, as options 4 and 5 did not prove significantly different to 2 and 3. The results in Table 5.1 – 5.8 therefore just show the coefficients for the managerial and whole Workforce qualifications and proficiency variables, included or excluded. The full set of control variables used is shown in Annex B.

**Interpreting the Multivariate Regression Results in Tables 5.1 – 5.8**

The results in the tables in this chapter present a summary of the results of multivariate regression analysis, based on the equations set out in Chapter 1, Section 1.3.

The coefficients presented in the tables (in the column headed Coef.) indicate the way the dependant variables, (goals, strategies, performance etc.) are related to the various measures of qualification and proficiency.

The former are indicated in the tables by the use of bold, italicised text.

The latter include:

| | Managers | Whole Workforce |
|---|---|---|
| Proficiency | Profgp1 | Prof |
| Minimum qualifications | Rqrateg1 | Redqrate |
| Proportion with minimum qualification | Redqhld1 | Redavq |

The statistical strength of those relationships are shown by the standard errors of the coefficients in the column headed Std Err. Or by the P.|z| column. P>|z| indicates the probability that the coefficient is different from zero. A value of one indicates a zero probability a value of zero absolute certainty. Coefficients which are more than twice the size of the corresponding standard error are 95 per cent certain of being statistically significantly different from zero.

## 5.4 Multivariate Results : Goals

Tables 5.1 and 5.2 present results using goals or high level targets as the dependent variable. They show the effects of managerial qualifications and/or proficiency on the propensity to choose these goals, *ceteris paribus*. The regressions include a large range of other control variables as reported in Bosworth *et al.* (2001), but not shown here. Table 5.1 includes the HMR variables amongst this set of controls. Table 5.2 presents the results excluding these variables.

Table 5.1 presents three sets of coefficients, shown in successive groups of columns. The first set, following Bosworth *et al.* (2001), includes general proficiency and qualifications indicators for the whole workforce. The second set replaces these by corresponding variables specifically for managerial occupations. The third set includes both groups of indicators.

Although most of the coefficients are statistically insignificant, the measure of the typical minimum qualification requirements set for managers (redqhld1) shows through consistently in the case of establishments setting cost, profits or productivity targets (see the second and third sets of results in Table 5.11. Generally, this is at the expense of the corresponding, whole workforce measure (redavq), which is statistically significant in the first set of results but not in the third.

This pattern is repeated in Table 5.2 when the HRM variables are excluded. Indeed, if anything, the results are even stronger in this case, with a statistically significant coefficient for the sales goal as well.

As suggested by the discussion in earlier chapters, the proficiency variables (prof) are generally less successful. In Table 5.1 (including the HRM variables) they are usually statistically insignificant, although when both whole workforce and managerial variables are included, the coefficients do tend towards the expected negative sign (given the way proficiency is measured). In Table 5.2 (excluding the HRM variables), the managerial proficiency variable takes a "perverse" positive sign, especially in the absence of the whole workforce measures.

## 5.5 Multivariate Results : Product Market Strategies

Tables 5.3 and 5.4 report a summary of the results for product market strategies. Again, the results focus on the qualifications and proficiency variables.[9] Table 5.3 presents the results including the various HRM indicators developed using factor analysis in Bosworth *et al.* (2001). Table 5.4 presents a corresponding analysis excluding these indicators (on the grounds that they may be regarded as a consequence of management behaviour). Three main product market strategies are distinguished:

- New higher quality product
- Increasing quality of existing product
- Increase efficiency with existing product

*New Higher Quality Products*

Table 5.3 sets out the results for the three product market strategies when the HRM variables are also included. It can been seen that the level of qualification held by managers (redqhld1) has a positive sign, but it is not at all significant in explaining the adoption of a new higher quality product strategy. This variable plays a slightly more important role if the HRM variables are

[9] The full set of econometric results are available on www.skillsbase.dfes.gov.uk

excluded (Table 5.4) and is highly significant positive if the corresponding workforce variables are excluded. However, the final column of Table 5.4 suggests that it is the level of workforce qualification (rather than management qualification) that is the more important measure in explaining the adoption of the new, higher quality product strategy.

The second management qualification variable (rqrateg1), the qualification rate for managers (i.e. the proportion of managers in the establishment meeting at least the minimum qualification required of newly recruited managers), appears to play a significant positive role in determining whether the establishment adopts a new, higher quality product strategy (see first set of results in Tables 5.3 and 5.4). This result holds whether the corresponding all workforce variables are included or not and, with a somewhat greater difference in significance, whether the set of HRM variables are included or not.

The management proficiency measure (profgp1), however, appears to have an unexpected positive sign, showing that establishments whose managers have lower levels of proficiency are more likely to adopt a new, higher quality product strategy. Whilst the coefficient in this variable is insignificant in both Tables 5.3 and 5.4 when the corresponding workforce variables are excluded, it is marginally significant at 10 per cent levels when the workforce variables are included whether or not the HRM variables are included.

*Increase Quality of Existing Products*

The results for the product market strategy of increasing the quality of existing products are shown by the second set of rows in Tables 5.3 and 5.4. The results can be summarised more briefly. Again, the proficiency variable has an unexpected positive sign in both tables, but its coefficient is not significantly different from zero in the regressions which include both the workforce and management variables, irrespective of whether the HRM variables are included or not (the coefficient is marginally significant in regression 2 of Table 5.3). In the case of this product market strategy, the proportion of managers with the minimum qualification is not significant in any of the regressions, although it has an expected positive sign. The level of management qualification, however, is significant at the 5 per cent level or higher in the two regressions where the HRM variables are excluded (see Table 5.4)

*Increased Efficiency with Existing Product*

As in the cross-tabular results, there is a sign reversal for the various management variables when the product market strategy of increasing efficiency with the existing product is examined, as shown in the final set of rows in Tables 5.3 and 5.4. The results suggest that managers with higher qualification levels (redqhld1) are less likely to adopt this goal, although the associated coefficient not significantly different from zero. More importantly, the higher the proportion of managers with the minimum required qualification (rqrateg1), the less likely they are to adopt this goal. In this instance, the associated coefficient is significantly different from zero at the 5 per cent level in the regressions where both the workforce and management variables are

included (i.e. the final columns of Tables 5.3 and 5.4), irrespective of whether the HRM variables are included or not. Finally, the proficiency variable shows an association between higher proficiency and the adoption of this goal (profgp1), although the associated coefficient is insignificantly different from zero.

## 5.6 Multivariate Results: Methods of Achieving Goals

Tables 5.5 and 5.6 focus on the various 'methods' establishments use to achieve their product market strategies and thereby their higher level goals. These include:

- Cost reduction
- New product development
- Introduction of new technology
- New working practices

Table 5.5 presents results including the HRM variables while Table 5.6 excludes them.

The multivariate results attempting to explain the various methods adopted in order to achieve product market strategies and thereby the high level goals are not very encouraging. The preferred measures are those shown in the final columns of Table 5.6 (i.e. including both the workforce and management variables but excluding the HRM variables). The results indicate a generally positive relationship between both the level of management qualification (redqhld1) and the proportion of managers holding at least the minimum qualification required (rqrateg1) and the adoption of each of the methods. Of those two management variables it is the proportion of managers with at least the minimum qualification (rqrateg1) that both maintains its sign (positive throughout) and is significantly different from zero in two of the four cases (and close to being significant in one of the other two cases). The level of qualification variable (redqhld1) has only one sign reversal – in the case of cost reduction, which is a result broadly consistent with the sign reversal found in the previous section for the increasing efficiency strategy. The unexpected positive signs on the management proficiency variable (profgp1) are again apparent and significant at the 10 per cent level or higher in two of the four cases. Again, it suggests that causality might run in the other direction, indicating that managers who try to do more (i.e. set more demanding standards) are perceived in some cases, as being less proficient.

## 5.7 Multivariate Results: Performance

At various points in this report the problems surrounding the observation of definitive links between management characteristics and establishment performance have been emphasised. In the earlier discussions it was agreed that there may be some preference for the self defined performance measure (on the grounds that it should at least be consistent with the goals the establishment sets). However, in the performance regressions shown in Tables 5.7 and 5.8 it generally makes little difference to the management

qualification (rqrateg1 and redqhld1) results which of the specifications is chosen. The coefficients on the level of qualification variable (redqhld1) have an unexpected negative sign in all of the results and the coefficient borders on significance at the 10 per cent level in one or two cases. The coefficients on the proportion of managers with at least the minimum qualification (rqrateg1) has a positive sign for the relative sales growth and future sales growth performance measures, but not in the other two sets of regressions. In addition, this coefficient is not significant at the 10 per cent level in any of the regressions.

The proficiency variable on the other hand has an expected negative sign in three of the four performance measures, and is significant at the 1 per cent level in the preferred self defined performance regressions. However, while higher proficiency may lead to higher performance, again, following the earlier results, it is equally likely that causality may run in the opposite direction (with better performing establishments reporting higher management proficiency).

It is difficult to reconcile the management qualification results with prior expectations, as neither the level of qualification, nor the proportion of managers holding the minimum level of qualification required turns out to play a significant role. The only consolation in this rather perverse set of results is that (in all but one of the sets of regressions) the associated coefficients are consistently insignificant at the 10 per cent level. One possible explanation for this result is that establishments with more highly qualified managers set disproportionately higher expectation levels with regard to performance than corresponding establishments with less qualified managers. Clearly, alternative explanations include the fact that qualifications are not a pre-requisite for establishment performance.

**Table 5.1 Summary of Multivariate Results: High Level Goals, including HRM Variables**

| | 1 Workforce Variables | | | 2 Management Variables | | | 3 Workforce and Management Variables | | |
|---|---|---|---|---|---|---|---|---|---|
| | Coef. | Std Err. | P>\|z\| | Coef. | Std Err. | P>\|z\| | Coef. | Std Err. | P>\|z\| |
| ***Sales, fees or budgets*** | | | | | | | | | |
| Prof | -0.01 | 0.07 | 0.91 | - | - | - | -0.06 | 0.08 | 0.47 |
| Redqrate | 0.25 | 0.19 | 0.17 | - | - | - | 0.37 | 0.23 | 0.10 |
| Redavq | 0.08 | 0.05 | 0.12 | - | - | - | 0.06 | 0.06 | 0.35 |
| Profgp1 | - | - | - | 0.06 | 0.05 | 0.29 | 0.09 | 0.07 | 0.19 |
| Rqrateg1 | - | - | - | 0.09 | 0.17 | 0.59 | -0.17 | 0.23 | 0.46 |
| Redqhld1 | - | - | - | 0.03 | 0.03 | 0.32 | 0.01 | 0.04 | 0.86 |
| ***Costs*** | | | | | | | | | |
| Prof | 0.02 | 0.06 | 0.73 | - | - | - | -0.01 | 0.07 | 0.90 |
| Redqrate | 0.01 | 0.17 | 0.93 | - | - | - | 0.00 | 0.21 | 0.99 |
| Redavq | 0.10 | 0.04 | 0.02 | - | - | - | 0.01 | 0.06 | 0.83 |
| Profgp1 | - | - | - | 0.06 | 0.05 | 0.20 | 0.05 | 0.06 | 0.40 |
| Rqrateg1 | - | - | - | 0.16 | 0.16 | 0.32 | 0.15 | 0.21 | 0.47 |
| Redqhld1 | - | - | - | 0.08 | 0.03 | 0.00 | 0.08 | 0.03 | 0.03 |
| ***Profits*** | | | | | | | | | |
| Prof | 0.04 | 0.06 | 0.44 | - | - | - | 0.00 | 0.07 | 0.98 |
| Redqrate | 0.39 | 0.16 | 0.02 | - | - | - | 0.50 | 0.20 | 0.01 |
| Redavq | 0.04 | 0.04 | 0.32 | - | - | - | -0.06 | 0.05 | 0.29 |
| Profgp1 | - | - | - | 0.09 | 0.05 | 0.06 | 0.07 | 0.06 | 0.21 |
| Rqrateg1 | - | - | - | 0.20 | 0.15 | 0.19 | -0.05 | 0.20 | 0.79 |
| Redqhld1 | - | - | - | 0.05 | 0.02 | 0.04 | 0.08 | 0.03 | 0.02 |
| ***Productivity*** | | | | | | | | | |
| Prof | 0.02 | 0.05 | 0.71 | - | - | - | -0.02 | 0.06 | 0.76 |
| Redqrate | 0.03 | 0.15 | 0.83 | - | - | - | 0.02 | 0.19 | 0.91 |
| Redavq | 0.08 | 0.04 | 0.03 | - | - | - | -0.01 | 0.05 | 0.86 |
| profgp1 | - | - | - | 0.04 | 0.04 | 0.33 | 0.06 | 0.05 | 0.21 |
| rqrateg1 | - | - | - | 0.21 | 0.14 | 0.13 | 0.16 | 0.17 | 0.35 |
| redqhld1 | - | - | - | 0.08 | 0.02 | 0.00 | 0.08 | 0.03 | 0.01 |

Source: ESS Face to Face Survey, probit specification.

Notes:

. P>|z| indicates the probability that the coefficient is different from zero. A value of one indicates a zero probability a value of zero absolute certainty

**Table 5.2 Summary of Multivariate Results: High Level Goals, excluding HRM Variables**

| | 1 Workforce Variables | | | 2 Management Variables | | | 3 Workforce and Management Variables | | |
|---|---|---|---|---|---|---|---|---|---|
| | Coef. | Std Err. | P>\|z\| | Coef. | Std Err. | P>\|z\| | Coef. | Std Err. | P>\|z\| |
| ***Sales, fees or budgets*** | | | | | | | | | |
| Prof | 0.05 | 0.05 | 0.36 | - | - | - | -0.04 | 0.06 | 0.51 |
| Redqrate | 0.15 | 0.15 | 0.33 | - | - | - | 0.23 | 0.19 | 0.24 |
| Redavq | 0.12 | 0.04 | 0.00 | - | - | - | 0.06 | 0.05 | 0.21 |
| Profgp1 | - | - | - | 0.08 | 0.05 | 0.06 | 0.13 | 0.06 | 0.02 |
| Rqrateg1 | - | - | - | 0.17 | 0.15 | 0.24 | -0.02 | 0.19 | 0.93 |
| Redqhld1 | - | - | - | 0.08 | 0.02 | 0.00 | 0.05 | 0.03 | 0.08 |
| ***Costs*** | | | | | | | | | |
| Prof | 0.07 | 0.05 | 0.13 | - | - | - | 0.14 | 0.18 | 0.43 |
| Redqrate | 0.05 | 0.14 | 0.71 | - | - | - | 0.02 | 0.04 | 0.73 |
| Redavq | 0.11 | 0.03 | 0.00 | - | - | - | | | |
| Profgp1 | - | - | - | 0.07 | 0.04 | 0.09 | 0.06 | 0.05 | 0.23 |
| Rqrateg1 | - | - | - | 0.13 | 0.14 | 0.36 | 0.02 | 0.18 | 0.91 |
| Redqhld1 | - | - | - | 0.10 | 0.02 | 0.00 | 0.09 | 0.03 | 0.00 |
| ***Profits*** | | | | | | | | | |
| Prof | 0.08 | 0.05 | 0.07 | - | - | - | 0.01 | 0.05 | 0.79 |
| Redqrate | 0.36 | 0.14 | 0.01 | - | - | - | 0.57 | 0.17 | 0.00 |
| Redavq | 0.08 | 0.03 | 0.01 | - | - | - | -0.02 | 0.04 | 0.57 |
| Profgp1 | - | - | - | 0.11 | 0.04 | 0.00 | 0.10 | 0.05 | 0.04 |
| Rqrateg1 | - | - | - | 0.15 | 0.13 | 0.24 | -0.16 | 0.17 | 0.35 |
| Redqhld1 | - | - | - | 0.07 | 0.02 | 0.00 | 0.09 | 0.03 | 0.00 |
| ***Productivity*** | | | | | | | | | |
| Prof | 0.05 | 0.04 | 0.19 | - | - | - | 0.01 | 0.05 | 0.86 |
| Redqrate | 0.03 | 0.13 | 0.80 | - | - | - | 0.10 | 0.16 | 0.55 |
| Redavq | 0.08 | 0.03 | 0.01 | - | - | - | -0.02 | 0.04 | 0.55 |
| Profgp1 | - | - | - | 0.05 | 0.03 | 0.11 | 0.06 | 0.04 | 0.13 |
| Rqrateg1 | - | - | - | 0.13 | 0.12 | 0.25 | 0.06 | 0.15 | 0.67 |
| Redqhld1 | - | - | - | 0.08 | 0.02 | 0.00 | 0.09 | 0.02 | 0.00 |

Source: ESS Face to Face Survey, probit specification.
Notes:
P>|z| indicates the probability that the coefficient is different from zero. A value of one indicates a zero probability a value of zero absolute certainty.

**Table 5.3 Summary of Multivariate Results: Product Market Strategies, including HRM variables**

| | 1 Bosworth *et al*. (2001) (Workforce Variables) | | | 2 Management Variables | | | 3 Workforce and Management Variables | | |
|---|---|---|---|---|---|---|---|---|---|
| | Coef. | Std Err. | P>\|z\| | Coef. | Std Err. | P>\|z\| | Coef. | Std Err. | P>\|z\| |
| ***New higher quality product*** | | | | | | | | | |
| Prof | -0.03 | 0.05 | 0.60 | - | - | - | -0.08 | 0.06 | 0.18 |
| Redqrate | 0.02 | 0.14 | 0.89 | - | - | - | -0.25 | 0.17 | 0.14 |
| Redavq | 0.04 | 0.03 | 0.28 | - | - | - | 0.06 | 0.04 | 0.21 |
| Profgp1 | - | - | - | 0.03 | 0.04 | 0.42 | 0.08 | 0.05 | 0.09 |
| Rqrateg1 | - | - | - | 0.21 | 0.12 | 0.10 | 0.41 | 0.16 | 0.01 |
| Redqhld1 | - | - | - | 0.01 | 0.02 | 0.46 | 0.00 | 0.03 | 0.93 |
| ***Increase quality of existing product*** | | | | | | | | | |
| Prof | 0.06 | 0.05 | 0.28 | - | - | - | 0.03 | 0.06 | 0.67 |
| Redqrate | -0.23 | 0.15 | 0.14 | - | - | - | -0.35 | 0.19 | 0.07 |
| Redavq | -0.03 | 0.04 | 0.40 | - | - | - | -0.06 | 0.05 | 0.21 |
| Profgp1 | - | - | - | 0.07 | 0.04 | 0.10 | 0.06 | 0.05 | 0.21 |
| Rqrateg1 | - | - | - | 0.03 | 0.14 | 0.82 | 0.24 | 0.18 | 0.17 |
| Redqhld1 | - | - | - | 0.02 | 0.02 | 0.48 | 0.03 | 0.03 | 0.25 |
| ***Increase efficiency with existing product*** | | | | | | | | | |
| Prof | -0.05 | 0.06 | 0.44 | - | - | - | -0.04 | 0.07 | 0.57 |
| Redqrate | 0.30 | 0.18 | 0.10 | - | - | - | 0.62 | 0.24 | 0.01 |
| Redavq | 0.03 | 0.05 | 0.49 | - | - | - | 0.03 | 0.06 | 0.64 |
| Profgp1 | - | - | - | -0.03 | 0.05 | 0.59 | -0.02 | 0.06 | 0.74 |
| Rqrateg1 | - | - | - | -0.05 | 0.16 | 0.78 | -0.44 | 0.22 | 0.04 |
| Redqhld1 | - | - | - | 0.01 | 0.03 | 0.74 | -0.01 | 0.04 | 0.84 |

Source: ESS Face to Face Survey, probit specification.

Notes:

P>|z| indicates the probability that the coefficient is different from zero. A value of one indicates a zero probability a value of zero absolute certainty.

**Table 5.4 Summary of Multivariate Results: Product Market Strategies, excluding HRM variables**

| | 1 Bosworth *et al.* (2001) (Workforce Variable) | | | 2 Management Variables | | | 3 Workforce and Management Variables | | |
|---|---|---|---|---|---|---|---|---|---|
| | Coef. | Std Err. | P>\|z\| | Coef. | Std Err. | P>\|z\| | Coef. | Std Err. | P>\|z\| |
| ***New higher quality product*** | | | | | | | | | |
| Prof | 0.01 | 0.04 | 0.81 | - | - | - | -0.04 | 0.05 | 0.43 |
| Redqrate | -0.04 | 0.12 | 0.75 | - | - | - | -0.27 | 0.15 | 0.08 |
| Redavq | 0.06 | 0.03 | 0.03 | - | - | - | 0.06 | 0.04 | 0.11 |
| Profgp1 | - | - | - | 0.04 | 0.03 | 0.25 | 0.07 | 0.04 | 0.09 |
| Rqrateg1 | - | - | - | 0.18 | 0.11 | 0.11 | 0.35 | 0.14 | 0.01 |
| Redqhld1 | - | - | - | 0.03 | 0.02 | 0.05 | 0.01 | 0.02 | 0.59 |
| ***Increase quality of existing product*** | | | | | | | | | |
| Prof | 0.15 | 0.04 | 0.00 | - | - | - | 0.13 | 0.05 | 0.01 |
| Redqrate | -0.01 | 0.03 | 0.84 | - | - | - | -0.06 | 0.04 | 0.17 |
| Redavq | -0.22 | 0.13 | 0.10 | - | - | - | -0.28 | 0.17 | 0.09 |
| Profgp1 | - | - | - | 0.08 | 0.04 | 0.02 | 0.03 | 0.04 | 0.44 |
| Rqrateg1 | - | - | - | 0.03 | 0.12 | 0.77 | 0.19 | 0.16 | 0.23 |
| Redqhld1 | - | - | - | 0.04 | 0.02 | 0.05 | 0.05 | 0.03 | 0.03 |
| ***Increase efficiency with existing product*** | | | | | | | | | |
| Prof | -0.10 | 0.05 | 0.05 | - | - | - | -0.07 | 0.06 | 0.23 |
| Redqrate | 0.01 | 0.04 | 0.74 | - | - | - | 0.02 | 0.05 | 0.70 |
| Redavq | 0.29 | 0.16 | 0.06 | - | - | - | 0.53 | 0.21 | 0.01 |
| Profgp1 | - | - | - | -0.05 | 0.04 | 0.20 | -0.05 | 0.05 | 0.35 |
| Rqrateg1 | - | - | - | -0.03 | 0.14 | 0.83 | -0.39 | 0.19 | 0.04 |
| redqhld1 | - | - | - | 0.00 | 0.02 | 0.94 | -0.02 | 0.03 | 0.54 |

Source: ESS Face to Face Survey, probit specification.
Notes:
P>|z| indicates the probability that the coefficient is different from zero. A value of one indicates a zero probability a value of zero absolute certainty.

**Table 5.5 Summary of Multivariate Results: Methods of Achieving Goals, including HRM variables**

| | 1 Bosworth *et al.* (2001) (Workforce Variable) | | | 2 Management Variables | | | 3 Workforce and Management Variables | | |
|---|---|---|---|---|---|---|---|---|---|
| | Coef. | Std Err. | P>\|z\| | Coef. | Std Err. | P>\|z\| | Coef. | Std Err. | P>\|z\| |
| ***Cost reduction*** | | | | | | | | | |
| Prof | -0.01 | 0.05 | 0.79 | - | - | - | -0.03 | 0.05 | 0.58 |
| Redqrate | -0.34 | 0.14 | 0.01 | - | - | - | -0.45 | 0.17 | 0.01 |
| Redavq | 0.00 | 0.03 | 0.98 | - | - | - | 0.03 | 0.04 | 0.53 |
| Profgp1 | - | - | - | 0.01 | 0.04 | 0.84 | 0.03 | 0.05 | 0.45 |
| Rqrateg1 | - | - | - | -0.01 | 0.02 | 0.76 | -0.02 | 0.03 | 0.40 |
| Redqhld1 | - | - | - | -0.07 | 0.12 | 0.58 | 0.15 | 0.16 | 0.32 |
| ***Introduction of New product*** | | | | | | | | | |
| Prof | -0.08 | 0.04 | 0.05 | - | - | - | -0.11 | 0.05 | 0.03 |
| Redqrate | -0.25 | 0.13 | 0.05 | - | - | - | -0.33 | 0.16 | 0.04 |
| Redavq | -0.06 | 0.03 | 0.06 | - | - | - | -0.07 | 0.04 | 0.10 |
| Profgp1 | - | - | - | 0.00 | 0.03 | 0.97 | 0.04 | 0.04 | 0.31 |
| Rqrateg1 | - | - | - | -0.02 | 0.02 | 0.36 | 0.01 | 0.02 | 0.60 |
| Redqhld1 | - | - | - | -0.06 | 0.11 | 0.57 | 0.14 | 0.15 | 0.33 |
| ***Introduction of New technology*** | | | | | | | | | |
| Prof | -0.08 | 0.04 | 0.08 | - | - | - | -0.10 | 0.05 | 0.05 |
| Redqrate | -0.16 | 0.12 | 0.19 | - | - | - | -0.22 | 0.16 | 0.15 |
| Redavq | 0.00 | 0.03 | 0.88 | - | - | - | 0.02 | 0.04 | 0.61 |
| Profgp1 | - | - | - | 0.01 | 0.03 | 0.85 | 0.04 | 0.04 | 0.34 |
| Rqrateg1 | - | - | - | -0.02 | 0.02 | 0.40 | -0.02 | 0.02 | 0.42 |
| Redqhld1 | - | - | - | -0.01 | 0.11 | 0.92 | 0.06 | 0.14 | 0.67 |
| ***New working practices*** | | | | | | | | | |
| Prof | 0.08 | 0.04 | 0.05 | - | - | - | 0.04 | 0.05 | 0.39 |
| Redqrate | -0.35 | 0.12 | 0.01 | - | - | - | -0.48 | 0.16 | 0.00 |
| Redavq | -0.04 | 0.03 | 0.18 | - | - | - | -0.04 | 0.04 | 0.26 |
| Profgp1 | - | - | - | 0.10 | 0.03 | 0.00 | 0.07 | 0.04 | 0.07 |
| Rqrateg1 | - | - | - | 0.00 | 0.02 | 0.99 | 0.01 | 0.02 | 0.62 |
| Redqhld1 | - | - | - | 0.03 | 0.11 | 0.76 | 0.21 | 0.14 | 0.14 |

Source: ESS Face to Face Survey, ordered probit specification.
Notes:

P>|z| indicates the probability that the coefficient is different from zero. A value of one indicates a zero probability a value of zero absolute certainty.

**Table 5.6 Summary of Multivariate Results: Methods of Achieving Goals, excluding HRM variables**

| | 1 Bosworth *et al.* (2001) (Workforce variables) | | | 2 Management Variables | | | 3 Workforce and Management Variables | | |
|---|---|---|---|---|---|---|---|---|---|
| | Coef. | Std Err. | P>\|z\| | Coef. | Std Err. | P>\|z\| | Coef. | Std Err. | P>\|z\| |
| ***Cost reduction*** | | | | | | | | | |
| Prof | -0.02 | 0.04 | 0.69 | - | - | - | -0.04 | 0.04 | 0.36 |
| Redqrate | -0.22 | 0.12 | 0.06 | - | - | - | -0.33 | 0.15 | 0.03 |
| Redavq | -0.01 | 0.03 | 0.70 | - | - | - | 0.01 | 0.04 | 0.80 |
| Profgp1 | - | - | - | 0.01 | 0.03 | 0.66 | 0.05 | 0.04 | 0.22 |
| Rqrateg1 | - | - | - | -0.03 | 0.11 | 0.81 | 0.14 | 0.14 | 0.33 |
| Redqhld1 | - | - | - | -0.01 | 0.02 | 0.69 | -0.02 | 0.02 | 0.48 |
| ***Introduction of New product*** | | | | | | | | | |
| Prof | -0.03 | 0.04 | 0.46 | - | - | - | -0.06 | 0.04 | 0.16 |
| Redqrate | -0.25 | 0.11 | 0.02 | - | - | - | -0.36 | 0.14 | 0.01 |
| Redavq | -0.01 | 0.03 | 0.65 | - | - | - | -0.04 | 0.03 | 0.26 |
| Profgp1 | - | - | - | 0.03 | 0.03 | 0.34 | 0.05 | 0.04 | 0.14 |
| Rqrateg1 | - | - | - | -0.02 | 0.10 | 0.86 | 0.22 | 0.13 | 0.10 |
| Redqhld1 | - | - | - | 0.01 | 0.02 | 0.41 | 0.04 | 0.02 | 0.10 |
| ***Introduction of New technology*** | | | | | | | | | |
| Prof | -0.02 | 0.03 | 0.61 | - | - | - | -0.06 | 0.04 | 0.15 |
| Redqrate | -0.21 | 0.11 | 0.05 | - | - | - | -0.26 | 0.14 | 0.06 |
| Redavq | 0.02 | 0.03 | 0.39 | - | - | - | 0.03 | 0.03 | 0.43 |
| Profgp1 | - | - | - | 0.04 | 0.03 | 0.18 | 0.06 | 0.03 | 0.07 |
| Rqrateg1 | - | - | - | -0.03 | 0.10 | 0.77 | 0.09 | 0.13 | 0.50 |
| Redqhld1 | - | - | - | 0.01 | 0.02 | 0.56 | 0.00 | 0.02 | 0.91 |
| ***New working practices*** | | | | | | | | | |
| Prof | 0.08 | 0.03 | 0.02 | - | - | - | 0.04 | 0.04 | 0.38 |
| Redqrate | -0.34 | 0.11 | 0.00 | - | - | - | -0.45 | 0.14 | 0.00 |
| Redavq | 0.01 | 0.03 | 0.77 | - | - | - | -0.01 | 0.03 | 0.71 |
| Profgp1 | - | - | - | 0.10 | 0.03 | 0.00 | 0.08 | 0.03 | 0.02 |
| Rqrateg1 | - | - | - | 0.01 | 0.10 | 0.94 | 0.20 | 0.13 | 0.11 |
| Redqhld1 | - | - | - | 0.02 | 0.02 | 0.11 | 0.03 | 0.02 | 0.18 |

Source: ESS Face to Face Survey, ordered probit specification.

Notes:

P>|z| indicates the probability that the coefficient is different from zero. A value of one indicates a zero probability a value of zero absolute certainty.

***Table 5.7 Summary of Multivariate Results: Performance***

| | 1 Bosworth *et al.* (2001) (Workforce Variables) | | | ***2*** Management Variables | | | ***3*** ***Workforce and*** Management Variables | | |
|---|---|---|---|---|---|---|---|---|---|
| | Coef. | Std Err. | P>\|z\| | Coef. | Std Err. | P>\|z\| | Coef. | Std Err. | P>\|z\| |
| ***Self selected performance*** | | | | | | | | | |
| Prof | -0.15 | 0.05 | 0.00 | - | - | - | -0.09 | 0.05 | 0.08 |
| Redqrate | 0.10 | 0.13 | 0.45 | - | - | - | 0.10 | 0.16 | 0.54 |
| Redavq | 0.02 | 0.03 | 0.53 | - | - | - | 0.07 | 0.04 | 0.11 |
| Profgp1 | - | - | - | -0.11 | 0.03 | 0.00 | -0.08 | 0.04 | 0.05 |
| Rqrateg1 | - | - | - | -0.03 | 0.12 | 0.78 | -0.12 | 0.16 | 0.45 |
| Redqhld1 | - | - | - | -0.03 | 0.02 | 0.16 | -0.05 | 0.03 | 0.05 |
| ***Sales growth*** | | | | | | | | | |
| Prof | -0.98 | 1.44 | 0.50 | - | - | - | -0.46 | 1.69 | 0.79 |
| Redqrate | 3.20 | 4.13 | 0.44 | | - | - | 5.23 | 5.19 | 0.31 |
| Redavq | -2.29 | 1.05 | 0.03 | - | - | - | -2.28 | 1.36 | 0.09 |
| Profgp1 | - | - | - | -1.00 | 1.08 | 0.36 | -0.87 | 1.40 | 0.53 |
| Rqrateg1 | - | - | - | -1.15 | 3.76 | 0.76 | -3.61 | 4.97 | 0.47 |
| Redqhld1 | - | - | - | -0.97 | 0.61 | 0.11 | -0.13 | 0.82 | 0.88 |
| ***Relative sales growth category*** | | | | | | | | | |
| Prof | -0.10 | 0.04 | 0.03 | - | - | - | -0.07 | 0.05 | 0.21 |
| Redqrate | 0.19 | 0.13 | 0.14 | - | - | - | 0.16 | 0.16 | 0.31 |
| Redavq | -0.05 | 0.03 | 0.14 | - | - | - | -0.03 | 0.04 | 0.44 |
| Profgp1 | - | - | - | -0.05 | 0.03 | 0.11 | -0.05 | 0.04 | 0.21 |
| Rqrateg1 | - | - | - | 0.06 | 0.12 | 0.60 | 0.01 | 0.15 | 0.96 |
| Redqhld1 | - | - | - | -0.03 | 0.02 | 0.17 | -0.02 | 0.02 | 0.45 |
| ***Future sales growth category*** | | | | | | | | | |
| Prof | 0.05 | 0.04 | 0.21 | - | - | - | 0.05 | 0.05 | 0.28 |
| Redqrate | 0.30 | 0.12 | 0.02 | - | - | - | 0.25 | 0.15 | 0.10 |
| Redavq | 0.03 | 0.03 | 0.38 | - | - | - | 0.08 | 0.04 | 0.04 |
| Profgp1 | - | - | - | 0.01 | 0.03 | 0.65 | 0.00 | 0.04 | 0.94 |
| Rqrateg1 | - | - | - | 0.07 | 0.11 | 0.52 | -0.02 | 0.15 | 0.91 |
| Redqhld1 | - | - | - | -0.02 | 0.02 | 0.22 | -0.05 | 0.02 | 0.03 |

Source: ESS Face to Face Survey, OLS(Sales) or ordered probit specification.
Notes:
P>|z| indicates the probability that the coefficient is different from zero. A value of one indicates a zero probability a value of zero absolute certainty.

**Table 5.8 Summary of Multivariate Results : Performance, excluding HRM variables**

| | 1 Bosworth *et al.* (2001) (Workforce Variables) | | | 2 Management Variables | | | 3 Workforce and Management Variables | | |
|---|---|---|---|---|---|---|---|---|---|
| | Coef. | Std Err. | P>\|z\| | Coef. | Std Err. | P>\|z\| | Coef. | Std Err. | P>\|z\| |
| ***Self selected performance*** | | | | | | | | | |
| Prof | -0.16 | 0.04 | 0.00 | - | - | - | -0.11 | 0.04 | 0.01 |
| Redqrate | 0.06 | 0.11 | 0.59 | - | - | - | 0.08 | 0.15 | 0.57 |
| Redavq | 0.01 | 0.03 | 0.69 | - | - | - | 0.04 | 0.04 | 0.26 |
| Profgp1 | - | - | - | -0.13 | 0.03 | 0.00 | -0.09 | 0.04 | 0.02 |
| Rqrateg1 | - | - | | -0.02 | 0.11 | 0.83 | -0.09 | 0.14 | 0.53 |
| Redqhld1 | - | - | - | -0.02 | 0.02 | 0.36 | -0.03 | 0.02 | 0.18 |
| ***Sales growth*** | | | | | | | | | |
| Prof | -0.84 | 1.07 | 0.43 | - | - | - | -0.82 | 1.25 | 0.51 |
| Redqrate | 1.82 | 3.27 | 0.58 | - | - | | 2.88 | 4.19 | 0.49 |
| Redavq | -1.51 | 0.80 | 0.06 | - | - | - | -1.39 | 1.06 | 0.19 |
| Profgp1 | - | - | - | -0.60 | 0.85 | 0.48 | -0.21 | 1.08 | 0.85 |
| Rqrateg1 | - | - | - | -0.46 | 3.00 | 0.88 | -1.68 | 3.95 | 0.67 |
| Redqhld1 | - | - | - | -0.72 | 0.48 | 0.13 | -0.12 | 0.65 | 0.85 |
| ***Relative sales growth category*** | | | | | | | | | |
| Prof | -0.10 | 0.04 | 0.00 | - | - | - | -0.07 | 0.04 | 0.08 |
| Redqrate | 0.09 | 0.11 | 0.39 | - | - | - | 0.13 | 0.14 | 0.34 |
| Redavq | -0.03 | 0.03 | 0.20 | - | - | - | -0.02 | 0.04 | 0.50 |
| Profgp1 | - | - | - | -0.04 | 0.03 | 0.13 | -0.04 | 0.04 | 0.29 |
| Rqrateg1 | - | - | - | 0.00 | 0.10 | 1.00 | -0.05 | 0.13 | 0.68 |
| Redqhld1 | - | - | - | -0.02 | 0.02 | 0.26 | -0.01 | 0.02 | 0.56 |
| ***Future sales growth category*** | | | | | | | | | |
| Prof | 0.03 | 0.04 | 0.35 | - | - | - | 0.04 | 0.04 | 0.36 |
| Redqrate | 0.21 | 0.11 | 0.06 | - | - | - | 0.15 | 0.14 | 0.27 |
| Redavq | -0.01 | 0.03 | 0.81 | - | - | - | 0.04 | 0.03 | 0.22 |
| Profgp1 | - | - | - | 0.01 | 0.03 | 0.78 | 0.00 | 0.04 | 0.96 |
| Rqrateg1 | - | - | - | 0.04 | 0.10 | 0.71 | -0.02 | 0.13 | 0.90 |
| Redqhld1 | - | - | - | -0.03 | 0.02 | 0.09 | -0.04 | 0.02 | 0.04 |

Source: ESS Face to Face Survey, OLS(Sales) or ordered probit specification.

Notes:

P>|z| indicates the probability that the coefficient is different from zero. A value of one indicates a zero proba value of zero absolute certainty.

## 5.8 Conclusions

The multivariate analysis suggests that there is evidence of a link between the minimum qualification of managers and the setting of various high level goals or targets, including cost reduction, profits and productivity. The results do not suggest a role for managerial proficiency in setting such goals.

The results, with regard to the influence of management adoption of product market strategies were largely in line with the earlier cross-tabular findings. In particular, higher levels of qualification and a high proportion of managers holding the qualification appear to increase the probability of adopting both product orientated strategies of introducing new, higher quality products and improving the quality of existing products, whilst having a negative impact on increasing efficiency with existing products. What was somewhat surprising was that the reverse relationship emerges with regard to management proficiency with the product goals associated with lower proficiency and the efficiency goal associated with higher proficiency. One reason for this result might be that causality runs the other way in the case of proficiency. In other words, it is less easy to be successful for managers intent on product innovation than for those focusing upon cost savings and process innovation.

In the analysis of the methods adopted by establishments to achieve their product market strategies and, thereby, their higher level goals, there is little, if any, relationship between the management variables and the methods adopted. In the light of earlier cross-tabular descriptive work on the methods adopted (Bosworth 2000) this result does not come as a great surprise, as the methods are fairly generic across establishments and particular methods are not closely linked to any particular strategy or goal. Indeed, establishments often adopted two or three methods on average for any particular strategy or goal. However, there are some consistencies between the results for the methods and the earlier results for goals. In particular, the generally positive coefficient on management qualifications – consistent with expectations, and the positive coefficient on the perceived management proficiency – when a negative coefficient was expected. Again, this raises the question of whether if the direction of causality with respect to proficiency runs in the other direction, with attempts to ‘do more’ (i.e. set more demanding goals) resulting in lower perceived efficiency.

As noted at the beginning of this chapter, there are a number of potential advantages in using a multivariable approach. In particular, this enables the analysis to control for the effects of other potentially important explanatory variables. However, it does not overcome some of the difficulties in assessing establishment performance (i.e. ensuring that the performance measure is consistent with the goals the firm sets itself), as noted in a number of places in the present report.

There is some evidence for a link between managerial proficiency and performance. However, there is little evidence for a direct link with qualifications. This may be because so many managers have acquired their skills in other ways and that qualifications is a poor measure of ability when looked at in such an aggregate way.

It appears that the main effects of more able managers on performance may show up through superior HRM (and other work practices) identified in Bosworth *et al.* (2001). The present results suggest that there are only modest additional effects (at least on goals) not captured by those variables.

While it is possible to show that perceived management proficiency is positively related to performance, the results suggest that this is at least a two-way relationship. In other words, the proficiency may be in part, judged on the performance of the establishment. More worrying is that, on balance, the link between management qualifications and establishment performance often appears perverse. One possible explanation for this is that more qualified managers disproportionately set higher aspirations for the performance of the establishment which are significantly harder to achieve. This raises issues to do with latent skill gaps which lie beyond the scope of this report but which were partially addressed in Bosworth *et al.* (2001).

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# *ANNEXES*

A General Methodological Approach (Econometrics)
B Definition and Derivation of variables

## Annex A. General Methodological Approach to Multivariate Analysis

### A.1 Introduction

The aim of the multivariate, econometric analysis is to move beyond the purely descriptive and to focus on cause and effect. However, this is more easily said than done. The present analysis builds upon that in Bosworth *et al*. (2001), to which the interested reader is referred for more detailed discussion.

### A.2 Technical Specification

A number of the specifications for both the explanation of goals and performance are best estimated using probits or ordered probits rather than ordinary least squares (OLS) methods.

Probits are useful when one is concerned with explaining the probability of making certain choices (e.g. choice of goal or strategy). These feature strongly in the analysis in Chapter 5 (e.g Tables 5.1-5.4).

Ordered probits are particularly suited to the analysis of Likert variables. Such variables give a ranking (or ordering) of preference or importance. In such rankings, it is known that (for example) that if the respondent reports say 6 (indicating the extremely important category) this is more important than saying 1 (the not at all important category). The use of OLS techniques, however, imposes a cardinal rather than ordinal interpretation. The difference between a score of 1 and 2 is assumed to be the same as the difference between a score of 5 and 6. This clearly need not be the case in a Likert scale, where the respondent may impose any form of relationship between the categories. The ordered probit looks at the probability that the respondents will report a 6 rather than a 5, or a 2 rather than a 1, bearing in mind that 6 is ranked higher than 5 is ranked higher than 1 (etc). These methods are used for both some of the performance regressions and some of the choice \of goals or strategies where Likert type scales are used rather then a simple yes or no (see Tables 5.5-5.8).

The results in Chapter 5 present just a selection of results from the multivariate analysis carried out. In particular they report just the coefficients relating to proficiency and qualifications of either managers or the whole work force. Full details of the econometric results are available from the authors on request. These include the coefficients for all the various control variables included, in addition to those reported in Chapter 5.

## ANNEX B: Definition and Derivation of Variables

### B.1 Background

The ESS dataset contains a wide range of interesting and potentially useful variables, which can be included in the econometric specifications of goals and performance. In what follows the original survey questions are referred to using the shorthand Qxy, where Q refers to a question x the section of the questionnaire and y the number. A copy of the full questionnaire can be found in Bosworth *et al*. (2001).

To simplify the exposition, the potential variables are allocated to a number of broad headings, for example, *structural variables*, which includes enterprise size and sector. Thus, in broad terms, the empirical specification for the measures of goals (for example) can then be written as:

| | | |
|---|---|---|
| Probability of choosing a particular goal = | ***G*** | [organisational structure (sector, size), nature of the market (i.e. market structure and the nature of the product), organisational skills and competencies (including past recruitment difficulties, past skill gaps, etc), HR policies and high level work practices, goals and their methods of achievement (i.e. product strategy), external environment (i.e. derived post-coded data relating to spatial labour market variables) etc. ***PLUS the qualifications and proficiency of the workforce and managers in particular***] |

### B.2 Measures of Goals, Strategies and Methods of Achieving Them

The routing embedded in the questionnaire creates potential problems in constructing a meaningful set of variables for goals and strategies across the whole sample of firms. Annex D in Bosworth *et al*. (2001) sets out a procedure that, in practice, overcomes these problems.

In the multivariate analysis a distinction is made between three different pieces of information used in the survey:

- "high level goals"
- "product market strategies"
- "methods used to achieve the product market strategies

***Goals****:* This term is used to refer to the high level goals or targets of the establishment. These may include:

- Targets for sales, fees, revenues, turnover, income
- Meeting budgets/costs, cost management
- Profitability/Profit
- Productivity
- Number of customers, etc
- Quality of products or services

The "high level goals" information comes from QB32/33 (which specifies sales, costs, profits and productivity, with no other choice) and QB34/35 (which includes the above, but also allowed the respondent to specify other "performance measures or targets").

***Product Market Strategy***: This is the term used to describe general methods used to achieve these targets or goals. These include:

- Introduce new higher quality products or services
- Increase quality of existing products or services
- Increase efficiency
- Move towards more basic products or services

The "product market strategies" information comes from QC3(B&C), but also uses QC13, QC18 [current] and QC22(B&C) [past three years].

***Methods used to achieve the product strategies***

Establishments report various methods used to pursue these goals and strategies. This include:

- cost reduction,
- new products and services,
- new technologies
- new work practices

The "method of achieving product market strategies" come from QC4, QC14[current] and QC23 [past three years].

## B.3 Measures of Performance

The construction of the performance variables (and, hence, the econometric analysis) has been restricted to just the private sector because of the potential differences in goals between the public and private sectors[10]. A variety of different performance measures, have been examined.[11]

They include:

(i) employment growth;
(ii) sales (or some other measure of activity) compared to sector average[12];
(iii) market share;
(iv) the self-defined "best indicator of performance";

[10] Some of the choices of this type require the use of sample selection techniques to check for possible sample selection bias. However, it is possible to begin with the whole sample or relevant sub-samples and then to re-estimate separately (i.e. undertake separate regressions for (a) the private sector and (b) the public sector, where sample sizes allow).

[11] A complete list is summarised in Table B.1 of Bosworth *et al*. (2001).

[12] By controlling for the sector, the specification will effectively estimate performance relative to the sector as a whole.

## B.4 Other Control Variables

This section lists the main control variables used in the multivariate analysis. Complete details may be found in Bosworth *et al*. (2001).

### *B.4.1 Structural Variables*

***Size:*** It is clear that, other things being equal, companies of different sizes may perform differently [QS3]. Several strands of the literature are relevant, depending on the choice of performance measure. For example, Schumpeterian theory argues that larger (and more monopolistic enterprises are likely to be the source of major innovation activity. A further example is that Gibrat's Law which argues that the rate of growth of companies (i.e. rate of sales growth) is independent of company size.

***Company structure:*** There are several other organisational structure variables that are potentially interesting, including whether the enterprise is part of an enterprise group, G(0,1) [QA2]. One might expect, for example, that enterprises that are part of a group may have access to advice and perhaps even a transfer of staff between different parts of the group that will make goals easier to achieve. This might be affected by whether the group is diversified or not, GD(0,1) [QA4]. The empirical literature suggests that, insofar as diversification is related to a lack of focus, this might have a negative influence on key performance measures. Finally, there is the issue of domestic *versus* foreign ownership [QA6]. A significant part of FDI into the UK comes from countries such as the USA and Japan, which are often associated with high levels of management quality. It is possible, therefore, that this might be reflected in the performance of foreign-owned UK companies. Finally, there is the type of company (i.e. public limited, …, charity), which may drive the enterprise goals and, thereby, their performance according to different measures [QA10].

***Other indicators:*** The ESS contains information on a variety of other structural variables. They include: (i) proportion working part-time; (ii) whether the enterprise is a head office (or not); (iii) the date of establishment of the enterprise (which may reflect learning effects and/or the age of plant and machinery); (iv) sector, where different sectors may experience different degrees of technological opportunity, etc (see below for a broader view of the role of sector).

### *B.4.2 Nature of the Market*

***Market Structure:*** Much of Industrial Economics is bound up with the idea that the behaviour and performance of firms in a particular sector is bound up with size (see above) and market structure. Here market structure is intended to represent the degree of market power of enterprises, with markets with many competing firms, for example, earning lower profits [QB12, QB13]. The Survey also collects information about the degree to which the enterprise faces low cost foreign competition [QC1C].

***Strength and Growth of the Market:*** The rate of growth of firms will tend to be higher the faster the growth in the market [QB14]. The nature of the

product market also includes such indicators as: (i) past market strength; (ii) future market strength; (iii) change in market strength [QC3A, QC22A].

***Export versus Domestic Markets:*** It is clear that the high value of sterling may have affected the performance of firms operating in export markets and, indeed, the effect may be greater the higher the proportion of the enterprise's output that is exported.[13] There is also a question asking whether the firm is involved in international, national, etc. markets

***Sector:*** Sector is potentially important, although, like size, this may mask a complex of factors – certainly not just product market, but also the processes/technologies, etc that are used.

**Details of Industrial Control Variables**

SD1 "Mining and quarrying".
SD3 "Food, beverages, tobacco".
SD4 "Textile clothing leather".
SD5 "Wood, paper, printing".
SD6 "Petroleum, chemicals, rubber, mineral".
SD7 "metal working".
SD8 "machinery, manufacturing".
SD9 "Transport, equipment".
SD10 "Other manufacturing".
SD11 "Electricity and water supply".
SD12 "Construction".
SD13 "Wholesale, retail, repair".
SD14 "hotels and restaurants".
SD15 "transport and communication".
SD16 "financial intermediation".
SD18 "computer and related".
SD19 "other business services".
SD21 "education".
SD22 "health and social work".
SD23 "other services".

[13] Note that causality is unlikely to be entirely in this direction, as the past high value of sterling may be a determinant of the extent of export *versus* domestic activity.

***Nature of the Product and Competition:*** The degree to which enterprises focus on particular goals and, indeed, the scope available to achieve certain goals may be affected by the nature of the product. For example, in the case of "standard products" that compete on price alone, the enterprise may focus much more on process innovation and cost reduction as a mechanism for achieving good performance. Those which compete mainly on quality may concentrate on product improvement and new product launch. The scope for growth, for example, might depend upon whether the enterprise operates in mass or niche markets. There are a whole range of potential variables to reflect these possible effects, including: whether the product is: (i) a standard quality product or service; (ii) high quality and individually tailored; (iii) price elastic; (iv) aimed at mass markets [QC1A,B,D,E]

### *B.4.3 Organisational Skills and Competencies*

While the ESS has a greater focus on skill deficiencies than actual, existing competencies, nevertheless, it contains a range of questions that may help to explain enterprise performance.
Thus, the survey includes a wide range of potentially relevant variables. An example of the actual competence levels includes the variables on skills proficiency scores [QF1]. While an example of the skills deficiencies would include the existence and extent of hard-to-fill vacancies [QE9, QE10].

### *B.4.4 Levels of activity in the enterprise*

These include:

- Sales growth
- Sales growth category
- Relative sales growth
- Future sales growth
- Future sales growth category
- Change in sales growth
- Capacity utilization

In most cases squared terms are also included in the regressions to allow for non-linearities in the relationships.

### *B.4.5 HR Policies and High-level Work Practices*

The survey contains a large number of variables relating to internal HR policies, although some of these are only asked of sub-groups within the sample (i.e. those undertaking recruitment activity). Nevertheless, most of the measures reported in the HR literature are present in the ESS and can be used in the construction of both individual high-level work practice variables and, in combination, to isolate high-level work practice systems. The survey includes a variety of measures, such as: off-the-job training; on-the-job training; formal analysis of skill needs; existence of employee development and training plans; staff appraisal; etc. Further discussion of these variables is contained in Annex C of Bosworth *et al*. (2001).

### *B.4.6 Technology*

The ESS includes a number of measures of the enterprise's involvement in innovation and technological change. These can be regarded as indicators of performance as well as explanatory variables.

In addition it is possible to use more detailed industry dummies to define particular sectors as "high" or "low" tech. The present set of results does not include either of these sets of variables.

### *B.4.7 Occupational/qualification structure*

There is a considerable amount of information in ESS about the occupational and qualification structure of the existing workforce. This includes estimates of:

Occupational composition of employment as measured by the percentage of staff employed within each of the 9 Major Groups of the Standard Occupational Classification [D12].
Single manager establishments [D12].
The average level of qualifications required by staff [D12, D13].
The actual average level of qualifications held by staff [D13, D14].
The actual average level of qualifications held by staff as a ratio of the current average level of qualifications required [D12, D13, D14].

### *B.4.8 Internal labour market indicators*

There is also a considerable amount of information about the state of the internal labour market within the enterprise in ESS. This includes:

Wastage rates as measured by the number of people who have left the establishment in the previous 12 months as a percentage of those currently employed [D1, E1].
Wage change compared to others [E13, D12].
The employment weighted average proficiency of employees [F1].

### *B.4.9 External, Local Labour Market Conditions*

Given that local labour market conditions can have an important bearing on skill problems, a number of indicators have been matched to the Employers' Survey to represent spatial variations in external labour market conditions (based on post-coded data from sources such as NOMIS). While the local labour market is likely to have an important influence on recruitment difficulties, it can also be argued that it might also impact on the skills deficiencies and gaps within enterprises and, thereby, on their performance. A full listing of the variables that have been matched on is provided in Annex E of Bosworth *et al.* (2001).[14]

[14] It should also be recognised that the accumulation of enterprises in a given local labour market is likely to affect the employment level, unemployment, skills level, etc. However, it seems unlikely that the interaction can be tested without a panel data set of results of the present type.