

## **Skills Matter:**

**A SYNTHESIS OF RESEARCH  
ON THE EXTENT, CAUSES,  
AND IMPLICATIONS OF  
SKILL DEFICIENCIES**

# Skills Matter: A SYNTHESIS OF RESEARCH ON THE EXTENT, CAUSES, AND IMPLICATIONS OF SKILL DEFICIENCIES

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# PREFACE

This report provides a synthesis of the Skills Task Force (STF) Employers Skill Survey undertaken in 1999 (ESS1999). It forms part of a wider investigation into the extent, causes, and implications of skill deficiencies, sponsored by Department for Education and Skills (formerly the Department for Education and Employment). This research has been carried out under the direction of Terence Hogarth and Rob Wilson at the Institute for Employment Research (IER) at the University of Warwick.

Further reports in this series provide more in-depth analysis and discussion of other elements of the project. These include a statistical report based on the survey, a series of complementary, in depth, case studies of individual sectors, spatial analysis, and econometric analysis. Further information can be obtained from:

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The specific Skills Task Force publications this report is based upon are:

Employer Skill Survey: Existing Survey Evidence and its use in the analysis of skill deficiencies  
Employer Skill Survey: Statistical Report  
Employer Skill Survey: Banking Finance and Insurance  
Employer Skill Survey: Engineering  
Employer Skill Survey: Food Manufacturing  
Employer Skill Survey: Health and social care  
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# GLOSSARY

The first report of the National Skills Task Force - Towards a National Skill Agenda - drew attention to the need to be clear about the distinction between external recruitment difficulties and skill gaps. Building on this terminology the present study has attempted to clarify the meaning of skill deficiencies. The terms used in the report are described below.

**Hard-to-fill vacancies** are those vacancies which the respondent classifies as hard-to-fill.

**Skill-shortage vacancies** are defined as hard-to-fill vacancies which were skill related where at least one of the following causes were cited by the respondent: low number of applicants with the required skills, lack of work experience the company demands, or lack of qualifications the company demands.

**Recruitment problems** or difficulties refer to the sum of hard-to-fill and skill-shortage vacancies.

**Skill gaps**, or internal skill gaps, refer to the extent to which employers perceive their employees' current skills as insufficient to meet current business objectives. Respondents were asked to comment on an occupation-by-occupation basis about the extent to which employees were 'fully proficient at their current job'. 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?

Using the answers to the questions on skill proficiency it is possible to derive various alternative measures of the incidence and intensity of internal skill gaps:

- these may be establishment based providing an estimate of the total number or proportion of establishments reporting that fewer than 'all' or 'nearly all' existing staff were fully proficient in any occupation;
- alternatively they may be employee based giving an overall estimate of the number of employees affected. This is based on applying estimates of the proportions of employment in each occupation affected and summing over all occupations.

A further distinction can be made between narrow and broad definitions:

- using narrow definitions, **internal skill gaps** are said to exist where fewer than nearly all staff are considered to be fully proficient
- a broader definition is where fewer than all staff are not considered to be fully proficient.

This broader definition is referred to as skill gaps (broader definition) or a **proficiency shortfall**.

**Unreported skill gaps** where employers are unaware that skill gaps exist or they may choose not to report vacancies (for instance, if they feel that there is no hope of resolving them).

**Latent skill gaps** emerge where employers simply do not perceive that they have a problem, because they are not fully aware of skills that might be needed to optimise their companies' performance.

**Skill deficiencies** refer to the sum of skill gaps, hard-to-fill vacancies and latent skill gaps.

**Establishment based** measures provide an estimate of the total number of establishments reporting a given skill deficiency.

**Employee based** measures weight establishment measures by the total number of employees at the establishment.

**Technical skills** refer to specific skills needed to work within an occupation, and include advanced IT/software skills and other technical/practical skills.

**Generic skills** are transferable and can be used across occupations and refer to skills such as basic computer literacy, communication skills, customer handling skills, team working, problem solving, management skills, numeracy and literacy skills.

# EXECUTIVE SUMMARY

## KEY MESSAGE

There is a tendency in some quarters to regard skill deficiencies simply as a consequence of the business cycle. The evidence does not support such a conclusion and points to more complex underlying causes and more serious consequences. It is clear that skill deficiencies are widespread across organisations. Many employers reported that they experienced recruitment problems related to the availability of skills, and/or that their existing workforce was not proficient enough to meet the needs of the business. Moreover, it is demonstrated that, where they exist, such problems have had a significant impact on organisations' economic performance, both with regard to employers' immediate perceptions and their effect on the longer-term performance of business. In aggregate, this has important implications for the overall performance of the economy and national wealth. In this sense there is a very real skills problem: skills matter.

## A SKILLS PROBLEM?

There has been much discussion over the course of the past century about the relatively poor productivity performance of the UK labour force compared to its main competitors. Analysis and prescription have covered many possible causes but a significant body of evidence has indicated that skill formation in the UK was less well developed than in countries such as Germany and that may have accounted for productivity differences. More recently, concerns have been aired about the emergence of a low-skill equilibrium where employers, in general, compete in low-value added markets, consequently demand relatively low-level skills from their employees which, ultimately, is reflected in the supply of skills.

## EMPLOYERS SKILL SURVEY 1999

The Employers Skill Survey (ESS1999) marks the single, largest investigation into England's skill needs ever. It was undertaken in 1999 to meet the needs of the Skills Task Force (STF) for information on the extent, causes and implications of skill deficiencies. A number of methodological advances in the study of skill deficiencies have resulted from the research, such as the measurement of internal and latent skill gaps.

There were several components to the study:

- i. an analysis of the existing survey evidence on skill deficiencies;
- ii. a questionnaire survey of 27,000 establishments to ascertain the extent of skill deficiencies (23,000 telephone and 4,000 face-to-face interviews with employers);
- iii. Around 100 case studies of establishments across a range of sectors designed to investigate more intensively the relationship between skill deficiencies and economic performance;
- iv. spatial analysis based on the questionnaire survey data of the location of skill deficiencies; and

- v. econometric analysis of the questionnaire survey data to definitively address: (i) why skills deficiencies arise; and (ii) the consequences of such deficiencies for economic performance.

This document provides a synthesis of these five elements. On the basis of this evidence it concludes that there is a skills problem and sets out its nature and extent.

## DEFINING SKILL DEFICIENCIES

Three different kinds of skill deficiency have been identified:

- external **recruitment difficulties**, focusing in particular on hard-to-fill vacancies (those vacancies which the respondent classified as hard-to-fill) and skill-shortage vacancies (defined as hard-to-fill vacancies which were skill related where at least one of the following causes was cited: low number of applicants with the required skills, lack of work experience or qualifications the company demands);
- **internal skill gaps**, which refer to the extent to which employers perceived their employees' current skills as insufficient to meet current business objectives: that is, the extent to which employees were considered 'fully proficient at their current job';
- **latent skill gaps**, which are based upon some concept of ideal or optimal behaviour or performance. Given the current goals, behaviour and, hence, performance of an establishment, skill deficiencies may not be perceived or observed. Respondents may simply not recognise they have a problem, because they are not fully aware of the skills that might be needed to optimise their companies' performance.

The term skill deficiencies is used to refer to all of the above.

## PERSISTENT SKILL DEFICIENCIES

Skill deficiencies are not simply a consequence of the business cycle. In fact, the evidence points to skill deficiencies influencing the cycle. Time series data reveal a 'stop-go' sequence where increases in labour demand result in an increase in skill constraints on production, which leads to a slowdown in output, resulting in a decrease in employment, this consequently reduces the skill constraint on production and allows output to increase, followed by an increase in labour demand, and the cycle starts over again.

## THE EXTENT OF SKILL DEFICIENCIES

### Recruitment Problems

The survey evidence demonstrates that the incidence of recruitment difficulties was widespread:

- over 30 per cent of all establishments reported vacancies;
- 16 per cent of establishments reported hard-to-fill vacancies; and
- 8 per cent reported skill-shortage vacancies.

The grossed up estimate of the total number of vacancies reported by all the establishments in England was approximately 560 thousand. The estimated total number of hard-to-fill and skill-shortage vacancies was around 250 thousand and 100 thousand respectively.

Examination of the spatial variations in skill-shortage vacancies reveals that there was some evidence for a 'north-south divide', with a higher incidence of skill-shortage vacancies in the south of England. This would appear to be directly related to the more buoyant economic conditions in the south.

The survey reveals that the main occupations associated with skill-shortage vacancies were:

- craft and skilled trades (22 per cent of the total);
- associate professional occupations (17 per cent);
- sales occupations (13 per cent); and
- personal service occupations (11 per cent).

The main industries associated with skill-shortage vacancies were:

- the craft-intensive construction (12 per cent of the total) and manufacturing sectors (16 per cent); and
- two large service industries - finance (17 per cent) and wholesale/retail (17 per cent).

The survey reveals where the volume of skill-shortage vacancies were located. The case studies, in contrast, tend to place more emphasis on how critical skill-shortage vacancies are to meeting business goals. Seen in this light the critical skill-shortage vacancies related more to managerial and professional staff and the development of hybrid skills (ie. various mixes of technical skills, or technical and generic skills in combination).

## Internal skill gaps

Skill deficiencies also need to be understood with regard to the proficiency of employees in their current jobs. In total, it has been estimated from the survey evidence that almost two million employees in England were less than fully proficient in their jobs. The largest numbers of such employees were in clerical and secretarial occupations. When expressed, however, as a proportion of employment in an occupation, it was in craft and skilled, personal service, and sales occupations that the highest ratios occurred (around 13-14 per cent of employment).

Adopting a somewhat tighter definition, 1 in 5 establishments suffered from internal skill gaps (defined as where fewer than nearly all staff were fully proficient). On this basis the scale of internal skill gaps was equivalent to some 800,000 persons.

The majority of establishments with internal skill gaps defined their problems in terms of employees lacking a desired mix of generic and vocational skills.

Overall, there was evidence of a 'North-South divide'. The majority of Local Learning and Skill Councils with the highest percentages of establishments reporting skill gaps were located south of a line from the Severn to the Wash.

As noted earlier, the case study data provides an indication of those skill deficiencies which employers thought critical to meeting their business goals, whereas the survey tends towards recording information about their volume. Just as in the case of skill-shortage vacancies, the critical occupational areas in which skill gaps occurred were managerial and professional.

Overall, the various sources of data provide a consistent picture relating to skill gaps. The volume of skill gaps relates mainly to lower level occupations. This is not an insignificant finding, since the demand for relatively low skilled staff in some sectors is strong.

## WHY SKILL DEFICIENCIES ARISE

To understand the underlying reasons for the emergence of skill deficiencies one has to look beyond the business cycle for explanations. Skill-shortage vacancies and skill gaps emerge not simply as a consequence of current skill needs not being met but as part of a more complex process, where changes in the external product/service market and the policies of organisations designed to anticipate or react to those changes give rise to a longer term process of skill change.

Skill deficiencies were more likely to arise where local labour market conditions were tight. The analysis that used local unemployment rates as a measure of labour availability demonstrated that skill deficiencies were more prevalent in areas with relatively low levels of unemployment. But one has to go further than this for a full explanation and look at the type of skills employers were looking for.

More dynamic organisations were more likely to report skill deficiencies. This was related in many instances to the types of product market, organisational, and technological change they were pursuing. Where change was being pursued, employers were more demanding of the skills required of their current employees and those they wanted to obtain from the external labour market. Often they were looking for 'hybrid' skills as mentioned above.

Provision of training and professional development could plug some of the skill gaps that emerged, but in many instances the pace of change was such that neither companies' internal human resource development strategies nor the capacity of the external labour market was able to meet their skill needs.

## SKILL DEFICIENCIES AND PERFORMANCE

Where they arose, there is evidence that external recruitment difficulties have had a substantial impact on business performance. The principal effects of skill-shortage vacancies were:

- difficulties in meeting customer service objectives;
- delays in developing new products or services;
- increased operating costs; and
- difficulties meeting required quality standards.

Where internal skill gaps were reported the evidence points to a similar impact as for skill-shortage vacancies. Importantly, a small but significant proportion of establishments with either skill-shortage vacancies or skill gaps reported that this had led to a loss of business to competitors.

Although the most common skill gaps relate to lower level occupations, such skill gaps may not be as critical to organisations meeting their goals as those for more highly skilled and qualified staff, who may be more concerned with setting the strategic vision for the organisation. Critical skill gaps relate more to higher level occupations (ie. managers and professionals). In many instances this relates to a failure to have acquired critical skills either through continuing professional development of staff, retention of existing staff, or recruitment. The regional data reveal that it was in the southern parts of England that respondents anticipated skill gaps having the greatest impact on business in the near future.

A key occupational skill gap related to senior managerial and professional staff and their capacity to construct a strategic vision for an organisation and then to manage and realise it. This may well result in sub-optimal product and service market strategies being developed which manifests itself as a latent skills gap (see below).

The links between skill and performance are many and complex. There is, however, considerable evidence from the survey and case studies to confirm that skills do matter. A variety of different measures of establishment performance were considered: these included a self-defined measure of business success as well as more independent indicators such as sales growth. Various measures of the stock of skills and the extent of skill deficiencies were found to have a statistically significant impact on performance. That is, establishments with a relatively low stock of skills were less likely to report external recruitment problems or skill gaps, but were more likely to report relatively poor organisational performance.

Aggregating the results presented above across the economy as a whole, it implies that skill deficiencies impose a significant constraint on output. If the impact of latent skill gaps is also included, the potential magnitude of that constraint is larger still.

## LATENT SKILL GAPS

The analysis provides new evidence about the importance of latent skill gaps - that is skill deficiencies which are not recognised by employers but which constrain their potential for economic growth.

By definition, measuring such gaps, which cannot be directly observed, is very difficult. It is not possible, therefore, to quantify them in a single summary statistic. Nevertheless, the case study evidence, as well as detailed statistical and econometric analysis of the survey results, suggests that such gaps may be significant for many employers.

A key finding relates to the fact that those organisations that were more concerned with cost-cutting were less likely to report skill gaps. By implication, an establishment that switches from a cost-cutting to a product-improving goal is likely to downgrade its assessment of the proficiency of their current workforce and increase its demand for skills.

The results of detailed statistical and econometric analysis of the survey demonstrates the role latent skill gaps may play in the economy. They suggest that even fairly minor shifts from, for example, cost-cutting to product improvement amongst establishments could produce a quite radical shift in employers' perceptions of their workforces. For example, there is support for the hypothesis that higher rates of innovation and diffusion would result in significant increases in skill levels required. These and other findings suggest that latent skill gaps may be a significant constraint on economic performance. There is, therefore, a case for policy interventions to make employers, especially in smaller enterprises, better aware of the importance of skills for their long-term business success and to assist them in addressing these hitherto hidden problems.

# 1. INTRODUCTION

## 1.1 Aims and objectives

The first report of the National Skills Task Force (STF), *Towards a National Skills Agenda*, drew attention to recruitment problems and skill gaps in the UK economy. This was a contribution to a longstanding debate about the role of skills in economic performance. Subsequent reports emphasised the need for new research to inform this debate and to guide policy decisions. The Employers Skill Survey 1999 (ESS1999) was commissioned by the then Department for Education and Employment (now Department for Education and Skills, DfES) in response to that request, with the aim of informing the STF and providing a comprehensive overview of the scale of current skill deficiencies, their causes, and consequences.

Previous work, including the series of Skill Needs in Britain (SNIB) surveys, suggested that employers' perceptions of the extent and implications of recruitment difficulties were relatively modest and regarded primarily a cyclical problem. SNIB revealed a strong cyclical pattern to the number of vacancies and hard-to-fill vacancies over the 1990s: in 1990 30 per cent of vacancies were classified as hard-to-fill, falling to 15 per cent in 1992/93 as the economy went into recession, rising again to 45 per cent in 1998 as the economy recovered. This is not to suggest that recruitment problems are simply a consequence of the business cycle. Time series of analysis of existing surveys undertaken as part of ESS1999 revealed that recruitment problems may well contribute to the cycle<sup>1</sup>.

Skill deficiencies, however, relate not only to recruitment difficulties stemming from external economic conditions. Factors internal to an organisation regarding the setting of business goals and developing personnel to meet those goals will, to some extent, manifest themselves as skill deficiencies. To what extent will depend upon how high those business goals have been set and how skilled staff are in achieving them. Based on a simple measure of the gap between the skills of current employees and those required to meet current business objectives, SNIB revealed that an average of 17 per cent of establishments reported a skill gap over the 1990s. There are, however, reasons to believe that both the scale of current recruitment problems and skill gaps reported by employers - as well as their implications for long-term economic performance - are underestimated by previous analysis. The principal aim of the present multi-faceted study was to explore these issues in much greater depth than hitherto.

The general aims and objectives of the study were to explore the extent, causes, and implications of skill deficiencies. This included:

- an assessment of the scale and nature of skill deficiencies, including recruitment difficulties reported by employers as well as internal "skill gaps" (that is, problems with the skills of the existing workforce);
- an exploration of the causes of these problems, both in terms of employers' perceptions and a detailed analysis of observed patterns of behaviour;

<sup>1</sup> N. Blake, J. Dods and S. Griffiths, *Employers Skill Survey: Existing Survey Evidence and its use in the Analysis of Skill Deficiencies*, National Skills Task Force/DfEE Research Report, SKT30, September 2000.

- an assessment of the implications of these difficulties for economic performance, again based on both the responses to the survey and an analysis of actual outcomes.

Taken as a whole, the study forms one of the most comprehensive and thorough analyses of Britain's skill deficiencies ever undertaken.

## 1.2 Methodological approach

To investigate the general aims and objectives outlined in the previous section a multi-faceted approach was adopted. The present document provides a synthesis of all these elements:<sup>2,3,4.</sup>

- a review of existing surveys and data sources was conducted;
- detailed case studies of around 100 establishments in seven selected sectors were used to probe these questions in depth;
- an intensive, face-to-face interview survey of some 4,000 establishments was used to produce detailed quantitative data;
- an extensive telephone survey of 23,000 establishments was conducted in order to enable robust quantitative estimates to be produced at a regional as well as national level<sup>5</sup>;
- detailed spatial analysis of the survey data was undertaken at regional and sub-regional levels (including by Local Learning and Skills Council areas); and
- a detailed econometric analysis of the face-to-face survey data was conducted.

### Review of existing surveys and data sources

A review of the previous research in this area was undertaken to assess the strengths and weaknesses of existing surveys and analysis. This included an examination of the Skills Needs in Britain Survey (SNIB). The results of this review are contained in Bosworth et al (2000) and (2001). SNIB were conducted on behalf of the DfEE for many years. The review also covered a number of other surveys such as that conducted by the Confederation of British Industry, (Blake et al, 2000).

### Surveys of employers

The overall response rate from the surveys of employers was 59 per cent for the telephone survey and 54 per cent for the face-to-face survey.<sup>6</sup> The sample was drawn from BT's Business Database, a regularly up-dated list of all establishments with a business telephone line. The drawn sample was stratified by RDA region, by industry sector (defined against 1992 SIC codes) and by establishment size (in terms of number of employees) using variable sampling fractions. This was done by:

- (i) distributing half the sample equally across the nine RDA regions; and
- (ii) distributing the remainder of the sample on a 'probability proportional to size' basis.

<sup>2</sup> These elements were combined in a research programme involving Business Strategies Ltd, the City University Business School, the Institute for Employment Studies, the Employment Studies Research Unit at the University of the West of England, and the Institute for Employment Research (IER) at the University of Warwick.

<sup>3</sup> The fieldwork for the surveys was undertaken by IFF in collaboration with NOP. The design of the survey instruments and the analysis was primarily the responsibility of the Institute for Employment Research (IER), at the University of Warwick.

<sup>4</sup> In an ideal world the various elements would have taken place sequentially but, in practice, the need to deliver results in a relatively short time scale meant that many of the elements were undertaken simultaneously.

<sup>5</sup> In an ideal world these various elements would have been undertaken in sequence in practice, the need to deliver evidence within a relatively short timescale meant that many of the elements were undertaken simultaneously.

<sup>6</sup> Completed interviews as a percentage of contacts.

Results were grossed up at the analysis stage (on a region by establishment size by industry sector matrix), to population estimates derived from the 1997/98 Annual Employers Survey. The results presented are therefore representative of the 533,616 employers in England who have five or more employees. Further information about the surveys is contained in Annex A.

The Statistical Report (Bosworth et al, 2000) presents a detailed descriptive quantitative analysis based on a data set combining the face-to-face and telephone surveys.

### Case studies

The case studies were designed to analyse in greater detail the relationship between skill needs and organisational performance. Each case study was structured as follows:

- discussion of the product/service market demand;
- analysis of how work was organised to meet the demand of the market and identification of critical functions within the organisation;
- the skill needs the above give rise to;
- exploration of any recruitment problems;
- exploration of skill gaps;
- adaptation to recruitment problems and skill gaps;
- impact of recruitment problems and skill gaps on establishment performance.

For the face-to-face interviews the respondent was the person responsible for human resources (typically the personnel manager or the chief executive in smaller establishments). In the case studies, there were often a number of different individuals interviewed, in order to obtain a more holistic picture.

A range of industrial activity and occupations were covered in the case studies (see Table 1.2).

Sector	SIC Code
Engineering	28-35
Food Manufacture	15
Hospitality	55
Telecommunications	64.2, 32.2, 32.3
Banking, Finance and Insurance	65, 66, 67
Local and Central Government	75
Health and Social Care	85

The case studies were disproportionately located in the larger establishments compared to the population of establishments in the sectors from which they were selected (with the exception of local and central government). Although the case studies were chosen in such a manner as to cover the full range of sectoral experience they cannot claim to be fully representative in a statistical sense. This is the role of the survey analysis. Annex B provides more details.

### **Detailed Spatial Analysis**

A key feature of the survey work was to enable detailed spatial analysis to be conducted at the regional and sub-regional level. A separate analysis of these data was conducted, which includes a detailed description of the spatial dissemination of both external and internal skill deficiencies (see Green and Owen, 2001). In addition, this research has developed a new typology of Local Learning and Skills Council areas in terms of labour market characteristics and skill deficiencies.

### **Detailed Econometric Analysis**

The final element to the research was an in-depth econometric analysis of the face-to-face survey data (Bosworth et al, 2001). This was aimed at exploring the causes and consequences of skill deficiencies in a multi-variate context. It included an analysis of the possible scale of latent or unperceived skill deficiencies, as well as those required by employers.

## 1.3 Structure of report

The structure of the remainder of this report is as follows. Chapter 2 presents the findings on the scale and pattern of skill deficiencies. Chapter 3 examines the causes of these problems, while Chapter 4 considers their consequences. Chapter 5 concludes the report.

## 2. EXTENT AND NATURE OF SKILL DEFICIENCIES

### 2.1 Defining and measuring skill deficiencies

Several surveys over recent years have examined skill-shortages in the British economy. The review undertaken for ESS1999 - Existing Survey Evidence and its use in the Analysis of Skill Deficiencies<sup>7</sup> - suggested that these various data sources were 'bedevilled by differences in methodology, terminology, and phraseology, and also by some inherent ambiguities in the subject, and by suspicions over how respondents understand the terminology of the questions' (p12). The first report of the National Skills Task Force - Towards a National Skill Agenda - drew a distinction between external recruitment difficulties and skills gaps. Building on this terminology the present study has attempted to clarify the meaning of skill deficiencies and to measure more precisely their incidence in the labour market.

#### Recruitment problems

In assessing recruitment problems, ESS1999 made a distinction between **hard-to-fill vacancies**<sup>8</sup> and **skill-shortage vacancies**. The latter were defined as hard-to-fill vacancies which were skill related. That is, hard-to-fill vacancies where at least one of the following causes was cited by the respondent:<sup>9</sup>

- low number of applicants with the required skills;
- lack of work experience the company demands; and
- lack of qualifications the company demands.

#### Skill gaps

One measure of internal skill gaps is the extent to which employers perceive their employees' current skills as insufficient to meet current business objectives. ESS1999 asked respondents to comment on an occupation-by-occupation basis about the extent to which employees were 'fully proficient at their current job'. In order to gauge the extent of skill gaps survey 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 follow-up question probed about the percentage signified by an evaluation of 'nearly all' over half etc. This suggested a median score of 85 per cent fully proficient<sup>10</sup> in response to the 'nearly all' response. The evaluation of 'over half' had a median of 65 per cent<sup>11</sup>.

7 N. Blake, J. Dods and S. Griffiths, Employers Skill Survey: Existing Survey Evidence and its use in the Analysis of Skill Deficiencies, National Skills Task Force/DfEE Research Report, SKT30, September 2000.

8 The respondent defined what was meant by hard-to-fill.

9 Note that this is a tight definition of 'skill-related' which excludes factors relating to applicants' personal attributes and to general competition among employers for the best applicants.

10 Inter-quartile range 80 per cent - 90 per cent.

11 Inter-quartile range 60 - 70 per cent.

Using the answers to the questions on skill proficiency it is possible to derive various alternative measures of the incidence and intensity of internal skill gaps:

- the establishment based definition provides an estimate of the total number or proportion of establishments reporting that fewer than 'all' or 'nearly all' existing staff were fully proficient in any occupation;
- the employee based measure gives an overall estimate of the number of employees affected. This is based on applying estimates of the proportions of employment in each occupational category affected and summing over all occupations.

A further distinction can be made between narrow and broad definitions:

- using narrow definitions, internal skill gaps are said to exist where fewer than nearly all staff are considered to be fully proficient
- a broader definition is where fewer than all staff are not considered to be fully proficient.

This broader definition is referred to as a **proficiency shortfall**.

### Latent skill gaps

The discussion so far has focussed on employer's perceptions of skill deficiencies. There is growing concern that this may be just the tip of the iceberg, because such deficiencies are under-reported. Where, for a variety of reasons, employers may fail to report some problems because they are unaware that they exist or because they may choose not to report vacancies (for instance, if they feel that there is no hope of resolving them), these are defined as unreported skill gaps. Potentially much more important is where employers may simply not perceive that they have a problem because they are not fully aware of skills that might be needed to optimise their companies performance. This, strictly, is a latent skill gap. There are, of course, important methodological and measurement issues surrounding the measurement of latent skill gaps. The essential element in latent skill gaps is that they are, in some sense, unperceived or unrecognised. Almost by definition, this means that they are difficult to measure and quantify.

## 2.2 The overall extent of skill deficiencies

Approximately 32 per cent of establishments reported vacancies at the time of the survey, (see Table 2.1). About 16 per cent of establishments reported hard-to-fill vacancies - that is, approximately half of all establishments with vacancies - but this varied by size of establishment, sector, and region. The most common reason for hard-to-fill vacancies reported by employers was 'not enough suitably skilled people'. Around half of the reported hard-to-fill vacancies (about 100 thousand in total) were **skill-shortage vacancies**<sup>12</sup> related to a lack of job applicants with the required skills, qualifications or experience - affecting 8 per cent of all establishments.

<sup>12</sup> Note that this is a tight definition of 'skill-related' which excludes factors relating to applicants' personal attributes and to general competition among employers for the best applicants.

**TABLE 2.1**  
**OVERALL NUMBER OF VACANCIES**

	% of all establishments reporting	Number of vacancies / skill gaps <sup>(a)</sup> (000s)
All vacancies	32	560
Hard-to-fill vacancies	16	255
Skill-shortage vacancies	8	100
Internal skill gaps <sup>(c)</sup>	20	800
Weighted Base	533572	-
Unweighted Base	26952	-

Source: ESS1999 Survey (IER/IFF), Bosworth et al (2000)

Base: All establishments

Note: (a) Grossed up survey-based estimates (these refer to establishments with five or more employees).

(b) Skill-related hard-to-fill vacancies are defined as those for which at least one of the following causes of hard-to-fill vacancies was cited: 'Low number of applicants with the required skills'; 'Lack of work experience the company demands'; 'Lack of qualifications the company demands'.

(c) Narrow definition.

It was estimated that there was a significant proficiency shortfall. There were some 1.9 million employees in 1999 who were less than fully proficient in their jobs. Of course, some proficiency shortfalls are to be expected as new employees find their feet or existing staff adjust to new situations. The responses suggest that, in most cases where not all staff were regarded as fully proficient, employers were referring to relatively small proportions (10-20 per cent) of employees in those occupations as lacking full proficiency. In key occupations, however, such as managers and professionals, even skill gaps on this scale could have damaging consequences for the firms involved.

Internal skill gaps can be defined as existing where lack of full proficiency (as perceived by employers) typically involved a third or more of staff in at least one occupational area.<sup>13</sup> Approximately 20 per cent of all establishments revealed such internal skill gaps. In other words, around one in five of establishments in England reported that a substantial proportion of their staff, in one or more occupational areas, were less than fully proficient in their jobs accounting for around 800,000 internal skill gaps.

In addition to these perceived skill deficiencies, there are also latent skill gaps which go unrecognised by employers but which may constrain performance. By definition, such gaps are very difficult to quantify. It has not proven possible to encompass these in a single figure. However, the case study evidence, as well as the survey results and econometric evidence, suggest that such skill gaps may be quite significant for many employers.

<sup>13</sup> Based on respondents replying that fewer than all or nearly all staff were fully proficient. This definition has the advantage of simplicity. It also covers all the establishments which were asked follow-up questions about the nature, causes and impacts of skill gaps.

## 2.3 Skill-shortage vacancies

### **Incidence of skill-shortage vacancies**

Vacancies, hard-to-fill vacancies, and skill-shortage vacancies were all related to the number of people employed in an establishment. Around 7 per cent of establishments with 5-24 employees reported skill-shortage vacancies, rising gradually to 25 per cent of establishments with 1000+ employees. In many respects, this is purely a function of size: the more jobs there are at an establishment the more likely a vacancy of some type would be reported. But there is also a less obvious feature relating to size of establishment. Case study data from the telecommunications sector revealed how a more entrepreneurial orientation to business amongst smaller companies and establishments allowed them to more readily plug into a range of networks to obtain the personnel they required, compared to the more bureaucratic approaches of larger companies and establishments. This suggests that where some smaller establishments faced skill-shortage vacancies they were better placed than their larger counterparts to either head them off or fill them once they arose.

One also needs to obtain an indication of the importance of skill-shortage vacancies. In later sections attention is turned to how critical a given skill-shortage vacancy is to the operation of a business. At this juncture the analysis concentrates on a measure of density which measures vacancies as a proportion of the workforce. Though larger establishments reported a higher number of vacancies these represented a smaller proportion of their workforce compared to smaller establishments<sup>14</sup>.

More detailed examination of the data points towards the importance of various establishment and product market characteristics upon the probability of reporting skill-shortage vacancies and internal skill gaps:

- larger establishments were more likely to report skill-shortage vacancies. Though this may seem obvious, the rate of increase in the probability of reporting vacancies and hard-to-fill vacancies declined as the size of the establishment increased. These types of vacancies were therefore disproportionately concentrated amongst smaller establishments;
- the degree of capacity utilisation at the establishment had an impact upon the probability of reporting a skill-shortage vacancy. Establishments that were operating 'somewhat below full capacity' and 'considerably below full capacity' were more likely to report the presence of a skill-shortage vacancy. Establishments may have operated below full capacity because they were constrained by vacancies that may have been proving hard-to-fill;
- a degree of congruence was found to exist between the presence of external skill deficiencies and the level of proficiency amongst existing employees. Establishments where all staff were reported as being fully proficient in their jobs were less likely to report the presence of a skill-shortage vacancy. The overall level of market growth for the establishment's main product or service was estimated to have a positive effect upon the probability of reporting such a vacancy.

<sup>14</sup> In establishments with 5-24 employees, skill shortage vacancies accounted for 1.22 per cent of employment, compared to 0.39 per cent in establishments with 1000+ employees, and 0.62 per cent overall.

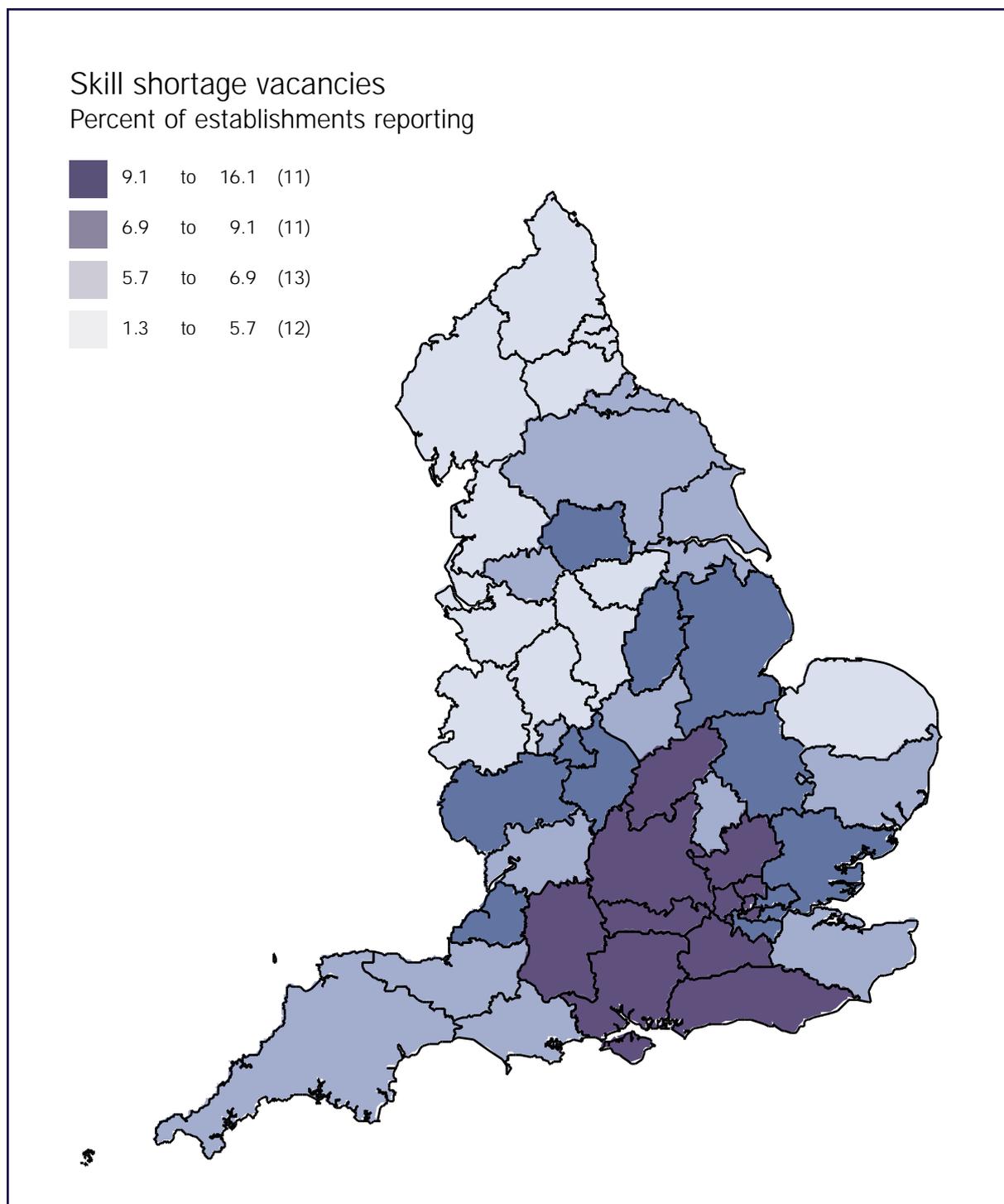
### **Geographical location of skill-shortage vacancies**

A higher proportion of establishments in London and the South-East reported skill-shortage vacancies. In some respects this may be a consequence of the relatively more buoyant economic and labour market conditions in these regions at the time of the study. Nevertheless, one has to be cautious about inferring too much about labour supply in regional and local labour markets. Much of the case study data - notably in the engineering, telecommunications, and banking sectors, especially that relating to recruitment difficulties for managerial and professional staff, points to these being a supply-side problem at a national, and often international level, rather than locally or regionally. This is particularly important given the concentration of banking and telecommunications establishments in the South-East.

Nevertheless, from a policy perspective it is useful to look at the incidence of skill-shortage vacancies by Local Learning and Skill Council (LLSC) areas. Of the LLSCs with a greater than average percentage of establishments reporting skill-shortage vacancies, the majority were in the South East (see Map 2.1). In fact, all of the LLSC areas with a greater than national average proportion of establishments reporting skill-shortage vacancies were located in southern England and the Midlands. More specifically, LLSC areas ranked highly in the proportion of establishments with either hard-to-fill or skill-shortage vacancies, formed a 'western crescent' around London.

## MAP 2.1

### PERCENTAGE OF ESTABLISHMENTS REPORTING SKILL-SHORTAGE VACANCIES BY LOCAL LEARNING AND SKILL COUNCIL AREAS



Source: ESS1999 Spatial Analysis, Green and Owen (2001) [IS5]

Though a broad North-South divide was evident, not all LLSC areas in the South-East displayed higher than average proportions of establishments with skill-shortage vacancies: Kent & Medway and East London exhibited lower than national average shares of establishments with skill-shortage vacancies. It is apparent, therefore, that within relatively short distances the pattern of recruitment difficulties can substantially change.

Whether one uses a simple measure of the proportion of establishments reporting skill-shortage vacancies or a density measure<sup>15</sup>, the same overall spatial pattern emerges. That is, a greater concentration of skill-shortage vacancies in southern England, particularly in local areas immediately to the west, south and north of London. At the intra-regional level, the greater prevalence of skill-shortage vacancies in the western part rather than in the eastern part of the South-East was also evident. At the opposite end of the spectrum, South Yorkshire and much of North-East England, were characterised by a lower than average incidence of skill-shortage vacancies.

One of the aims of the analysis was to consider whether these observed geographical variations in the incidence of skill-shortage vacancies were still observed after controlling for establishment and labour market characteristics. When such variables are included in the analysis it is apparent that the underlying geographical distribution of vacancies remains as outlined above. What one is observing in the South-East of England is an overlapping set of circumstances that reinforce the emergence of skill-shortage vacancies.

### **The pattern of skill-shortage vacancies by industry and occupation**

In looking further at the sectoral and occupational distribution of skill-shortage vacancies there is a need to obtain a view about both the volume and the critical nature of skill-shortage vacancies. There is no reason to believe that each measure is synonymous with the other. A restaurant, for instance, may find it difficult to recruit a number of waiters at the same time as struggling to take-on a single head chef. Whilst a shortage of waiters may slowdown service to customers' tables, without the head chef there is no food to serve. In this sense, the skill-shortage vacancy for the head chef is the critical one to the functioning of the restaurant.

The greatest volume of skill-shortage vacancies occurred where establishments had vacancies for associate professionals (17 per cent of all skill-shortage vacancies) and craft and related occupations (22 per cent) - Table 2.2 provides an overall summary. Within the overall pattern were a number of sector specific features:

- managerial and professional vacancies were widespread in manufacturing and business services;
- craft and related vacancies were predominantly in manufacturing and construction;
- professional, and clerical and secretarial vacancies were concentrated in business services;
- vacancies in personal and protective service occupations were mainly in hotels and restaurants;
- sales vacancies were mainly in distributive trades; and
- production and assembly vacancies were mainly in manufacturing, and transport and communication.

<sup>15</sup> The correlation coefficient for the two data series was 0.87.

**TABLE 2.2**  
**OVERALL DISTRIBUTION OF SKILL-SHORTAGE VACANCIES BY SECTOR AND OCCUPATION**

column percentages			
Industries	Total	Occupations	Total
Manufacturing (including mining and utilities)	16	Managers	7
Construction	12	Professionals	8
Wholesale, retail trade	15	Associate Professionals	17
Hospitality	6	Clerical & Secretarial	9
Transport & communication	7	Craft & Related	22
Finance	4	Personal & Protective Services	11
Business services	17	Sales & Related	13
Public Administration	2	Production & Process Operatives	9
Education	4	Other	3
Health & Social work	10	Total	100
Other Community Services	5		
Total	100		

Source: ESS1999 Survey (IER/IFF), Bosworth et al (2000)

Base: All skill-shortage vacancies

Drawing on interview data with a number of respondents within an establishment - senior managers, human resource/personnel staff, as well as workers - the case study evidence is better able to identify critical skill-shortage vacancies. Where respondents in the case study establishments reported skill-shortage vacancies there was tendency to focus upon those areas that were critical to the success of the business. Hence skill-shortage vacancies tended to be more in so-called higher level occupations (managers, professionals, associate professionals) related to responsibilities for setting and achieving organisational goals either at establishment or departmental level, or the provision of highly specialist skills.<sup>16</sup> At this occupational level, establishments were often looking to recruit those with sector specific skills (or experience) whether or not the job on offer was technically specialist (such as a professional engineer) or a more general management position.

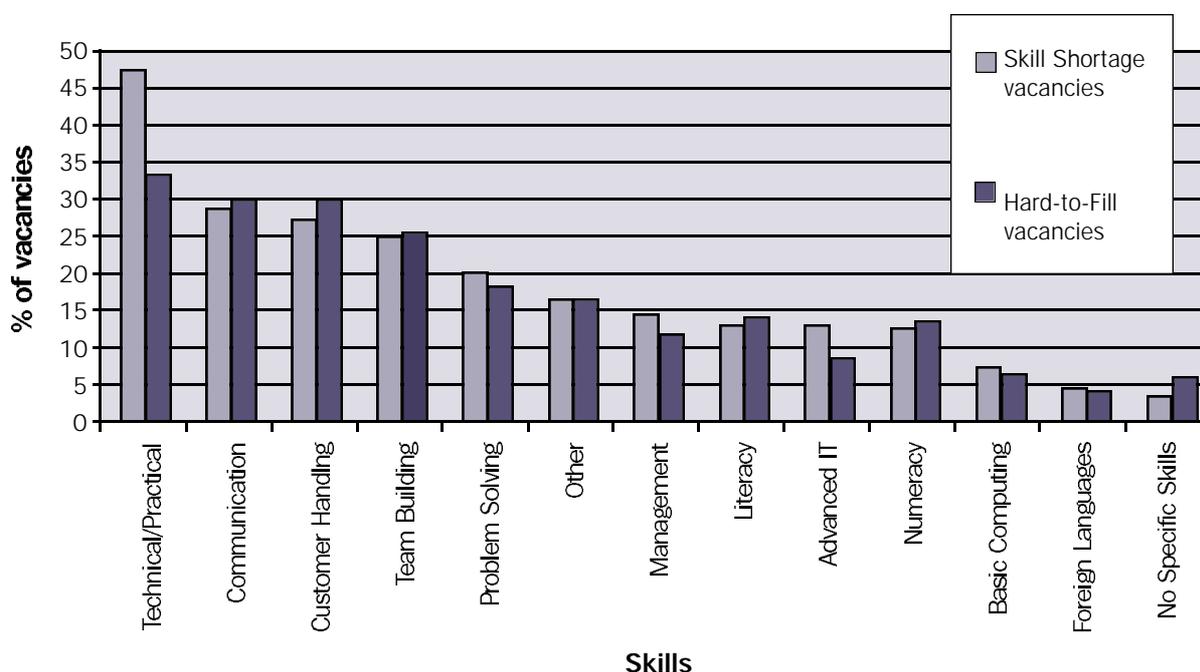
### **Skill content of skill-shortage vacancies**

The research also explored the specific skills that employers reported hard-to-find in the external labour market. This includes the types of skill that resulted in a skill-shortage vacancy, as well as the specific mixes of skill underlying those skill-shortage vacancies which were identified as critical to business performance.

<sup>16</sup> In the engineering sector differences between the survey and case study data were largely explained by size of establishment. The case studies tended to be concentrated in larger establishments and the survey data confirm that skill-shortage vacancies tended towards higher level occupations in the engineering sector in larger establishments. This finding, however, was not found in relation to the other case study sectors.

Technical and practical skills other than IT, communication, customer handling, and team building were the skills most commonly reported by establishments in the survey as accounting for the difficulty of filling a skill-shortage vacancy (see Figure 2.1). Advanced IT, basic computing, and foreign languages were least likely to be reported. It is apparent that the capacity to capture the specific technical competency related to the job that is on offer is the main skill factor associated with the emergence of both hard-to-fill vacancies and skill-shortage vacancies.

**FIGURE 2.1**  
SKILLS REQUIRED FOR HARD-TO-FILL AND SKILL-SHORTAGE VACANCIES



Source: ESS1999 Survey (IER/IFF), Bosworth et al (2000)

The specific skills required for skill-shortage vacancies also varied by occupation:

- technical/practical skills - especially amongst craft and skilled manual occupations;
- basic computing - a problem mainly for clerical and secretarial occupations;
- advanced IT skills - professionals, associate professionals and, to a lesser degree, clerical/secretarial occupations;
- lack of communication skills - amongst applicants for sales vacancies;
- team working - personal service and sales occupations;
- literacy and numeracy were reported as lacking in a substantial proportion of vacancies in many occupations, but especially so amongst clerical/secretarial, personal service, and sales occupations.

The survey suggests that the main types of skill which employers with skill-shortage vacancies found hard to obtain were 'technical and practical' in nature. This was reported by almost half of establishments with such vacancies. Where generic skills were mentioned these related to: communication (29 per cent of all skill-shortage vacancies) and customer handling (27 per cent). Team-working (25 per cent) and problem-solving (20 per cent) were also important. Generic skills were reported as a problem across all occupational categories (see Table 2.3).

The high proportion of skill-shortage vacancies requiring technical skills reflects strong demand from establishments seeking to fill craft, operative, associate professional and professional vacancies. In these occupational areas, technical skills were often sought without any reference to generic skill requirements. In other occupational areas, however, technical skills were sought in combination with generic skills for sizeable proportions of skill-shortage vacancies, particularly for clerical/secretarial and managerial vacancies. What begins to develop is a picture of employers demanding a variety of both technical and generic skills in combination from applicants. In many respects employers were looking for hybrid skills that may be classified accordingly:

- (i) a mix of generic skills;
- (ii) a mix of technical skills; and
- (iii) a mix of both generic and technical skills.

**TABLE 2.3**  
**SKILLS SOUGHT IN RELATION TO SKILL-SHORTAGE VACANCIES**

	row percentages						
	Technical skills only	Generic skills only	Technical and generic skills in combination	Other/non specified types of skill	Total	Weighted Base	Unweighted Base
Managers/senior administrative	8	38	30	24	100	8058	577
Professionals	31	13	31	25	100	8643	1093
Associate professional/technical	44	9	22	25	100	18964	2522
Clerical/secretarial	15	33	36	16	100	9542	984
Craft and skilled	50	13	21	16	100	24315	1770
Personal service	12	33	27	28	100	12318	834
Sales	10	49	21	20	100	13891	893
Operative and assembly	31	22	19	28	100	10314	1088
Other occupations	19	43	21	17	100	3545	362

Source: ESS1999 (IER/IFF), Bosworth et al (2000)

Base: All Establishments with skill-shortage vacancies

Note: Technical Skills refer to advanced IT/software skills and other technical/practical skills.

Generic Skills refer to basic computer literacy, communication skills, customer handling skills, team working, problem solving, management skills, numeracy and literacy skills.

The types of skills organisations were attempting to recruit varied between case study sectors (see Table 2.4). In social care, hospitality, and food manufacturing the emphasis was very much upon a mix of generic skills with the establishment often providing the technical skills through post recruitment training. In some instances, organisations were not looking to recruit skills so much as individuals with certain personality characteristics, such as in the hospitality sector where 'attitude' towards customers was so important. The emphasis on the generic and basic skills stems in part from the relatively low level of skill required in some sectors. In engineering, central and local government, telecommunications, and banking and finance which utilised relatively high level skills there was again a demand for generic skills but also for highly technical ones. Where technical skills were sought a broad mix was sometimes required. For instance, telecommunications engineers needed to be cognisant of a variety of technical standards. For more senior positions these needed to be combined with a range of generic skills related to project management and leading teams of people. The multiple skill sets required were invariably sector specific - with organisations seeking to recruit individuals who had experience of working in these sectors.

Overall, one may conclude that employers were often looking for specific sets of occupational/sectoral skill sets combining technical and generic skills. In many respects this may be interpreted as employers looking to recruit well-rounded individuals able to step, fully experienced and fully functional, straight into the job on offer. Whether the shortage of such staff stems from a failure of the external labour market to generate a sufficient supply of such personnel or a failure of organisations to sufficiently train and develop staff is a moot point. This is explored in greater detail in the next chapter that addresses the causes of skill deficiencies.

**TABLE 2.4**  
SKILL RELATED RECRUITMENT PROBLEMS ACROSS SECTORS

Skills	Engineering	Food Manufacturing	Hotels and Catering	Telecoms	Banking and Finance	Local and Central Government	Health and Social Care
<b>IT Skills</b>	✓ Linked to specific technologies			✓ Key recruitment problem	✓ Higher level skill In great demand	✓ IT professionals	
<b>Technical Skills</b>	✓ Experienced professionals	✓ Production staff	✓ Chefs	✓ As above	✓ Especially in emerging markets	✓ Variety of professional staff	✓ Associate professionals (eg. radiographers)
<b>Communication</b>	✓ Lacking amongst team leaders and some management		✓	✓ Applicants can lack full range of skills	✓		✓
<b>Customer Handling</b>			✓	✓ As above	✓		✓
<b>Team Working</b>				✓ As above	✓		
<b>Foreign Languages</b>					✓		
<b>Management Skills</b>	✓ Lacking amongst professional applicants	✓		✓ As above	✓		
<b>Literacy &amp; Numeracy</b>		✓ For production line applicants					✓ Care workers

Source: ESS Case Studies (Institute for Employment Research, Institute for Employment Studies, City University Business School, University of West of England)

## 2.4 Skill gaps

### **Incidence of skill gaps**

Thus far the analysis has been concerned with recruitment problems which, as previous evidence and new analysis presented in the econometric and spatial work show, are related to conditions in the external labour market. But there will be a range of factors internal to an organisation that will determine its skill composition and, consequently, its recruitment needs. The skill of senior management, for example, to spot market opportunities in higher value-added markets and develop appropriate business plans will determine an organisation's skill needs. If the skills possessed by existing staff are not capable of meeting the organisation's business objectives this will manifest itself as a skills gap. The reasons why skills gap should emerge, such as in failure to develop and train staff, is addressed in the next chapter. At this juncture the incidence, location and characteristics of skill gaps are addressed. What begins to emerge is a pattern of skill gaps related to:

- higher goals;
- higher qualifications;
- critical staff (especially managers/professionals).

Around one fifth of establishments in England reported that a substantial proportion of their staff, in one or more occupational areas, were less than fully proficient in their jobs. In total, it is estimated that there were 800,000 people not fully proficient at their existing job (internal skill gaps).

The econometric analysis points towards the importance of various establishment, and product market characteristics upon the probability of reporting internal skill gaps and the levels of proficiency reported amongst employees. This evidence suggests that the presence of internal skill gaps and the general level of proficiency amongst employees were both related to the attainment of formal qualifications. There is some evidence to suggest that establishments were less likely to report the presence of an internal skill gap where a higher proportion of existing staff possessed the qualifications required of new applicants. The results indicate that both the proficiency of staff within establishments and the presence of internal skill deficiencies are clearly related to the attainment of formal qualifications required by the establishment.

Establishments that were operating in areas of high market growth reported higher levels of proficiency amongst staff. Establishments, however, reporting both high and low levels of market growth were more likely to report the presence of an internal skill gap. This seems intuitive, insofar that establishments operating in areas of high market growth may be more demanding in terms of the skills that they required from their employees. Finally, proficiency levels were estimated to be lower within larger establishments and establishments formed within the last five years. Also, establishments were less likely to report an internal skill gap where the market for the main product or service was local or regional compared to establishments where the main market was national or international. Such establishments may be less demanding in terms of the skills required of staff.

## Geographical location of skill gaps

Overall, the distribution of internal skill gaps at a regional level reveals a broad north - south divide, with skill gaps being much more apparent in London and the South-East, and much less so in the North-East. The broad north-south divide is not as strong as that observed for skill-shortage vacancies. It is also apparent in these specific instances that the distribution of internal skill gaps is somewhat disproportionate to each of the respective region's share of total employment but the differences are not great.

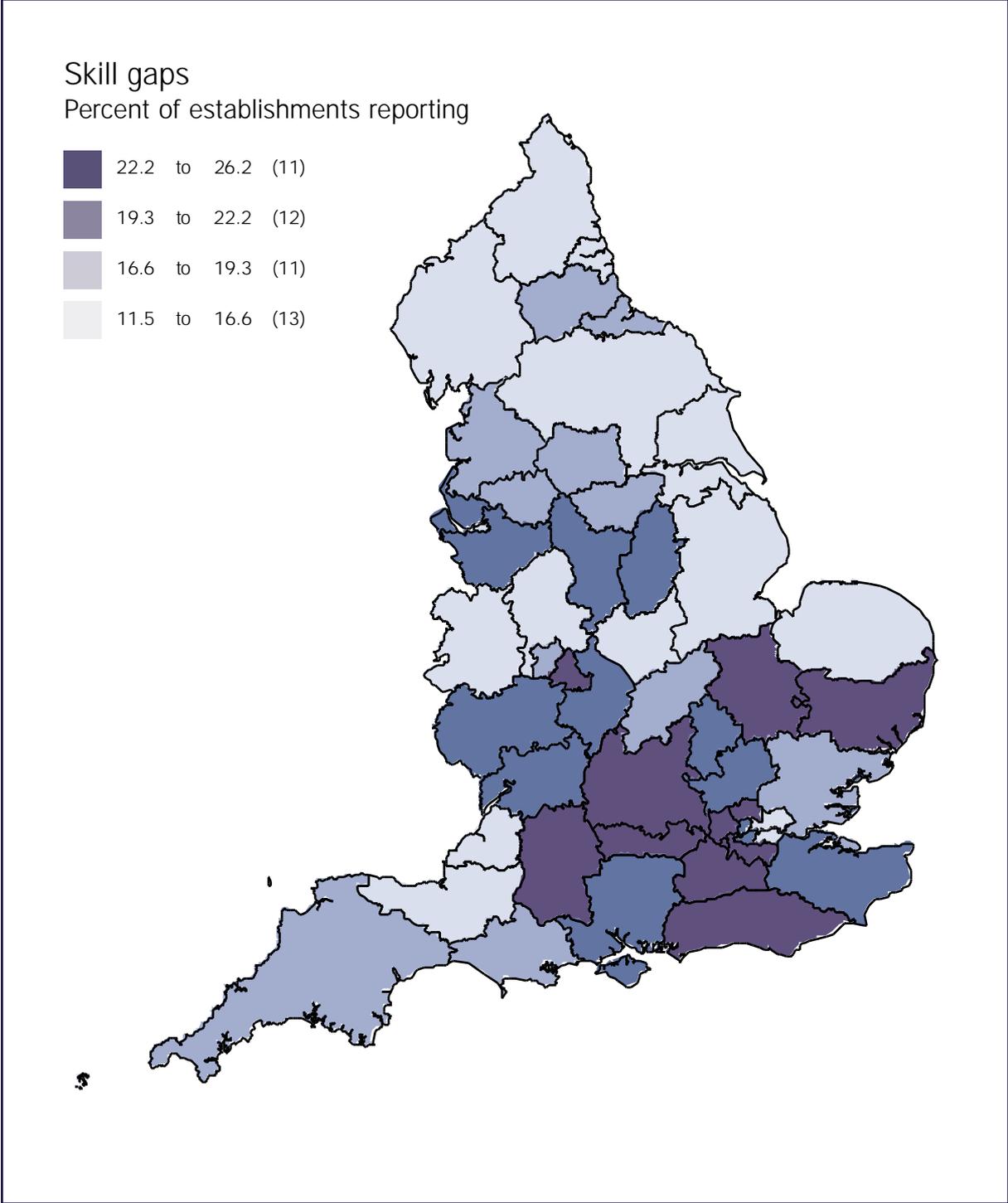
Once can look at spatial differences in a little more detail by LLSC area. Overall, a similar pattern emerges (see Map 2.2). There is still a north-south divide, and problems to the immediate west of London appear to be worse than elsewhere, but the absolute level of variation is much less than for recruitment problems.

An important question is whether the skills/product market equilibrium is lower in one region compared to another. In other words, are businesses objectives in, say, the North less demanding and capable of being met by a lower skills base, compared to establishments in, say, the South-East, setting a more demanding business objective which are capable of being met by a relatively more skilled labour force? As with the analysis of recruitment problems, spatial variations in the incidence of internal skill gaps may be due to geographical variations in labour market conditions and establishment characteristics. After controlling for establishment and labour market characteristics, few significant geographical variations in the incidence of internal skill deficiencies remained<sup>17</sup>.

<sup>17</sup> After controlling for establishment characteristics, only Lincolnshire, Herefordshire, Bedfordshire, South London, Derbyshire and Essex had significantly higher incidences of internal skill gaps. Controlling for labour market characteristics has little impact upon these geographical results.

**MAP 2.2**

**PERCENTAGE OF ESTABLISHMENTS REPORTING SKILL GAPS  
BY LOCAL LEARNING AND SKILL COUNCIL AREAS**



Source: ESS1999 Spatial Analysis, Green and Owen (2001)[IS7]

## The pattern of skill gaps by industry and occupation

The proportions of establishments reporting that all staff were fully proficient varied by occupation, ranging from 52 per cent (in the case of establishments employing sales staff) to 69 per cent (of those employing professional staff) (see Table 2.5). Just over a third (35 per cent) of establishments reported a lack of full proficiency in two or more different occupational areas. The proportions of establishments reporting skill gaps ranged from approximately 5 per cent of those employing professionals to 14 per cent of those employing sales staff (Table 2.5, column 3). Skill gaps were reported least in small establishments (employing fewer than 25 people) and in the education and construction sectors.

	All staff fully proficient at current jobs (a)	Nearly all staff proficient at current jobs (a) (Proficiency shortfall)	'Over half' or fewer staff proficient at current jobs (a, b) (Internal skill gaps)	Don't know (a)	Total	% of establishments reporting employment within occupation	Weighted Base	Unweighted Base
Managers & administrative	67	24	8	1	100	98	522109	26558
Professional	69	24	5	2	100	39	205261	12914
Associate professional & technical	64	26	7	3	100	25	132106	9743
Clerical/secretarial	65	25	8	1	100	63	336786	20130
Craft and skilled	61	28	9	2	100	28	149008	10427
Personal service	56	30	12	2	100	23	119668	7396
Sales	52	33	14	2	100	34	180118	9628
Operative and assembly	57	30	10	3	100	18	96725	7072
Other manual occupations	65	24	9	2	100	28	150293	9628

Source: ESS1999 Survey (IER/IFF), Bosworth et al (2000)

Base: All establishments employing at least one person in respective occupations

Note: (a)The survey question on this topic asked respondents: 'What proportion of your existing staff at this establishment in [each occupation] would you regard as being fully proficient at their current job: all, nearly all, over half, some but under half, very few?'

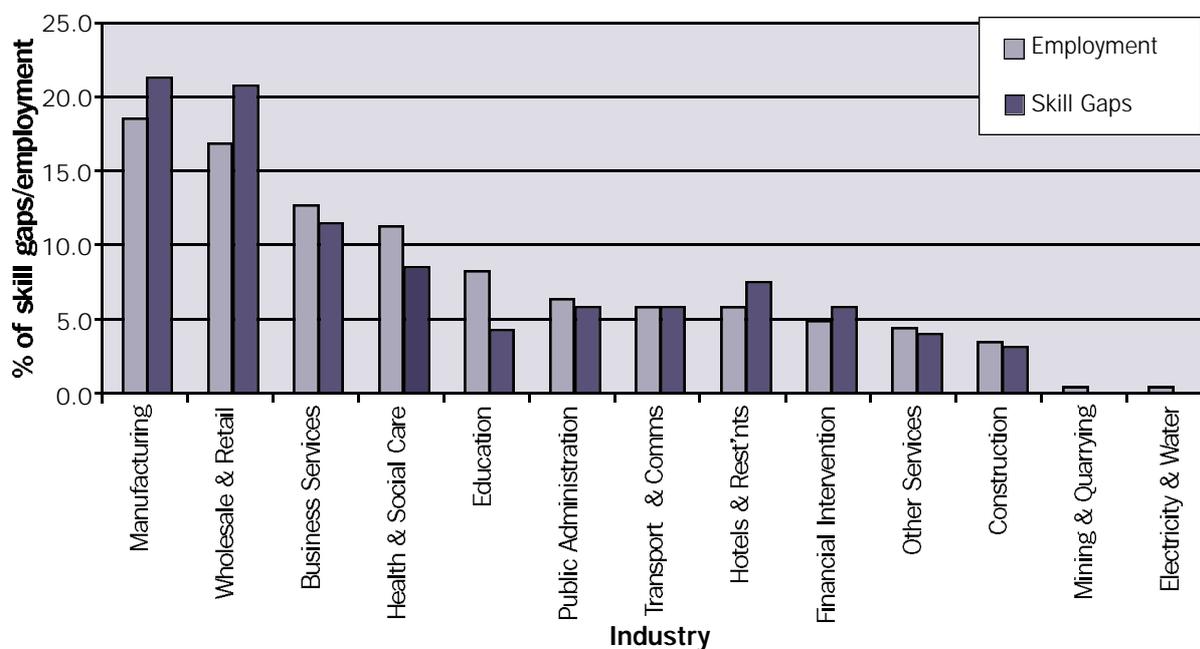
(b)Internal skill gaps are defined as the sum of the percentages responding that over half or fewer staff were proficient in their current jobs.

The distribution of internal skill gaps by sector is presented in Figure 2.2. Overall, there were heavy concentrations of skill gaps in manufacturing, wholesale/retail, and business services. A comparison is made with the overall distribution of employment. Differences are limited, but these sectors appear to have a disproportionate share of such skill gaps.

The pattern of internal skill gaps by occupation and sectors, to some extent, reflects the scale of total employment in the sector. When expressed, however, as a percentage of total employment, it is clear that the most serious problems seem to be in hospitality where such gaps accounted for over 7 per cent of employment. Education and mining and quarrying had the lowest level of gaps expressed as a percentage of employment.

These are significant variations in the occupational pattern of less than fully proficient employees by sector. Not surprisingly, this tends to reflect the occupational concentrations of employment by sector. In hospitality, for example, the bulk of less than fully proficient employees fell into the personal service occupation group (61 per cent). In manufacturing, craft and skilled occupations (16 per cent) and operatives (42 per cent) are the most significant categories. Less than fully proficient employees in clerical/secretarial occupations are important in a number of sectors (financial intermediation, (53 per cent) and public administration, (50 per cent) being the most notable).

**FIGURE 2.2**  
INTERNAL SKILL GAPS AND INDUSTRIAL SECTOR



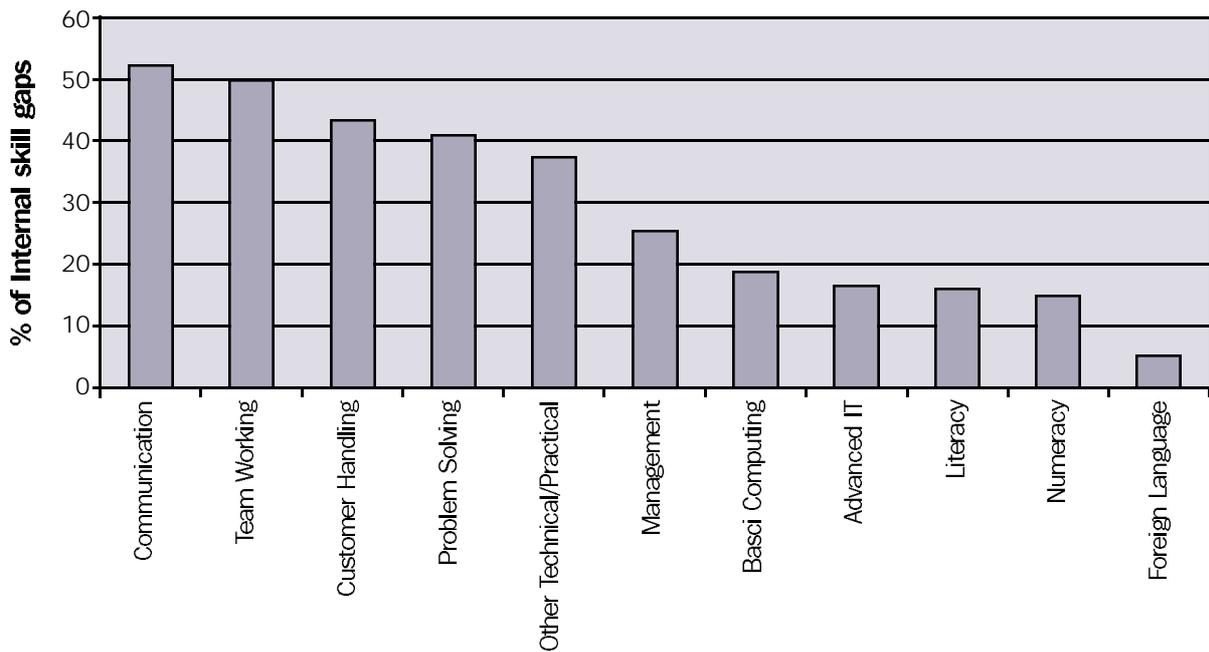
Source: ESS1999 Survey (IER/IFF), Bosworth et al (2000)

The intensive case study analysis suggests that the most critical skill gaps existed at higher occupational levels within establishments. This is presented in more detail in the section below which addresses the skill content of skill gaps.

### Skill content of skill gaps

Figure 2.3 summarises the skill characteristics of reported skill gaps across all occupations. Employers perceived internal skill gaps in terms of generic skill shortcomings (especially in communication, customer handling, and team-working skills)). These were reported ahead of the technical and practical skills which underlay many skill-related recruitment difficulties (except for craft and associate professional occupations). It is, however, notable that in every occupational area between, roughly, a quarter and a half of establishments with skill gaps defined their problems in terms of employees lacking a desired mix of generic and vocational skills (see Table 2.6).

**FIGURE 2.3**  
SKILL CHARACTERISTICS OF INTERNAL SKILL GAPS



Source: ESS1999 Survey, Bosworth et al (2000)

**TABLE 2.6**  
**TYPE OF SKILLS SOUGHT IN RELATION TO INTERNAL SKILL GAPS**

Occupation	Type of skill sought					row percentages	
	Technical skills only	Generic skills only	Technical and generic skills in combination	Other/non-specified types of skill	Total	Weighted Base	Unweighted Base
Managers/senior administrative	3	42	42	13	100	124762	17380
Professional	7	30	48	16	100	58727	8645
Associate professional/technical	16	22	45	18	100	41543	5967
Clerical/secretarial	8	33	45	14	100	125623	16705
Craft and skilled	17	23	39	21	100	66441	9793
Personal service	8	52	26	14	100	96251	10727
Sales	3	61	24	12	100	135103	16059
Operative and assembly	11	31	47	12	100	125354	23891
Other manual occupations	6	4	25	20	100	86179	13441

Source: ESS1999 Survey (IER/IFF), Bosworth et al (2000)

Base: Internal Skill Gaps: employee based measure

Note: 'Technical skills' here comprise advanced IT and other technical/practical skills; 'Generic skills' comprise communication skills, customer handling skills, team working skills, problem solving skills, basic computer literacy, management skills, numeracy skills and literacy skills

From an occupational perspective the key findings to emerge are outlined in Table 2.7.

<b>TABLE 2.7 OCCUPATIONAL CHARACTERISTICS OF SKILL GAPS</b>	
<b>Skill gap</b>	<b>Occupational characteristics</b>
Basic computing skills	most likely to be mentioned with respect to managers, professionals, associate professionals, and clerical and secretarial occupations. Sales occupations and operatives also frequently mentioned
Advanced IT skills	tended to be mentioned with respect to managers, professionals, associate professionals, and clerical/secretarial occupations, but much less so amongst other manual and non-manual occupations
Other technical and practical skills	by which is meant the core technical and practical skills required in an occupation other than IT, was one of the most commonly cited skill gaps across all occupations. Particularly important with respect to associate technical, craft and related occupations and operatives
Communication skills	one of the most commonly cited skill gaps across the board. It was especially important for managers, sales, and personal service workers
Customer handling	was especially important for personal service workers and sales occupations
Team working	reported as a frequent skill gap across all occupations but was especially important with respect to managers, personal and protective service occupations, sales occupations, and plant and machine operatives
Foreign language skills	mentioned by few respondents
Problem solving	mentioned across all occupations
Management skills	were mentioned as a skill gap amongst managers, but were also important for professionals
Numeracy and literacy skills	were mentioned in few instances, but were more likely to be mentioned in lower skill occupations (operatives and assembly, and other manual occupations), where around one quarter of establishments reported this skill gap

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Source: ESS1999 Survey (IER/IFF), Bosworth et al (2000)

It is apparent that, for most occupations, skill gaps were multi-faceted. Distinct occupational patterns emerged only with regard to management and to certain skills such as numeracy and literacy. The latter affected lower skill occupations. Computing and IT skill problems related mainly to higher level occupations.

The case study data illustrates some of the critical or most important skill gaps experienced by establishments. At first glance the evidence points to a degree of commonality in the content of skill gaps across sectors (see Table 2.8). Just about every sector reported a skill gap with respect to the technical competency of at least part of the workforce. This was particularly marked in the telecommunications sector where the pace of technical development of both products and processes was often such that existing staff could not keep pace with the rate of technical change. A further feature that emerges clearly from the telecommunications sector is the lack of hybrid skills, by which is meant the combination of technical skills, product market knowledge, and business know-how. Whilst these skills exist in the industry, difficulties emerge in reconfiguring these skills to meet a rapidly changing market. During the 1980s the software industry faced a similar problem, whilst it had the employees with programming skills, it often lacked individuals who could manage a project - finance, timing, etc. - and who were able to liaise with the client and translate their requirements into products<sup>18</sup>. In fact what emerges from the case study evidence is that the principal skill gap that exists in each sector is the failure to develop the combination of skills to meet the challenges of a changing market: technical competence combined with a well rounded knowledge of the business.

In health care, hospitality, and food manufacturing the combination of skills required could be of a rudimentary level: numeracy and literacy; hygiene; basic client or customer handling skills. In the social care sector the combination of communication skills that were sometimes lacking or not sufficiently developed were identified as:

- listening to clients;
- reflecting back clients' thoughts and feelings;
- self-reflection of own practice;
- reflection on the practice of others; and
- critical analysis of own and others' actions.

Despite the rudimentary level of skill required in the above sectors the impact of failing to develop a combination of skills could be significant. For example, in food manufacturing where the ability to read a list of ingredients and maintain hygiene levels is of the utmost importance to public health and company performance. The failure to develop the above types of skill by establishments often related to the structure of the industry where it was low-skilled, low waged, often relying on casual staff, linked to a low level of training. Arguably this manifests itself as a skill gap rather than a recruitment problem because employers recruiting in the labour market at a given wage level obtain the skills set available at that wage but subsequently fail to develop, for a number of reasons, the human resource policies and training programmes that will provide the combination of skills that they require. There is a policy problem here. Increasing the quality of supply to these sectors may not in itself overcome the skill gap without actions within establishments to address retention.

18 R.M. Lindley and T. Hogarth The Costs and Benefits of Training in the European Union, Report to the Task Force Human Resources Commission of the European Communities, Brussels, 1993.

At a professional and managerial level, it was the mix of skills relating to the management of complex projects requiring technical and managerial competence that manifested itself as the principal skill gap. The combination of skills that was required here included:

- leadership skills;
- financial management (cost control);
- team building;
- project management;
- presentational/communication skills;
- specific technical competencies (eg. robotics, design, derivatives, etc.).

**TABLE 2.8**  
MANIFEST SKILL GAPS ACROSS SECTORS

Skills	Engineering	Food Manufacturing	Hospitality	Telecoms	Banking and Finance	Local and Central Government	Health and Social Care
<b>IT Skills</b>		✓	Gap exists at a lower level	✓ Especially relating to the latest ICT developments	✓ At all levels	✓ IT skills lacking at all levels	
<b>Technical Skills</b>	✓ At the highest levels includes IT	✓ Lack of Production skills	✓ Possibly in relation to kitchens, but at low level	✓ As above	✓ Especially in emerging markets	✓ Difficulties of developing technical skills at all levels	
<b>Communication</b>	✓ Team leading; at shopfloor and managerial levels		✓	✓	✓		✓
<b>Customer Handling</b>			✓	✓	✓		✓ Managing diverse customer groups with limited resources
<b>Team Working</b>	✓ At all levels			✓	✓	✓	
<b>Foreign Languages</b>					✓		
<b>Management Skills</b>	✓	✓	✓	✓	✓	✓	✓
<b>Literacy &amp; Numeracy</b>		✓ For production levels					✓ Care workers

Source: ESS1999 Case Studies

## 2.5 Conclusion

The survey evidence indicates a substantial number of hard-to-fill vacancies (255,000) and skill-shortage vacancies (110,000) across the economy as a whole. The nature of these vacancies tends to indicate a high degree of sectoral and occupational specificity. This suggests that establishments in a given sector were looking for occupation related skills specific to that industry. To some extent this is borne out by the case study data which revealed that the recruitment of higher level skills in engineering, banking, and telecommunications were sector specific. ESS1999 also confirms that skill-shortage vacancies tended to relate mainly to technical/practical skills rather than generic ones. The very nature of technical skills is such that their transferability across sectors will be more limited than generic ones.

ESS1999 reveals that sectors such as telecommunications have a strong demand for skills related to professional and managerial occupations and that these skills are not easily obtained from the labour market. Where the case studies shed new light on the nature of skill deficiencies relating to higher level occupations, relates to the complex set of skills required, sometimes linked to substantial experience of practising them. Skill deficiencies at a professional level in telecommunications and engineering relate to what have been termed 'hybrid skills'. These require a mix of (i) various technical competencies and/or (ii) technical and business competency. Moreover, the combination of competencies required was typically sector specific.

The geographical data reveals relatively high level of skill deficiencies in parts of London and the South-East. Though the case studies can reveal little about regional patterns, it is worth noting that the banking industry is centered in London and there is an agglomeration of telecommunication companies to the west of London. This suggests a regional dimension to the types of skill sets (or the complexity of skills sets) being sought by establishments.

The evidence from the survey reveals that there is a considerable proficiency shortfall. There were nearly 2 million employees were less than fully proficient in their jobs. Using a somewhat narrower definition of the scale of internal skills gaps, where fewer than nearly all staff were fully proficient, amounts to some 800,000 skill gaps. By definition, these internal skill gaps relate directly to the capacity of organisations to meet their business goals. Where skill gaps were reported, it tended to be in relation to lower level occupations (eg. sales, personal service, etc.) whereas skill-shortage vacancies were reported more in relation to intermediate level occupations (eg. craft and related).

The case study data contrasts with the survey data in that it tended to be at managerial and professional levels where skill gaps were most likely to emerge. A number of reasons have been suggested for this, but the most plausible explanation is that the case studies were concerned in many instances with skills gaps critical to the organisation meeting its business goals. In many respects the reports of skill gaps in the case study establishments were the same as those for recruitment problems. Skill gaps in the case study establishments, especially in relation to higher level occupations, appear to stem more directly from a failure to capture the skills required to drive business forward.

## 3. CAUSES OF SKILL DEFICIENCIES

### 3.1 Causes of skill deficiencies

Recruitment problems are often explained away with reference to the economic cycle and wage levels. If recruitment problems are simply a consequence of the economic cycle, where the number of hard-to-fill vacancies or skill-shortage vacancies rises and falls simply in line with employment or output levels, this reveals little about skills per se. There is, however, an increasing body of evidence from ESS1999 which suggests that skill levels may well influence the business cycle.

Causal factors can be divided into those which are external to the workplace and those which are internal. External factors include conditions in the economy and local labour market, and the supply of skilled people exiting the national education system. Internal ones include training and human resource development practices and policies pursued by individual workplaces. In reality, one is probably looking at an interaction of the two set of factors. For instance, if the education system fails to produce the skills required by employers, they have recourse to produce those skills themselves in-house or at their own expense through the external training market. Nevertheless, for clarity of exposition it is useful to separate those causes of skill deficiencies considered to be external to an organisation and those that are internal to it.

Skill deficiencies will also be a consequence of the product market position of the workplace and the attempts to either consolidate that position or improve upon it. A priority, one might expect a greater incidence of skill deficiencies in establishments that have set more challenging product market strategies. From here it is possible to identify skill needs arising from different product market positions.

### 3.2 External causes

External causes relate to conditions in the national, regional, or local economy or labour market over which a typical organisation has, at best, negligible influence. Most important here are:

- the business cycle; and
- the supply of skilled labour from the education and training system.

It is possible to further categorise external recruitment problems depending upon whether they stem from<sup>19</sup>:

- **wage problems** where the skill level required is fairly rudimentary but the demand for labour is high resulting in wage levels being the basis of competition between employers;
- **cyclical imbalances** where recurrent bouts of excess demand or supply are associated with cyclical fluctuations in economic activity;

<sup>19</sup> RM Lindley and T Hogarth The Costs and Benefits of Training in the European Union. Report to Task Force Human Resources, Commission of the European Communities, Brussels, 1993.

- **dynamic excess demand** where demand for a given set of skills and experiences is increasing faster than supply;
- **supply falling faster than demand** where, for instance, industries may be experiencing employment contraction, but the supply of skilled personnel may be falling even faster. It may also be symptomatic of a number of sectors where the pay on offer is insufficient to attract new recruits or retain existing staff;
- **marked changes in the qualitative aspects of demand** where the nature of skills and experiences required in a job have changed and so affected the supply of people competent to fill these posts.

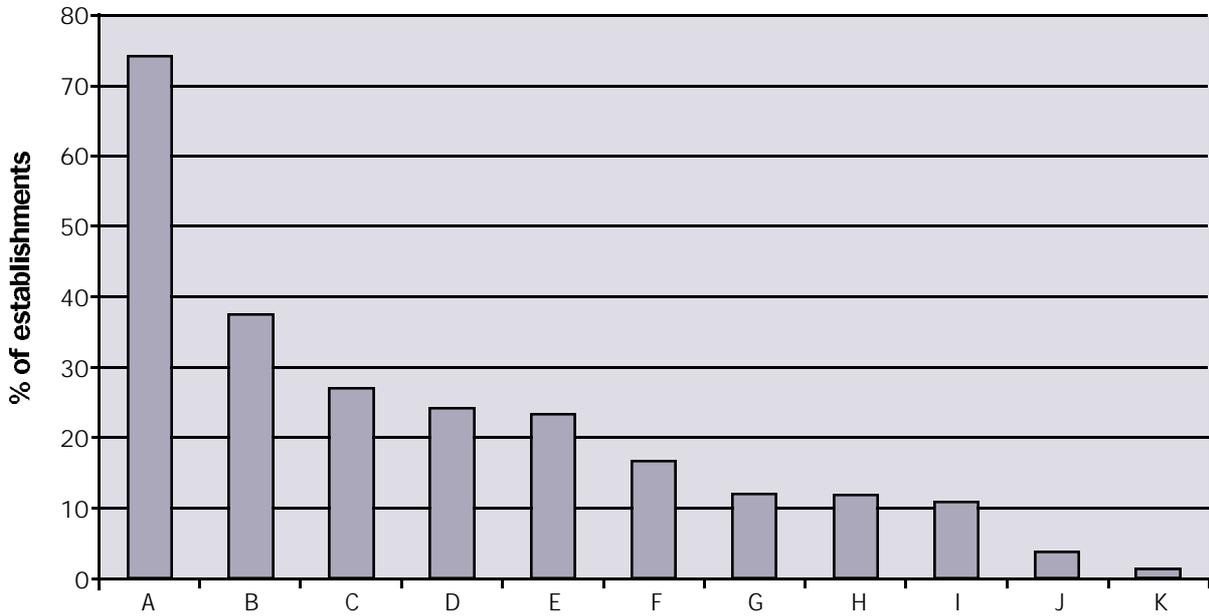
### Wage problems

At its simplest level skill deficiencies can be seen in the light of wage demands over the business cycle. The economics literature has tended to concentrate on disequilibrium or equilibrating models where the principal adjustment is relative wages<sup>20</sup>, with the literature suggesting that pecuniary and non-pecuniary rewards do not adjust, or at least not quickly enough, to enable the market to clear. The available evidence indicates that where wages adjust they do so far too slowly to move the market back into equilibrium, except possibly in the long run. Available evidence from the Skill Needs in Britain Survey (SNIB) has suggested that relatively less weight is attached to higher wage incentives as a means to relieve skill-shortages.

Consistent with the above finding, relative wage levels were mentioned by relatively few survey respondents as an explanation for their recruitment problems (see Figure 3.1). There were, however, sectors of the economy where this was less true, notably in the public sector: (a) local and central government; and (b) health care. The case study evidence revealed that the local and central government sector struggled to recruit managers and professionals, such as lawyers and accountants, because pay ceilings capped salaries below those available in the private sector. In health care, there was some evidence that low wage levels had led to people leaving the sector to take up different jobs in other industries. There was also some more limited evidence from the food manufacturing and social care sectors that workers of the required quality were unwilling to take the jobs on offer at the wages provided because of a strong demand for low skilled labour from other sectors of the economy where wages (or other conditions of employment) were better. Overall, however, the broad mass of evidence points away from wage levels being a major cause of recruitment problems. This may suggest that employers are reluctant to compete for labour on the basis of wage levels.

<sup>20</sup> D. Bosworth, 'Skill Shortages in Britain', *Scottish Journal of Political Economy*, Vol. 40, No.3, 1993, D. Bosworth and P. Warren, 'Modelling Skill Shortages' in D. Bosworth, P. Dutton and J.A. Lewis (eds.) *Skill Shortages*, Avebury, Aldershot, 1992, P.E. Hart and A. Shipman 'Skill Shortages in the UK: Evidence from Surveys', Discussion Paper, National Institute; B. Thomas and D. Deaton, *Labour Shortages and Economic Analysis*, Basil Blackwell, Oxford, 1977

**FIGURE 3.1**  
REASONS FOR SKILL-SHORTAGE VACANCIES



Source: ESS1999 Survey (IER/IFF), Bosworth et al (2000)

Key:

- |  |                                 |
|--|---------------------------------|
| A - Low number of applicants with skills         | G - Company does not pay enough |
| B - Lack of work experience                      | H - Too much competition        |
| C - Low number of applicants with motivation etc | I - Irregular hours             |
| D - Low number of applicants generally           | J - Other                       |
| E - Not enough people interested                 | K - Company location            |
| F - Lack of qualifications                       |                                 |

### Cyclical problems

The research was undertaken at a time when the business cycle was beginning to peak (ie. output growth was slowing). Labour market conditions, however, were exceedingly tight in many local labour markets. Table 3.1 shows the percentage of establishments with skill-shortage vacancies by unemployment rate category. Across both Local Learning and Skills Council (LLSC) areas and travel-to-work-areas (TTWAs), a pattern emerges of 'low' unemployment rate areas displaying a higher than average percentage of establishments with skill-shortage vacancies. In the 'low' unemployment rate areas, unemployment rates are so low that they would indicate a situation of 'full employment'. In the case of TTWAs and LLSCs, the 'high' unemployment rate areas display a lower than average percentage of establishments reporting both hard-to-fill vacancies and skill-shortage vacancies.

**TABLE 3.1**  
**PERCENTAGE OF ESTABLISHMENTS REPORTING VACANCY BY UNEMPLOYMENT RATE**  
**CATEGORIES**

Unemployment category	% with hard-to-fill vacancies	% with skill-shortage vacancies
<b>LLSCs</b>		
Low	18.8	8.5
Medium	15.7	7.2
High	14.0	7.4
<b>TTWAs</b>		
Low	20.1	9.3
Medium	16.0	7.6
High	13.2	6.1
<b>Total</b>	16.5	7.7

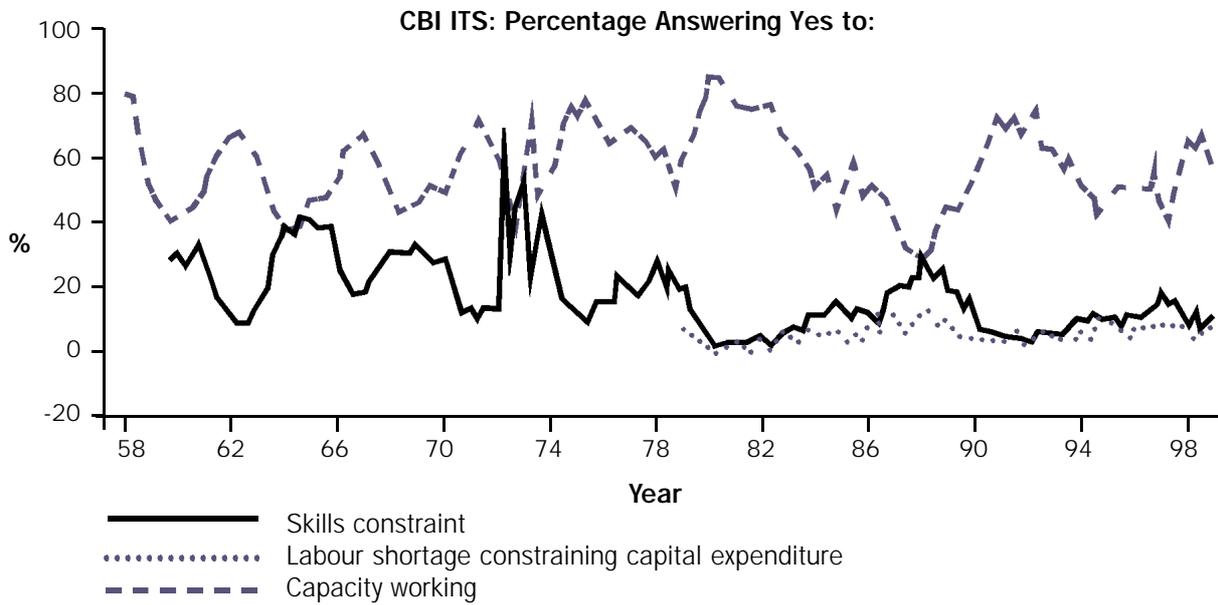
Source: ESS1999 Spatial Analysis, Bosworth et al (2000)[IS8]

Strong cyclical patterns are apparent in previous analyses of the incidence of skill deficiencies. For example, SNIB revealed that over the 1990s the number of vacancies revealed a strong cyclical pattern. Hard-to-fill vacancies showed a similar pattern with 30 per cent of vacancies so classified in 1990, falling to 15 per cent in 1992/93 as the economy went into recession, rising again to 45 per cent in 1998 as the economy recovered. Over a longer term the CBI Industrial Trends Survey reveals a similar cyclical pattern. Figure 3.2 reveals the proportion of respondents saying yes to the question:

“What factors are likely to limit your output over the next four months? .....  
 skilled labour”.

If this is compared to capacity utilisation - a measure of the business cycle - it confirms that there is a high correlation between skill constraints and business performance.

**FIGURE 3.2**  
SKILL DEFICIENCIES OVER THE BUSINESS CYCLE



Source: ESS1999 Review of Existing Survey Evidence (BSL), Blake et al (2000)

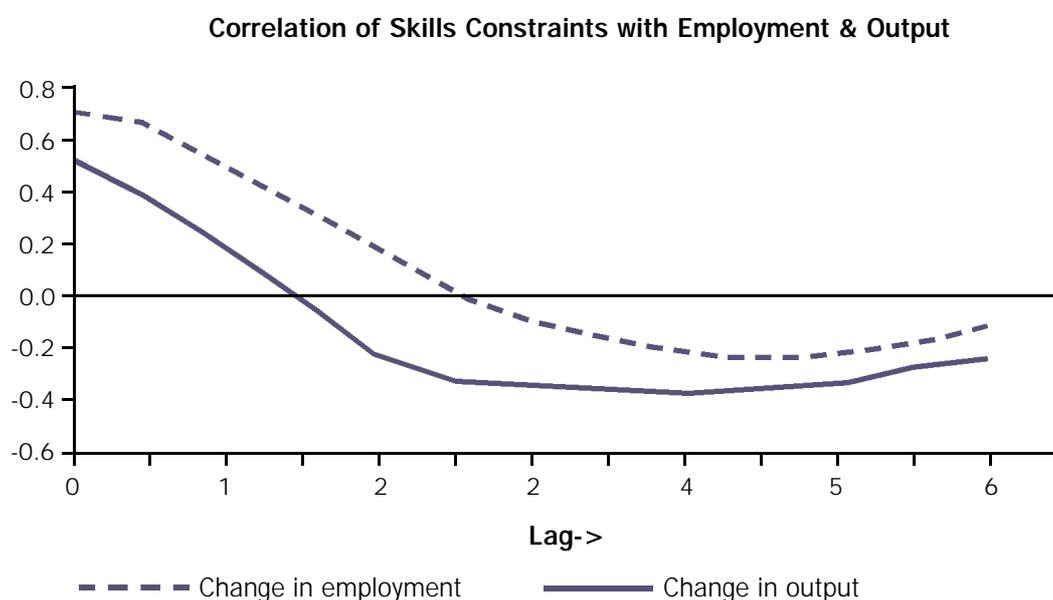
This may be too simple an interpretation of the relationship between skill deficiencies and the economic cycle. Other evidence reveals that skill deficiencies, other things being equal, reduce labour productivity over the cycle<sup>21</sup> and that investment in human capital can increase investment and output<sup>22</sup>. Figure 3.3 shows the correlation between reported changes in labour demand and changes in output from the CBI survey and different lagged values of the responses to the skills constraints question. The interpretation of this series is that of a 'stop-go' sequence where increases in labour demand result in an increase in skill constraints on production, which leads to a decline in output, resulting in a decrease in labour demand. This consequently reduces the skill constraint on production, allows output to increase, followed by an increase in labour demand, and the cycle starts over again.<sup>23</sup>

21 J. Haskel and C. Martin, 'Do skill shortages reduce productivity? Theory and evidence for the United Kingdom', *Economic Journal*, Vol. 103, 1993

22 S. Nickell and Nicolitsas, 'Human capital investment, and innovation: what are the connections?' R. Barrell, G. Mason and M. O'Mahoney (eds) *Productivity, Innovation, and Economic Performance*, Cambridge, Cambridge University Press, 1999

23 N. Blake, J. Dods, S. Griffiths, *Employers Skill Survey: Existing Survey Evidence and its use in the analysis of skill deficiencies*, DfEE, Research Paper SKT 30, London, 2000

**FIGURE 3.3**  
SKILLS CONSTRAINTS OVER THE BUSINESS CYCLE



Source: ESS1999 Review of Existing Survey Evidence (BSL), Blake et al (2000)

If cyclical imbalances are an insufficient explanation for skill deficiencies arising one must look to more structural explanations related to the supply of skilled labour from the education and training system. This is addressed more fully in the sections that follow.

### **Labour supply: dynamic excess demand**

Establishments tended to point to poor labour supply from the external labour market to explain the reasons for their skill-shortage vacancies rather than to factors more specific to the establishment, such as relative wage levels. When looking at the causes of skill-shortage vacancies the responses relating to low number of applicants with skills, or lack of work experience, or qualifications were inevitably more common (see Figure 3.1 above). For every occupational group 'a low number of applicants with skills' was the most commonly cited cause of recruitment problems.

From the case study data it is apparent that much of the dynamic excess demand related to managers and professionals. The latter include engineers with both technical and management competencies (engineering), specialists in IT (telecommunications), experts in emerging financial markets (banking and finance), and medical technicians (health care) - (see Table 3.2). There was also evidence at an intermediate level of excess demand for chefs in the hospitality sector. To some extent the types of occupational recruitment problems reported in both the survey and case studies were perennial supply side problems that can be traced back through the SNIB series.

A qualification needs to be added to the analysis of dynamic excess demand. At the time the study was conducted the telecommunications sector was experiencing rapid growth. The subsequent collapse in the share price of many telecommunications companies and the consequent decline in employment suggests that, over the short- to medium-term at least, the magnitude of any dynamic excess demand is extremely sensitive to the business cycle. Nevertheless, the pace of technological change in information and communication technology sectors suggests that skills supply will struggle to keep pace with that change.

### **Labour supply: supply falling faster than demand**

Recruitment problems were commonly mentioned in relation to skilled craft workers in the survey. This is an occupational group where overall levels of employment are in decline, but where there are still many employment opportunities because of the level of replacement demand required over the medium term<sup>24</sup>. Nevertheless evidence, often anecdotal, and drawn from the manufacturing sector, suggests that this is an occupational area where it is difficult to recruit either trainees or experienced workers. The ESS1999 Survey revealed that 36 per cent of all skilled craft skill-shortage vacancies were a consequence of 'not enough people interested in this type of work' compared to 30 per cent overall. The evidence from the case studies, which yields some insights into labour supply problems in the engineering sector, suggest that little recruitment of skilled manual workers was taking place, in part because companies were looking to consolidate rather than expand at the time of the study. Comments were made, however, about the general difficulties of attracting trainees of sufficiently high quality given competition from other sectors.

### **Qualitative changes in demand**

From the case study evidence it was apparent, in many establishments that technological and organisational change were changing the nature of skills demanded in the workplace. Technological change was, in part, driven by developments external to the organisation although such change was often piecemeal. More often than not, how technological and organisational change affected skills within the workplace was a consequence of those policies pursued internally within the workplace. This is addressed in subsequent sections looking at the internal causes of skill deficiencies.

## **3.3 A summary of external causes**

Though a substantial proportion of establishments reported recruitment problems, the evidence points to a range of causes underlying them. Typically, recruitment problems have been explained with reference to wage levels and the economic cycle. Undoubtedly, these are factors underlying the existence of recruitment problems reported by employers, but there are other factors which are, at least to some extent, independent of wages and the business cycle, and which relate more to the mechanisms or institutions which are in place to supply skills. On the one hand, this relates to the capacity of the education system and the external training market to deliver the skills demanded by employers, but on the other it also relates to the human resource development and training activities undertaken by employers themselves. This is addressed further in the next section.

**TABLE 3.2**  
TYPE OF RECRUITMENT PROBLEM ACROSS SECTORS

Skills	Engineering	Food Manufacturing	Hospitality	Telecoms	Banking and Finance	Local and Central Government	Health and Social Care
<b>Wage problems</b>		Semi-skilled operatives	General level operatives				
<b>Dynamic excess demand</b>	✓ Engineering Professionals		✓ Chefs	✓ IT Professionals	✓ Professional staff knowledgeable about emerging markets	✓ IT professionals	✓ Associate Professional staff (health care)
<b>Temporary imbalances</b>				✓ Craft level Engineers			
<b>Cyclical imbalances</b>	✓ Intermediate level skills and apprenticeship training	✓ Production line staff	✓ General level operatives and management	✓	✓ Call centre staff		✓ Care staff (social care)
<b>Supply falling faster than demand</b>	✓ Selected Intermediate level occupations and professional engineers		✓	✓			
<b>Marked changes in demand</b>	✓ Engineering and design professionals with management skills			✓ IT staff with knowledge of the latest communication skills	✓ Professional staff involved in new financial products	✓ Staff capable of managing new government initiatives	

Source: ESS1999 Case Studies

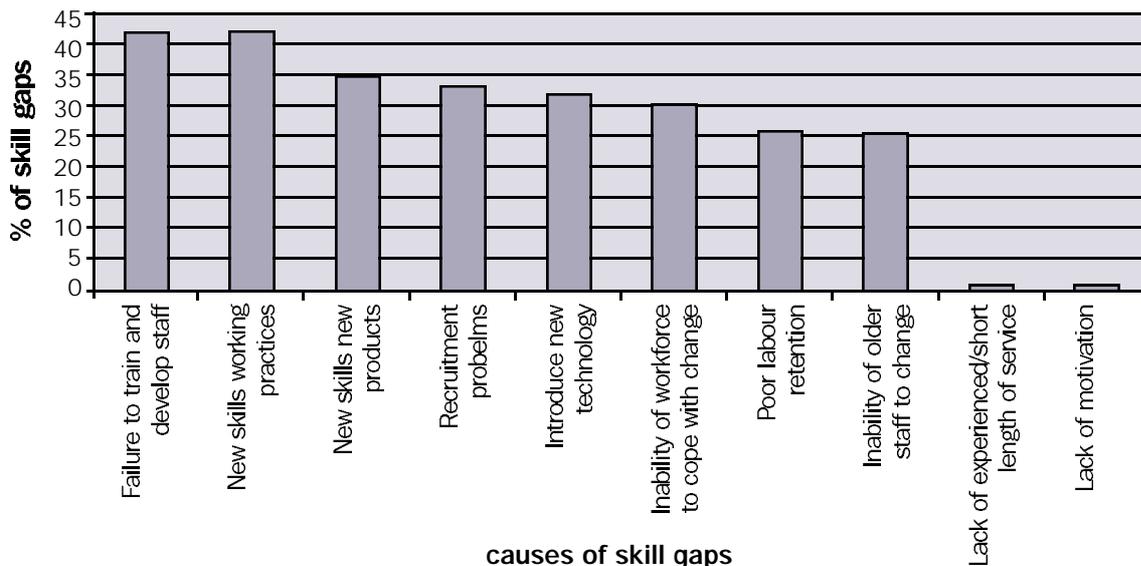
### 3.4 Internal causes of skill deficiencies

A number of factors internal to a company may account for the emergence of skill deficiencies including:

- technical change;
- introduction of new working practices;
- failure to engage in training and human resource development;
- problems of labour recruitment and retention.

Internal skill problems have been designated skill gaps. The survey reveals that respondents perceived that the skills associated with new working practices and failure to train and develop staff were the two more important causes of skill gaps, but there were a number of other factors were also mentioned (see Figure 3.4). According to the respondents, approximately 40 per cent of skill gaps were caused in part by their companies' failure to train and develop staff - well ahead of the 30 per cent associated with the inability of the workforce to keep up with change. The introduction of new working practices was also associated with approximately 40 per cent of total skill gaps. This cause was ranked just ahead of the development of new products (35 per cent) and the introduction of new technology (32 per cent). These changes contributed to skill gaps in nearly all occupational areas, although 'lack of skills required for new product development' particularly applied to managerial and professional occupations. Recruitment problems were cited as contributing to internal skill gaps in personal service occupations and other occupations where hard-to-fill vacancies derived from unattractive job conditions and job applicants' lack of desired personal attributes as much as lack of skills.

**FIGURE 3.4**  
MAIN CAUSES ASSOCIATED WITH INTERNAL SKILL GAPS



Source: ESS1999 Survey (IER/IFF), Bosworth et al (2000)

Skill-shortage vacancies emerged as a consequence of action (or inaction) that leads to recruitment being necessary: such as a lack of staff training and development and/or poor staff retention measures. A number of observations from the case studies are relevant here:

- in high value-added markets such as engineering, investment banking, and telecommunications the principal skill-shortage vacancies related to high level technical skills. In part, this was a consequence of a reported absolute shortage of suitably experienced and qualified persons in the external labour market, but in the case of engineering it also related to a failure to invest in professional engineers over recent years;
- in central and local government vacancies for professional and managerial staff related to the problems of retaining (and recruiting) staff who could earn more in the private sector as a consequence of the rigid pay structures in place in the sector;
- for intermediate level staff in the health sector a combination of limited supply coupled to staff retention problems resulted in skill-shortage vacancies;
- for lower level occupations typically in the hospitality and social care sectors the limited amount of training required to meet the demands of the jobs on offer was such that this could be dealt with through induction training;
- in the food manufacturing sector, which was reliant upon lower level skills, a key problem was literacy which was not able to be solved through induction training;
- keeping existing staff in lower level occupations was a problem where wage competition in local labour markets made retention difficult.

Human resource policies within an organisation may ameliorate external recruitment problems through addressing recruitment and retention, and importantly, head-off the emergence of internal skill gaps. This is not to suggest that establishments that have developed 'higher level' human resource practices will experience fewer external recruitment problems or internal skill gaps. In fact, the opposite relationship is likely to arise if these types of policy are located in establishments that have set more challenging goals and, as a consequence, have a relatively strong demand for highly skilled and qualified staff. This is, in fact, confirmed by the econometric evidence.

The case study evidence sheds further light on the process of technical and organisational change, the development of human resource practices to manage that change, and the emergence of skill gaps within organisations.<sup>25,26</sup> The case studies point towards skill gaps emerging in response to changes in product or service markets:

- in the private sector such problems were related to bringing on stream new products and services; and
- in the public sector it was to manifold government initiatives, aimed at improving both quality and economy, such as Best Value in local government, that give rise to new skill needs.

25 Note that case study establishments tended to self-select themselves for inclusion in the study as a consequence of reporting skill deficiencies.

26 Evidence from the case studies suggests that employers had some difficulty distinguishing recruitment problems from skill gaps.

In the hospitality sector and in food manufacturing, where skill gaps were largely a consequence of recruitment problems brought about by low wages, skill gaps appeared to be somewhat less significant than in other sectors and were more temporary in nature. This may be contrasted with the telecommunications sector, where the merging of telecommunication and computer technologies is creating a rapidly changing industry with respect to both products and processes. This has posed establishments with problems with respect to:

- capturing the technical skills to develop leading edge products;
- changing the skills profile of establishments where there is a problem of skill inheritance from employees skilled in bygone technologies<sup>27</sup>; and
- the problems that arise as companies move from being entrepreneurial to more mature organisations.

### 3.5 Product market position and skill deficiencies

Thus far the analysis has concentrated on the external and internal causes of skill deficiencies, but without reference to the product/service market<sup>28</sup> positions and trajectories that are likely to be a prime determinant of skill needs.

#### **Market position: price versus quality**

Developing a successful product market strategy should not be seen simply as capturing high value-added markets. It is possible for organisations to adopt successful strategies to compete successfully, and profitably, in their chosen market even if it is relatively low value-added. To do so, however, requires a suitable mix of capital and skill investment.

In describing the product market position of an establishment a number of features can be identified:

- the quality of the product or service with respect to the specification of the product;
- the quality of production (low specification goods may be produced to a high quality);
- whether products are mass produced;
- whether products are customised;
- the amount of price competition in the market.

ESS1999 provides evidence that organisations tend to compete, to varying degrees, on many or all the elements listed above. Where once some of the categories may have been mutually exclusive, such as customisation versus mass production, advances in technology have allowed systems of mass customisation to be successfully developed. Depending upon the segment of the market in which organisations are situated the importance of the each of the above elements will vary.

Conventionally, the product market positions of organisations can be classified according to whether they compete principally on price (serving a mass market) or quality (serving a niche or specialist market). The ESS1999 survey captured a substantial amount of information about the performance of organisations (level of sales, sales growth, etc.)

27 A. Pettigrew et al (1989) Training in Britain, Training Agency, Sheffield

28 In the remainder of this chapter product market is used as shorthand for product and service market.

and attempted to classify organisations according to: (a) whether they competed on price or quality; and (b) their plans to move into higher quality, less price sensitive markets. If organisations were not looking to do this, they were asked if they were looking to improve the efficiency with which they produced their existing range of goods and services.

The ESS1999 survey revealed that most establishments' view of their product market recognised the importance of both quality and price (see Table 3.3). It is apparent that respondents did not regard price and quality as mutually exclusive, with 83 per cent of establishments reporting that they produced 'a higher quality product or service tailored to customer requirements'. Only 20 per cent of establishments felt that the statement about foreign imports was 'very' or 'fairly' applicable to their establishments, the corresponding figure for competitive success not depending on price was approximately 51 per cent. Overall, the evidence points towards establishments perceiving their position as one of competing more on quality than price but where price is not unimportant in maintaining their product or service market position.

The results reveal that a majority of establishments were in the process, or were about to commence, plans to improve the range of their products and services, but a much smaller proportion were doing so to achieve higher profit margins (see Table 3.4). One may interpret this as improvements taking place to maintain rather than advance an establishment's product or service market position. Around 24 per cent of all establishments had no plans to move into higher quality product or service areas. Respondents were then asked if they had plans to achieve higher efficiency with their existing products and services. Approximately 37 per cent of those respondents felt that this was 'very' applicable to their situation, 34 per cent 'fairly', 9 per cent 'not very', and 14 per cent 'not all' applicable.

### **Skill constraints on improving market position**

The ESS1999 survey asked respondents who indicated that they were not planning to move to a higher quality product about whether there were financial or skill constraints preventing them from attempting to move up-market. Respondents were asked whether they agreed with the following two statements:

"We would like to move into new, higher quality product or service areas but we cannot afford the high level of capital investment required"

"We would like to move into new, higher quality product or service areas but we lack the required skills in the workforce"

These two constraints enable a useful comparison, giving some feel for the potential importance of skills vis-à-vis other problems faced by firms and other organisations<sup>29</sup>. In interpreting the results, it should be remembered that not all of the establishments asked would want to move up market. Thus, it seems unlikely that high percentages of establishments would report "very applicable". Nevertheless, about 21 per cent responded with either fairly or very applicable to the financial barrier question and about 11 per cent give the corresponding responses to the skills barrier question. It should also be borne in mind that there is considerable evidence that establishments only begin to

<sup>29</sup> Note, however, that the two constraints may not be entirely independent: (i) the quality of the workforce the firm can attract may depend upon its current financial situation (and its ability to raise money for capital investments); and (ii) equally, the ability to raise finance for investment may depend upon the quality of its current workforce.

recognise skill barriers when they actually attempt to change their goals or performance. Thus, the proportions in the “very” and “fairly” categories are likely to be underestimates for those establishments that would, in principle, like to move up-market.

Where establishments were looking to move to higher value added areas and/or improve the quality of existing products and services, the skills they required tended to combinations of both generic and vocational skills. These were broadly the same as those required to fill internal skills gaps. Where companies were not planning to move into higher value-added markets it tended to be financial factors rather than skills supply that acted as a constraint, suggesting that skills are a second order problem when planning changes in product market strategy. This is not to suggest that skills have no impact on the performance - as will be explored in later chapters.

**TABLE 3.3**  
CURRENT PRODUCT AND SERVICE MARKET POSITIONS OF ESTABLISHMENTS

	row percentages						
	Very applicable	Fairly applicable	Not very applicable	Not at all applicable	Total	Weighted base	Unweighted base
It is standard quality product/ service that competes mainly in price (private sector)	27	38	18	17	100	421407	21078
It is a standard quality product or service (public sector)	50	29	8	9	100	112165	5874
It is a high quality product/ service tailored to customer requirements (private sector)	59	25	9	7	100	421407	21078
It is a high quality product/ service tailored to customer requirements (public sector)	62	25	7	5	100	112165	5874
We face serious competition from low cost foreign imports (private sector)	10	10	15	64	100	421407	21078
Competitive success does not depend greatly on price (private sector)	16	35	23	24	100	421407	21078

Source: ESS1999 Survey (IER/IFF)

Base: All Establishments

Note: Table excludes don't knows.

**TABLE 3.4**  
**EXPECTATIONS AND PLANS OF ESTABLISHMENTS**

	row percentages						
	Very applicable	Fairly applicable	Not very applicable	Not at all applicable	Total	Weighted base	Unweighted base
The market for our main product or service will remain strong for 5 years	56	29	5	3	100	533572	26952
We are currently implementing or about to implement plans to move into higher quality product areas with higher profit margins (private sector)	16	21	20	38	100	421407	21078
We are currently implementing plans to improve our ability to meet customer needs (public sector)	58	28	6	6	100	112165	5874
We are currently implementing/ about to implement plans to improve quality of services/ products	37	33	12	16	100	533572	26952
We have no plans to move into higher quality product areas but we do have plans to achieve higher efficiency	37	34	9	14	100	128975	5918

Source: ESS1999 Survey (IER/IFF)

Base: All Establishments

Note: Table excludes don't knows.

The econometric analysis covers the effects of establishment goals upon the propensity to report skill deficiencies at three levels:

- establishment wide goals;
- product strategy; and
- second level/"goal implementation" goals.

Establishment wide goals were considered in terms of the nature of targets set by the establishment. These included sales, costs, profits and productivity. Establishments that had a greater emphasis on the sales goal reported a higher perceived proficiency amongst their employees. In contrast, the econometric analysis presented some evidence to suggest that establishments that reported a greater emphasis on profitability targets were more likely to report a lack of proficiency amongst their employees. A high-level profit goal was also estimated to increase the probability of an establishment reporting a skill-shortage vacancy.

Product strategy was measured by the degree to which establishments made sustained attempts to achieve improvements in the quality of new products or services, and improvements in the quality of existing products or services. Establishments that set more demanding product quality goals were more likely to report the presence of internal skill gaps and have less of their workforce fully proficient. There was little evidence of product market strategies being of major importance in explaining skill-shortage vacancies.

Four goal implementation variables were derived, reflecting the degree to which establishments were achieving a product strategy through cost reduction, the introduction of new working products, the introduction of new technologies other than for routine replacement, and the introduction of new working practices. Establishments that were meeting their product strategies through cost reductions were found to be more satisfied with the proficiency of their employees than others. This was in contrast to those establishments that were currently increasing their use of new technology, who were significantly less satisfied with the proficiency of their workforce. Goal implementation variables were not found to be a significant predictor of skill-shortage vacancies.

### **Puttick grid analysis**

The econometric evidence points to the importance of product market goals as a partial explanation of skill deficiencies. In order to address the complex relationships between product market strategy, performance, and skills in more depth, it is useful to adopt a simple heuristic device that allows product market position to be defined and the skills related to that position to be identified. This device is known as the Puttick Grid. The Puttick Grid uses product/service complexity and the degree of market demand to categorise product market position. Organisations can broadly be categorised into four basic types of product market situation with quite different characteristics and relative requirements from their production systems if they are to be more competitive than their rivals (see Figure 3.5). These are:

- **“super value goods and services”** typified by products or services that consist of a large number of components, probably carrying a relatively high value but in an uncertain market of small size (by numeric volume). Fitness for purpose and functional superiority is critical to success here and relies on higher level skills and competencies;
- **“fashion/fast response”** typified by relatively simple products or services by number of components because they are products in markets that are fickle with short product life cycles;
- **“commodity products and services”** are usually set up for high volumes from dedicated process lines at minimum cost. They tend to be simple products or services and warrant the high capital investment required for the relatively dedicated production systems. Low cost per unit is vital to gaining and not losing an exceedingly tight profit margin;
- **“consumer durables”** includes many products/services that are of moderate complexity but are in much high volume markets of lower uncertainty. Balanced processes are the key to success and optimisation of production techniques are often important.



Classifying the case study sectors according to Puttick Grid is difficult, but Figure 3.5 attempts to give an indication of where they were located<sup>30</sup>. One can differentiate between groups of sectors

- high value-added products of considerable complexity: high productivity sectors - telecommunications, financial services, selected engineering establishments - where price is a consideration but competition revolves around quality of product/service specification and the quality of production;

30 The Puttick Grid was used in the design of the engineering sector study but not so in the other sector studies.

- products and services serving the mass market but where the product may be complex. In the public sector, for example, there was low productivity but strong incentives to improve the specification of the service (eg. joined-up government) and the quality of service delivery (eg. to become more customer facing). Though there was a strong emphasis on quality, these sectors were competing much more on price than in the case of (i);
- low productivity, simple products serving the mass market - hospitality, food manufacturing, and social care - where the emphasis is to improve the level of customisation but competition is very much geared towards price.

The selected sectors had followed significantly different trajectories, from high employment/productivity growth (telecommunications) to employment loss and limited productivity gains (central and local government). Despite this, a number of product market pressures, other than effects of the economic cycle, can be identified.

These were:

- technical change opening up new market opportunities;
- technical change threatening existing markets;
- regulatory change affecting competition in markets;
- supply chain pressures or reconfiguring of supply chains;
- changing consumer tastes and behaviour.

These were usually experienced in combination by case study establishments. What is most critical, from the perspective of identifying skill needs, is the response of establishments either in anticipation or reaction to such changes and the resulting human resource requirements. Again, a number of common responses can be identified:

- identifying market opportunities provided through: (a) regulatory change (liberalisation of markets) and (b) new technology;
- shortening of product-life cycles;
- increased customisation of standard products;
- concentrating on niche markets versus more universal provision;
- organic growth versus merger and acquisition;
- developing strategic alliances, partnerships, and relationships; and
- lowering customer turnover.

How this relates to specific skill needs is addressed below.

### 3.6 Skill needs arising from product market strategy

#### **Efficiency, quality and skill constraints**

It is possible, using the ESS1999 survey results, to explore skill needs of those establishments that:

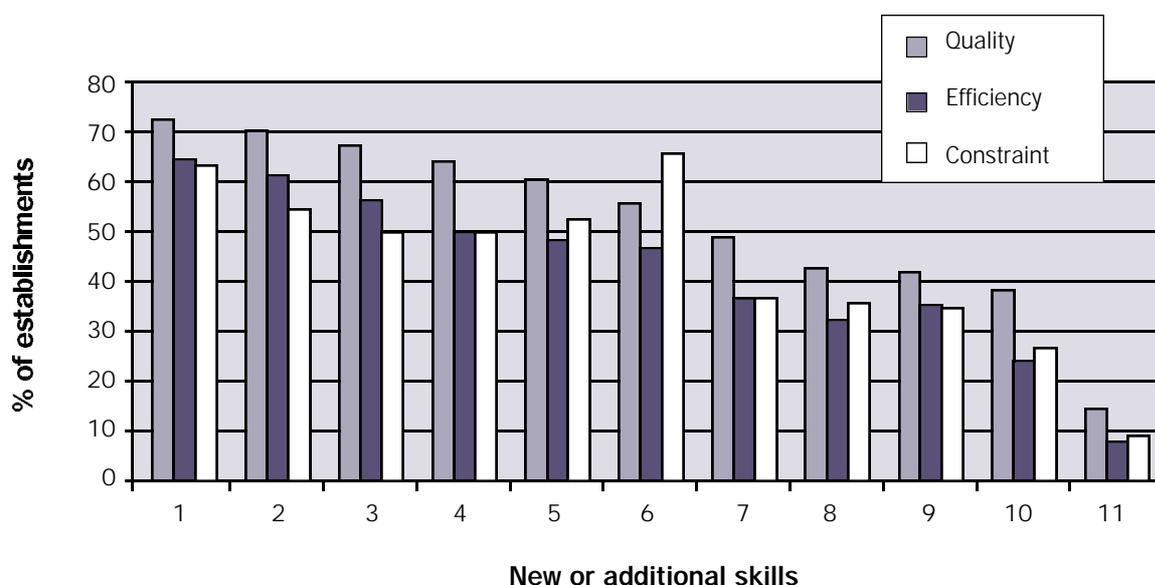
- were currently, or were planning to improve the quality of their products and services;
- were currently or were planning to improve their efficiency if they had no plans to

improve quality; and

- those instances where a lack of skills in the existing workforce constrained the ability of the establishment to improve the quality of its products or services.

A comparison of the new or additional skills required in each of the three instances mentioned above reveals that the demand for specific skills follows a similar pattern in each case (see Figure 3.6). The key difference is that the proportion of establishments in the relevant sample was greater for all but one skill mentioned in those instances where establishments were currently moving or planning to move to higher quality compared to either (ii) or (iii). Given that this group of establishments were in the process of change, and explicitly considering their skill needs, they may be better placed to assess the additional skills required by such change.

**FIGURE 3.6**  
COMPARISON OF SKILL NEEDS



Source: ESS1999 (IER/IFF), Bosworth et al (2000)

Key

- |                      |                              |                       |
|----------------------|------------------------------|-----------------------|
| 1. Team Working      | 4. Management                | 7. Basic Computing    |
| 2. Customer Handling | 5. Problem Solving           | 8. Numeracy           |
| 3. Communication     | 6. Other technical/practical | 9. Literacy           |
|                      |                              | 10. Advanced IT       |
|                      |                              | 11. Foreign languages |

The ESS1999 survey tended to highlight communication, customer handling, and team working skills as the most important in relation to establishments attempting to improve either value-added or the efficiency with which they produced their goods and services. The case study evidence allows a slightly more detailed view of the skills required to meet product market pressures. The key skill areas across sectors related to:

- technical knowledge that went beyond traditional functional boundaries;
- technical knowledge combined with general management skills (eg. team leading);
- ability to manage sometimes complex strategic relationships and alliances;
- managing customer relations; and
- knowledge of product markets to enable new opportunities to be identified.

The development of these skill areas was common across occupational groups and across sectors.

### **Skills within the Puttick Grid**

Returning to the Puttick Grid, it is possible to relate product strategy, competitive performance, and skill requirements in a little more detail (see Figure 3.7). The skill implications of each quadrant vary in importance between the different styles of production system and the customer expectations that they must be able to meet. The successful organisation in the top left 'super value goods and services' quadrant was likely to have good project managers trained in complex risk assessment and able to consider and assess conflicting information and potential outcomes. In addition, it was likely to have a research and development programme and an organisational regime that allows freedom for innovation and creating novel solutions. Organisations in this quadrant revealed a demand for personnel capable of managing complex programmes of change or project teams as organisations sought to improve their product market position. This required a wide range of both technical and management skills relating to product market pressure identified above (eg. shortening product life cycles, market liberalisation, identifying new markets, etc.). There was also a customer service dimension to managing complex projects. Working with customers, to design products that incorporate a much higher degree of customisation than previously, was one of the keys to product market success in engineering.

The telecommunications sector revealed the mix of skills required in a fast moving product market. The key question for individual telecommunications establishments was how to differentiate themselves from the competition whilst hedging their bets about those technologies that might come to dominate the market. A multi-faceted response to the product market was observable. This provided, at a technical level, systems that were readily integrated with other products (open solutions, etc.), coupled to developing strategic alliances and relationships across the supply chain. This ensured that the products reached the widest customer base. It also required investing heavily in customer service. The emphasis on customer service was particularly important since the adherence to open solutions, the pace of technical change, and the number of players in the market combined to ensure that there was little customer loyalty (customer churn). Falling technology prices meant that companies were not able to compete on price - although this may not have been a desirable competitive strategy - so that the emphasis fell on providing a high level of customer care. For several establishments this required a substantial investment - for example, in telephone help lines.

**FIGURE 3.7**  
**PUTTICK GRID: SKILL NEEDS**

		High Complexity		Low
High "Agile" Uncertainty	High	Project management Research & Development	Marketing Logistics	
	Low	Product or service design skills Craft production or delivery skills	Craft production or delivery skills	
Low "Lean"	High	Team working System design	Cost control System design	
	Low	Cell manufacturing Communication skills	Plant maintenance Logistics Unskilled minders/Operatives	

Organisations in the top right 'fast response' quadrant, were more likely to have a dynamic management team that was able to respond to new ideas and to adapt to a new opportunity with a workable blend of skills that they could resource quickly. Adaptability of skills was again crucial to success and was more likely to come from motivated skilled people. Logistics can be the make or break factor in keeping control of costs and increasingly involved information management.

Organisations in the bottom right 'commodity' quadrant, whenever possible, employed unskilled rather than skilled employees in order to keep costs down. They typically invested in process lines, integrated systems, and high levels of automation to reduce running and product costs. Preventative maintenance and rapid system fault diagnosis were all crucial to success. In food manufacturing this was essential given the nature of supply-chain relationships.

Organisations in the bottom left quadrant needed to offer a balanced solution to what were often conflicting customer expectations and system demands. Flexibility of technology and people to address a complex catalogue of variants and options was often the key. In order to achieve this, production techniques and technologies needed to be married up with good teamwork, involving a mixture of skills and skill levels to achieve a 'right first time', 'no waste' approach. The production skills required were more about technician skills, product changeover, re-setting, and re-programming than creating it for the first time.

Important in this quadrant were IT skills at an intermediate level. In local and central government, for instance, many of the initiatives that the Government has introduced will be realised through greater use of IT. It is anticipated that IT will provide an opportunity for communication across departments and agencies which will free more time to develop a more customer facing service. The public sector establishments were not subject to market pressures in the same way as those in the private sector. In local and central government, the agenda for change was established by the range of Government initiatives outlined in the White Papers Modernising Government (1999) and Modern Local Government, In Touch with the People (1998). Nevertheless, there were pressures that were analogous to the private sector, such as the emphasis on:

- working across department (functional) boundaries;
- customer facing services;
- obtaining best value and increased efficiency.

The general pattern to emerge from across the sectors was a recognition that even to stand still in the product market one needs to be constantly addressing quality and price considerations. At first glance the evidence points to skills being of secondary importance in this respect. Financial constraints, for instance, were cited more often than skill constraints by employers as a reason for not shifting to higher value-added segments of the marketplace. But this interpretation downplays the role of skills too much.

The evidence reveals that positioning oneself in higher value-added segments of the market - such as the super value-added quadrant on the Puttick Grid - required high level skills capable of adapting to safeguard market position. This is likely to be reflected in the skill-shortage vacancies and skill gaps as companies realise what is demanded of their staff as new technologies and working practices are introduced. This is evidenced in the finding that companies pursuing profit oriented product market strategies were more likely to experience skill deficiencies.

In the context of product market strategy there is much evidence to suggest that whilst skills constraints may be less important than financial ones, they nevertheless play an important role to play in organisation's product market strategies.

## 3.7 Conclusion

Chapter 2 revealed that the extent of skill-shortage vacancies and skill gaps was extensive. This chapter has shown that their causes are various, linked to both external skills supply and the policies pursued within organisations relating to training and retention. By focussing on the role of product market strategy and its relationship to skill deficiencies the complexity of the situation becomes apparent. Skill-shortage vacancies, and particularly skill gaps, emerged not simply as a consequence of current skill needs not being met but as part of a more complex process, where changes in the external product market and the policies of organisations that anticipate or react to those changes give rise to a longer term process of skill change. This was most apparent in relation to the those organisations involved in the super value-added quadrant of the Puttick Grid.

The evidence from ESS1999 highlights employers' perception of the causes of skill deficiencies. This places considerable emphasis on seeking to explain skill-shortage vacancies with respect to conditions in the external labour market. The evidence points to demand outstripping supply for personnel at all levels of the occupational hierarchy. This is given further credence by the analysis of local unemployment rates (used as proxy measure of labour availability) which suggests that skill-shortage vacancies were more prevalent in areas with relatively low levels of unemployment. Evidence drawn from previous surveys suggests that skill deficiencies are not simply explained by reference to the business cycle. Though there is a cyclical component to the incidence of skill deficiencies, the evidence also points to their being structural causes related to the operation of the education and training system and the activities of organisations in supplying themselves with the skills they require, notably their failure to train and develop staff. The latter is cited as one of the key causes of internal skill gaps.

Though not necessarily representative of the population of all establishments, the case study evidence is nonetheless able to flesh out the reasons underlying employers reporting of skill-shortage vacancies such as the changing nature of skills demand (see Table 3.5). Except in the public sector, and in those sectors reliant upon relatively less skilled staff, the underlying cause of recruitment problems and skill gaps related directly to the supply of skills rather than wage problems. Most importantly the case studies point to changes in the product market generating a demand for skills, as organisations adapted their product market strategies in line with market trends[IS11]. This is also supported by the survey evidence, which highlights the importance of the introduction of new working practices in generating new demands for skills.

The product market of the establishment is especially important with regard to skill gaps. The introduction of new products, and technical and organisational change were cited by a significant number of establishments as accounting for the reason why their staff were not fully proficient at their jobs. Driving product market change, in relation to liberalisation of markets and the use of IT, had created skill gaps at a professional and managerial level because of the scarcity of personnel able to manage such change, especially where managers and professionals lacked hybrid skills, combining different mixes of technical and management skills to push their businesses forward.

The responses of organisations to skill-shortage vacancies and skill gaps and their impact on economic performance are considered in detail in the next section.

**TABLE 3.5**  
SUMMARY OF RECRUITMENT PROBLEMS, SKILL GAPS AND CAUSES IN SELECTED SECTORS

	Skill Problem Recruitment Problem	Skill Gap	Skill Problem	Cause Wage Problem
<b>Engineering</b>	Higher level professional skills in combination with management skills and team leaders at intermediate level	Experienced designers able to manage teams	Absolute shortage of skills in external labour market	
<b>Food Manufacturing</b>	Production line workers	Ability to develop flexibility to realise efficiency gains		Low wage, low skill sector
<b>Hotels and Catering</b>	Flexible staff at all levels			Low wage, low skill sector
<b>Telecommunications</b>		Hybrid technical and management skills		Limited supply from HE sector
<b>Banking and Finance</b>		Lack of knowledge of emerging markets	Limited supply of people with working knowledge of new markets	
<b>Local and Central Government</b>				
<b>Health Care</b>	Recruitment of associate professionals		Limited current supply of physiotherapists, radiographers, etc.	Relatively low wages in some regions results in difficulties of skill retention
<b>Social Care</b>	Care staff			Low wage, low skill sector; failure to recognise caring as a skill

Source: ESS Case Studies

## 4. IMPLICATIONS OF SKILL DEFICIENCIES

### 4.1 Introduction

The previous chapter addressed the causes of skill deficiencies, focussing upon factors internal to the workplace and those in the external labour market. This chapter explores how organisations responded to those skill deficiencies and the eventual impact on organisational performance. The analysis goes beyond reporting employers' responses to a series of questions about the impact of recruitment problems or skill gaps on business performance to provide:

- a more holistic analysis based on the evidence from the case studies;
- a quantitative analysis based on a multivariate econometric assessment of the impact of skill deficiencies on a range of performance indicators; and
- an indication of the impact of latent skill gaps on company performance.

The chapter starts by looking at the responses of establishments to the existence of skill deficiencies in relation to their recruitment and wider HR policies. It then examines in more detail the impact on business performance before addressing latent skill gaps.

### 4.2 Responding to skill deficiencies

Since there is evidence that skill deficiencies, either skill-shortage vacancies or skill gaps, are numerous in the economy, it is important to consider how organisations addressed them in the workplace. Many employers were aware of an impact of skill deficiencies on business performance and given this were attempting to address them. It is also apparent that many others remained unaware of the full implications of skill deficiencies for the long-term success of their businesses. Responses to skill deficiencies included:

#### **Retention**

- reviewing wage rates
- reviewing terms and conditions of employment to keep existing members of staff and recruit new ones

#### **Recruitment**

- better targeting of potential supply of recruits
- lowering entry requirements
- developing stronger links with education institutions
- use of agency workers

#### **Organisation**

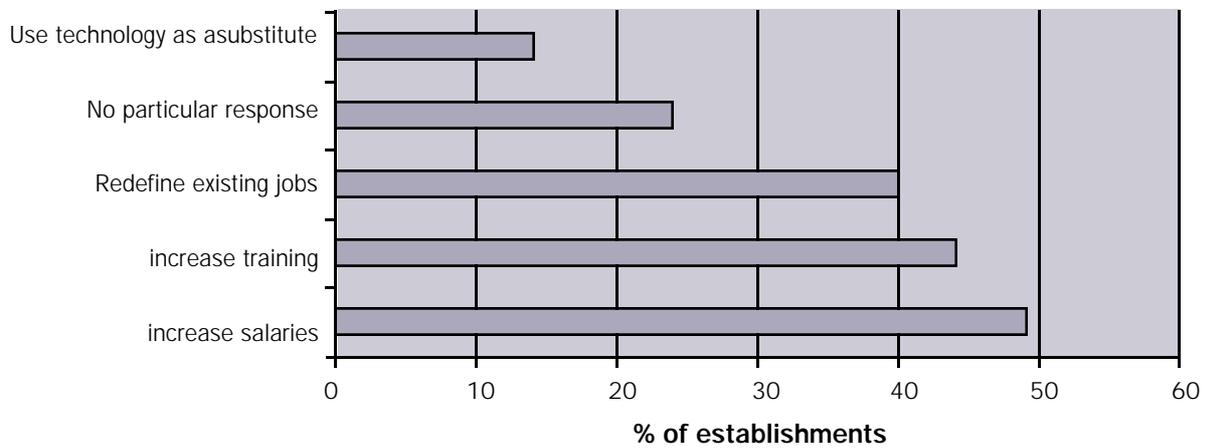
- overtime work
- outsourcing
- overtime worked by existing staff courses
- work re-organisation and review of the supply chain

## Training

- training and development of existing or new employees

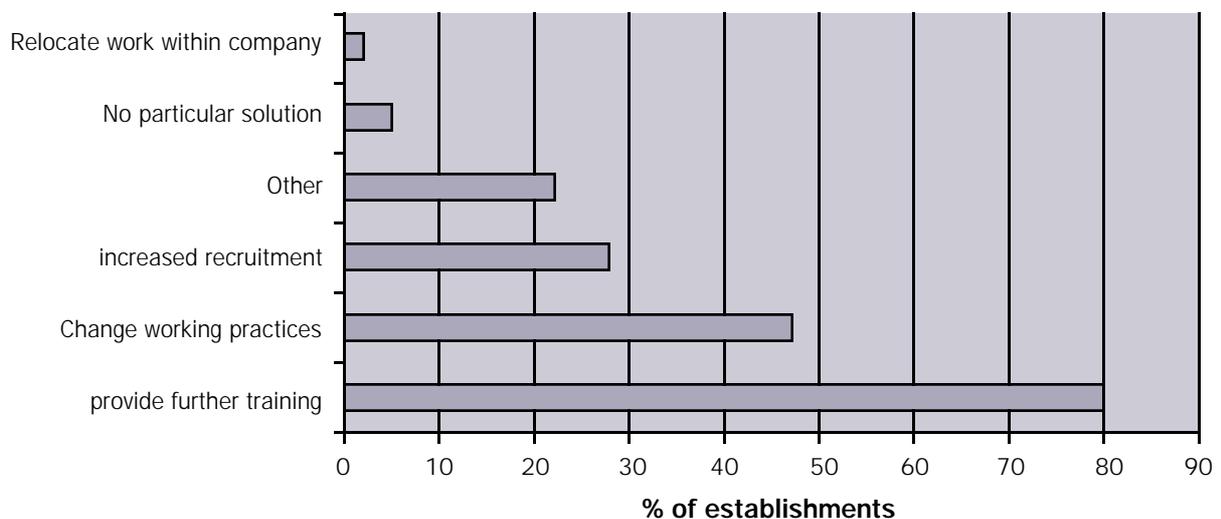
Where a skill-shortage vacancy existed, employers reported that they were most likely to resort to increasing salaries, increasing training, redefining existing jobs, or using technology to substitute for labour (see Figures 4.1 and 4.2). In general, where a skill-shortage vacancy existed for a higher level occupation, establishments were more likely to resort to some solution than if the problem was for a lower level occupation. For example, in just 15 per cent of cases, the respondent indicated that the establishment had not adopted any of the above solutions in relation to their skill-shortage vacancies for managers compared to 38 per cent for sales occupations.

**FIGURE 4.1**  
RESPONSE OF ORGANISATIONS TO SKILL-SHORTAGE VACANCIES



Source: ESS1999 Survey (IER/IFF), Bosworth et al (2000)

**FIGURE 4.2**  
RESPONSE OF ORGANISATIONS TO SKILL GAPS



Source: ESS1999 Survey (IER/IFF), Bosworth et al (2000)

Where the respondent indicated that fewer than “nearly all” employees in an occupational area were proficient, an enquiry was made as to the methods used to overcome such skill gaps. Where internal skill gaps existed, the most common response was to provide further training (80 per cent of skill gaps) - changing working practices (47 per cent) and increased recruitment (28 per cent) were also common responses. In just 5 per cent of cases no particular solution was cited.

The response to skill gaps varied between occupations. Increased recruitment was more likely to be a response with regard to skill gaps amongst personal service occupations, plant and machine operatives, and other manual occupations. This may reflect the respondent’s perception of the availability in the external labour market of the skills associated with these occupations. Providing further training to existing staff was a more common response across many occupations, especially so with respect to professional, clerical and secretarial, personal service, and sales staff. Changing working practices was another frequently quoted response by establishments, being mentioned for all occupations. Relocating work within the company was mentioned by very few respondents, regardless of occupation.

### **Retention of employees**

As noted in Chapter 3, a failure to retain staff was one of the main causes of skill deficiencies in establishments. According to the case study evidence, several establishments were addressing the retention of employees. Labour turnover was a problem facing several establishments, although it was regarded as potentially beneficial where it allowed new people to enter the business and to ease skill bottlenecks - as reported in the engineering and telecommunications industries. In engineering, labour turnover amongst professional staff was at a critical level. The main reason reported was the absolute shortage of individuals with the skills required (especially in relation to new product development): typically technically competent design and software engineering managers with substantial experience. Labour turnover was also high in the food manufacturing, hospitality, and social care sectors. Here the low skill nature of much of the work and the availability of higher waged work in other sectors locally was the main cause. In addition, there was also a tradition in the hospitality sector of people, especially amongst chefs, developing their careers by moving between establishments to fully develop their talents.

At managerial and professional levels there was evidence that organisations had reviewed their employment packages in order to keep key members of staff. This mainly referred to increasing wages, but examples were cited in the telecommunications sector of providing stock options to key employees in addition to increased salaries. Increasing wage rates was a common response for higher level occupations in engineering, telecommunications and banking. Sometimes this was an ad hoc response for a particular vacancy, in other instances it had been subject to comprehensive review especially so in telecommunications, which appeared to suffer from the most severe recruitment problems.

## Recruitment methods

Recruitment methods were being reviewed in many instances where there were recruitment problems. Recruitment for lower skilled staff tended to be focused on local labour markets and was undertaken through traditional methods: word-of-mouth was still an important source of recruits. Recruitment for higher skilled staff was in regional, national, or international labour markets depending upon the seniority of the appointment. What was common across all sectors was the failure of traditional recruitment methods to provide successful applicants at higher levels. A wider range of new recruitment methods were being employed including:

- establishing better links with universities to obtain more graduate applicants and to influence curriculum development;
- sponsorship of students in higher education;
- developing a network of contacts throughout relevant industries;
- searching for applicants down the supply-chain;
- establishing more permanent relationships with sub-contractors.

Often the most sought after staff had established their own network of contacts and business links and firms recognised a need to tap into these networks - especially in telecommunications, banking and finance, and engineering. The problem for establishments is that tapping into these networks is synonymous with bidding up the price of the skills required. In engineering and telecommunications, where skills were in short supply, establishments admitted that they had resorted to increasing wages to retain existing staff and to attract new recruits. In sectors such as central and local government, where there was also a demand for highly skilled and qualified staff but there were constraints on increasing salaries to retain and recruit such staff.

Strategic responses to solving recruitment problems related to improving recruitment techniques and targeting selected university departments to acquire both graduate recruits and on-going professional development and training for existing staff. In other instances, better links were being established with parent companies linked to offering career progression through the parent, thereby increasing the attractiveness of establishments to potential applicants.

Some firms had considered lowering entry requirements. Several engineering establishments seeking design engineers reported that they had considered lowering entry qualifications but had rejected it because it would result in an internal skill gap at a later date. One telecommunications establishment reported that graduates felt overqualified for the jobs on offer so the company had recruited HND qualified employees and trained them to the required standard. Another establishment, which had also adopted this approach, felt that it assisted with staff retention because more qualified recruits might have become bored and left their employment.

Use of agency workers was common at lower and intermediate skill levels. At higher skill levels, problems relating to the control of the production or service process and the sometimes confidential nature of the work being undertaken meant that use of agency

workers was often thought inappropriate. Nevertheless, the acute shortage of engineers with design experience was such that these were frequently recruited through agencies in some engineering establishments or were taken on a self-employed status (this allowed the individual employees to maximise their earnings).

### **Organisation of work**

Whilst a skill-shortage vacancy existed it was left to existing staff to organise around the problem. Overtime, often unpaid for managerial staff, provided one means of overcoming recruitment problems where this was limited to a small number of hard-to-fill-vacancies. This was generally regarded as a short-term solution but it can become institutionalised, especially where it is unpaid<sup>31</sup>. This was a common response in central and local government where the overtime work fell mainly on managers.

Overtime also provides a means of overcoming internal skill gaps: those with the necessary skills work longer which may have implications for retaining such staff. In the local authority sector examples were cited of such practices leading to stress amongst staff. This hardly represents a remedy for a skill problem: if there is a recruitment and retention problem for a given group of staff, increasing their hours of work even tacitly is unlikely to retain a group which faces good opportunities in the external labour market.

Outsourcing was commonly used across sectors, often in relation to IT functions. It was seldom a solution with respect to a single incidence of a recruitment problem but was more likely to be a strategic response as to whether the functional area was a core business or generated sufficient value-added, as much as whether the establishment was able to staff it. In this context, outsourcing becomes part of a wider set of supply-chain issues relating to what activities are located where in the chain. It is inappropriate, therefore, to describe outsourcing as a response to a recruitment problem. It is better to understand outsourcing as part of a wider set of strategic thinking relating to what the business is able to achieve internally and what is best located elsewhere through the development of a supply-chain.

### **Training and professional development**

The results from ESS1999 Survey suggest that training was an important response, especially in the face of internal skill gaps. Mentions of training and continuing professional development was conspicuous by its absence in much of the case study data. At the higher end of the skill spectrum, this related to the fact that establishments were looking for well-rounded, experienced professionals. This was most obvious in the telecommunications and engineering sectors. This raises an important question not fully addressed in the case study evidence about the extent to which it is the responsibility of the state, employer, or individual to equip employees with the skills that will raise their employability.

The role of staff development in its widest sense needs to be viewed alongside policies that seek to motivate staff often through the achievement of a degree of job satisfaction or improved job quality. Given the emphasis in later sections of the report on the failure to fully develop a range of generic skills such as communication and team working, this

31 T. Hogarth et al., (2000) Work Life Balance: Summary Report, Department for Education and Employment, London. This report highlighted the high proportion of professional and managerial staff working unpaid additional hours.

may suggest that there was insufficient attention being paid to those human resource policies that sought to develop people in a wider sense and integrate them into the workplace. At a time when the life-long employment relationship has disappeared<sup>32</sup>, and certain groups of employees develop 'portfolio careers' this may be a particularly difficult problem for human resource functions to resolve, since it suggests a level of investment in staff beyond that required to ensure that they are technically competent to undertake their immediate set of tasks.

### 4.3 Human resource strategies and skill deficiencies

The discussion above has outlined the types of response put in place by establishments once they had arisen. There is also a need to address policies at a more strategic level designed to anticipate future skill-shortage vacancies or skill gaps that may have an impact on organisational performance. In summary, it is possible to differentiate between those establishments where HR strategy (i) was embedded in the product market strategy and anticipated skill needs, and (ii) where it was largely reactive to a skill deficiency.

One of the principal weaknesses of HR policy in meeting the skill needs arising out of product strategy, was its lack of involvement in the development or planning of that strategy. There was little evidence to suggest that the HR function was involved in the development of product market strategies in the private sector. Organisational responses to product market pressures, such as achieving better productivity, creating a culture of continuous improvement or acceptance of change, had a significant human resource dimension. Yet as the engineering sector demonstrates these type of responses tended to be articulated in terms of engineering or manufacturing solutions. The HR function was expected to translate this into HR policy, but only at the point at which change was about to be introduced. In many respects, the capacity of an organisation to recognise and define product market threats and opportunities and to construct an appropriate business response to them was the primary issue. In some sectors, such as food manufacturing, an immediate response was required to some performance crisis. Even if in the first instance the response to product market pressures was with regard to production processes, the evidence points to there being a significant human resource component even if this is developed subsequently. As noted in the previous sections, the primary HR task for many organisations, faced as they were with the task of reducing costs whilst simultaneously maintaining quality standards (both in processes and products) was to address the way in which work was organised and to ensure that employees were sufficiently customer focused. A summary of responses is provided in Table 4.1.

32 It is recognised that the evidence relating to the end of the lifelong relationship is not conclusive - the duration of job tenure has been stable for many years.

**TABLE 4.1**  
**HUMAN RESOURCE IMPLICATIONS OF RESPONSES TO PRODUCT MARKET PRESSURES**

Product Market Response	Human Resource Implications
Improving efficiency through IT	Development of IT skills throughout organisation; sourcing professional IT staff
Improving efficiency through work organisation	Developing new ways of working Identifying how skills to be deployed Identifying new skill needs Identifying training needs Recruiting additional staff as required Obtaining agreement to new ways of working
Developing strategic relationships	Learning to manage relationships between various organisations in the supply-chain /alliance
Continual improvement	Developing work culture where employees strive for continual improvement On-going development and training Developing reward structures for continual improvement
Becoming more customer facing	Developing appropriate attitudes in workforce for managing relationships with customers Identifying skill needs to manage customer relationships
Encouraging innovation	Understanding of how new products and processes affect work organisation Identification of skill requirements

Source: ESS Case Studies

There were only a few examples, notably in central and local government, of organisations strategically reviewing the human resource implications of changes in product market or corporate strategy. The local government sector revealed organisational change was more effectively achieved where there has been an integrated approach to achieving change that included the HR function. Where a review had taken place of the skill needs resulting from impending change, provision of training and professional development designed to equip employees with additional technical and generic skills could be deployed. Whereas the local and central government sector revealed how skill deficiencies could be minimised where HR policy was an integrated part of the corporate plan, in other sectors the HR response was perhaps more one of muddling through. The case studies suggest that product market strategies tended to be articulated primarily with respect to systems and processes rather than with respect to people and skills required to drive forward the business strategy. Where they tended to be articulated with respect to skills it was generally limited to professional and managerial level ones.

Skills, then, were regarded as a second order problem by many respondents. This may well under-estimate the importance of skills in organisational performance as the following sections reveal (and as indicated in the previous chapter).

## 4.4 Impact of skill deficiencies on business performance

### Recruitment difficulties

From the case study evidence the overall picture is one of employers recognising that skill-shortage vacancies and skill gaps had a detrimental impact on business performance but that their essentially reactive HR policies to such problems tended to take the edge off any impact. The respondent's perception of impact of recruitment problems on the establishment is dealt with explicitly in the survey. The impact of skill-shortage vacancies on the performance of the establishment is summarised in Figure 4.3. Overall, 'difficulties meeting customer service standards' was the most commonly reported response, affecting about 60 per cent of skill-shortage vacancies. 'Delays in developing new products or services' (44 per cent), 'increased operating costs' (42 per cent) and 'difficulties meeting required quality standards' (37 per cent) were also important. These may be considered relatively mild impacts compared to 'loss of business' or 'delays developing new products or services', but these impacts were reported in both a substantial proportion of those establishments with hard-to-fill vacancies and skill-shortage vacancies. This suggests that recruitment problems had a serious impact on establishment performance across the economy as a whole.

**FIGURE 4.3**  
IMPACT OF SKILL-SHORTAGE VACANCIES ON ESTABLISHMENT PERFORMANCE



Source: ESS1999 Survey, Bosworth et al (2000)

- |   |   |
|---|---|
| A - Difficulties with customer service        | F - Difficulties with organisational change |
| B - Delays developing new products            | G - Withdraw products                       |
| C - Increased costs                           | H - Difficulties with technological change  |
| D - Loss of business or orders to competitors | I - None of the above                       |
| E - Difficulties with quality                 |   |

A comparison of the impact of recruitment problems by occupation reveals some notable differences. Overall, it appeared to be skill-shortage vacancies for craft, sales, and operatives that were more likely to have the most serious impact on current establishment performance. In particular, respondents indicated that around 53 per cent of skill-shortage vacancies for craft workers led to a loss of business. For sales occupations and operatives the corresponding figures were 47 and 45 per cent respectively. These are much higher proportions than in any other occupations. In contrast, such recruitment problems relating to managers, professionals, and associate professionals were more likely to lead to an impact such as delays in 'developing new products and services', or 'difficulties with customer service'. These, of course, may have important long-term implications for performance.

These consequences were most severe in small establishments, where the unfilled positions represented relatively large proportions of employment. Longer-lasting vacancies, however, in craft, associate professional and professional occupations were strongly associated with customer service problems and delays in introducing new products and services in establishments of all sizes.

### **Internal skill gaps**

The previous discussion suggests that the impact of recruitment problems on organisational performance was substantial. With respect to skill gaps amongst the existing workforce, one might expect this to have an even more direct impact because it refers to the capacity of existing staff to undertake satisfactorily their current jobs.

Meeting customer service and quality standards were the most commonly cited consequences of internal skill gaps (see Table 4.2). For instance, 45 - 50 per cent of skill gaps amongst personal service staff resulted in a difficulty with customer care or product quality. The final column of Table 4.2 shows the relative importance of different consequences of skill gaps for establishment performance also allowing for differences in sales growth. The base for the table is all establishments reporting an internal skill gap in at least one occupational area. Thus the final column of data indicates that around 49 per cent of establishments with internal skill gaps reported that they had a skill gap that had an adverse impact on their ability to meet customer service objectives. While only 13 per cent suggested that it had resulted in withdrawal from product areas, it should be noted that this appears to be a fairly drastic impact. In addition, significant proportions also picked out the more dynamic problems that will affect company performance into the future, delays in developing new products (28 per cent), introducing technological change (26 per cent) and difficulties in introducing new working practices (35 per cent).

**TABLE 4.2**  
**IMPACT OF CURRENT SKILL GAPS AND SALES GROWTH CATEGORY**

Consequence	Sales Growth Category					All establishments
	Increased great deal	Increased a little	Stayed same	Decreased a little	Decreased great deal	
Loss of business/orders	28	30	32	36	44	31
Delay in developing new products	32	25	31	35	36	28
Withdrawal of products/service	12	12	14	16	18	13
Difficulties meeting customer service	50	50	47	53	60	49
Difficulties in meeting required quality	43	42	41	48	48	42
Increased operating costs	39	36	36	43	47	36
Difficulties introducing technological change	25	23	28	36	34	26
Difficulties introducing new work practices	38	35	34	43	39	35
None of these	30	27	29	21	25	27
Weighted Base	15501	32991	22251	1191	4669	104985
Unweighted Base	829	1873	1346	742	287	6088

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Source: ESS1999, Bosworth et al (2000)

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Base: All establishments reporting internal skill gaps

Table 4.2 also sets out the results broken down by change in total sales over the previous 12 months. A “U-shaped” relationship can be seen for most categories of consequence, although the minimum point shifts between the sales “stayed the same” and the sales “increased a little” categories. A further feature is the significantly greater percentages in the “decreased a great deal” category than in the “increased a great deal” category. Thus, while skill gaps are associated with fast-growing establishment losing business/orders, this was a much more significant problem amongst the rapidly declining establishments. In addition, it should be remembered that there is a sample selection problem here, as establishments that closed down (which, on the basis of this evidence, would have experienced even greater skill problems) are not observed.

The econometric analysis provides significant evidence as to the impact of skills upon firm performance. The key finding here is that higher levels of proficiency amongst employees<sup>33</sup> were estimated to have a significant impact upon two measures of performance: (i) relative sales growth category; and (ii) a self-selected performance measure. Other important findings demonstrate:

- higher levels of qualification in the workforce had a positive impact on current and future business performance;
- HR policies that attempted to improve conditions of employment (eg. staff development, job satisfaction, work environment) benefited business performance;
- where employers allowed their staff to have some control over the content and pace of their work this was reflected in better business performance;
- staff involvement in formal skills development improved performance;
- increased wages, profit sharing, and performance related pay were all related to better business performance.

The evidence strongly points to complementarities between HR policy and business performance.

### **Managing around skill deficiencies**

The analysis above has outlined respondents’ perceptions of the impact of skill deficiencies on their business. The impact of any current skill deficiency, where it is recognised by the employer, will be ameliorated to some extent by attempts to offset any loss to the business, or problems with customer service, and such like. At the beginning of this chapter employers’ responses were outlined regarding the attempts they had made to secure the skills they required. There is also a need to consider what they did in the meantime whilst they looked for those skills.

Case study establishments reported a number of impacts of skill deficiencies on their business relating to: delays in product development, loss of business, delivery of a less than ideal service, delays in introducing change. Overall, however, there was a sense of trying to organise around problems - as indicated in previous sections.

33 Based on a proficiency score - see econometric report for details

How do skill deficiencies affect business performance? At its simplest level this refers to:

- a lack of efficiency;
- slowed product development;
- a failure to realise opportunities.

Possessing the technical skills to avoid such problems is only part of the story. In the banking sector, examples were cited of where the lack of the technical skills created difficulties relating to capturing emerging markets because knowledge was in short supply. Across all sectors it was mainly the failure to acquire the right mix of skills (technical, managerial, and team playing) that inhibited performance and made it sub-optimal. In the engineering sector, it was design skill requirements encompassing both technical competence and the ability to manage teams of designers. In other cases, such as food manufacturing, a lack of communication and management skills related to poor attitudes to work combined to bring about a lack of attentiveness on the production line, leading to machine breakdowns and higher than otherwise wastage rates. In the service sector too the impact of skill gaps can pose severe operational problems. In local government, a lack of IT staff had increased pressure on managers resulting in non-ideal solutions for departments and slower response times for PC support problems.

There was evidence from the engineering sector that recruitment problems relating to IT had been solved by transferring this function abroad to locations where there is a more plentiful supply of IT graduates and diplomats - typically the Far East. A question arises about the extent to which this relates to routine data processing or a more integral element of the production or service process, such as design and product development. Within a multi-national corporation (MNC) context this raises questions about where knowledge is located globally. MNC location plans are likely to be determined by a number of factors and there is little evidence to suggest that skill formation is a primary factor. On the other hand if a country does not possess skills of a particular type it is unlikely that MNCs will locate that work here. It is not clear whether outsourcing beyond the UK is a consequence of, other things being equal, the price at which those activities can be undertaken abroad, or a skill supply-side problem in the UK. The case study for the telecommunications sector also demonstrates that business can be switched between countries if necessary.

Summarily the implications arising from skill gaps with respect to the types of response organisations had implemented in response to product market pressures are outlined below (see Table 4.3).

**TABLE 4.3**  
**SKILL DEFICIENCIES AND IMPLICATIONS FOR ORGANISATIONAL PERFORMANCE**

Product Market Response	Skill deficiencies and their implications
Improving efficiency through IT	Lack of IT skills results in delays or sub-optimal implementation of technical and organisation change - as in local government Lack of IT skills delays to development of new products and processes
Changing work organisation	Difficulty in achieving aims where skills designed to foster team work or lead project management teams are lacking - as evidenced in the engineering sector
Developing strategic relationships	May lead to sub-optimal relationships where core activities are sub-contracted because of lack of skills in-house
Continual improvement	Delay or failure in meeting standards required
Becoming more customer facing	Delay or failure in meeting standards required
New product and service development	Delays in development of products reported; may also limit capacity of establishments to develop products leading to development taking place elsewhere in multi-site/multi-national organisations

Source: ESS1999 Case Studies

## 4.5 Latent skill gaps

Chapter 2 introduced the concept of latent skill gaps. Thus far the analysis has been concerned with manifest skill gaps as identified by employees and management. It is also important to consider latent skill gaps, although this requires some assumptions to be made in the analysis about an organisation's objective skill needs. Latent skill gaps emerge where employers may simply not perceive that they have a problem, because they are not fully aware of skills that might be needed to optimise their companies' performance<sup>34</sup>. Since latent skill gaps are by definition unobserved, the analysis proves complex. In order to simplify the discussion, this section starts by addressing the case study work, that permits a comparison of an establishment's performance with reference to some industry standard of good or a more optimal performance. Such an analysis is ultimately subjective, but helps set the scene for a more quantitative assessment of latent skill gaps based on the survey evidence.

<sup>34</sup> There may be other reasons why skill deficiencies are not reported. This may reflect ignorance on the part of the respondent or the perception that nothing can be done to resolve the problems, so they are not worth reporting.

### **Qualitative evidence of latent skill gaps**

Analysis of latent skill gaps emerging from the case study analysis reveal a number of different aspects (see Table 4.4). The evidence indicates that latent skill gaps emerge as a consequence of:

- less dynamism in product market strategies;
- relatively poor workforce deployment;
- less integrated approaches to organisational change.

A lack of product market knowledge or a lack of dynamism was revealed amongst some of the smaller, owner-proprietor establishments in the hospitality sector who appeared to be locked into a declining holiday market. Whereas they might to be expected to struggle if they attempted to capture market share from their larger counterparts (eg, conferences, business travel) there were examples of other small hotels and restaurants expanding their market and service range by, for example, developing strategic marketing alliances with hotels and tourist organisations, both regionally and nationally. Such organisations were better placed to maintain or improve their product market position compared to those that had not taken this route.

In the engineering sector examples were cited of companies that were similarly locked into low value-added, high-volume ranges of goods. Here the product markets were in decline. The company's response was to focus on costs by moving towards continuous flow of production rather than the more fragmented production system in place hitherto. However, the inability of such businesses to develop higher value-added products left them vulnerable to low-cost imports. Whilst they had improved the efficiency with which they produced their products, these were unlikely to offset the wage cost advantage of competitors in the Far East. In food manufacturing, companies that had been started on the back of a 'good idea' had their product market positions challenged as competitors moved into their markets. Their inability to develop a new range of products whilst the competition, often much larger producers, brought out a comparable range of goods, left them competing increasingly on price.

**TABLE 4.4**  
**LATENT SKILL GAPS AND THEIR IMPLICATIONS FOR ORGANISATIONAL PERFORMANCE**

Sector	Examples of latent skill gaps	Implications for performance
Engineering	Component manufacturer: reliance on traditional ranges of products using semi-automated production technologies	Susceptible to low cost of imports from Far-East - increasingly competing on price resulting in lower company profitability.
Food manufacturing	Various niche manufacturers: entered market with an initial product range that established their position, but subsequent failure of proprietors/managers to plan new product development.	Possibly crowded-out of market as more established manufacturers enter the niche marketplace
Hospitality	Smaller, owner-proprietor establishments overly reliant upon existing service range	Failure to capture new market opportunities coupled to declining sales turnover.
Telecommunications	Larger organisations have more bureaucratic approaches to staff recruitment and deployment. SMEs adopted a more entrepreneurial approach with greater success in attracting key personnel	Possible delays in developing new products and processes where critical staff in short-supply
Local and central government	Successful organisational change achieved where local authorities had a holistic, integrated approach to managing change involving the HR function in the planning of change.	Failure to adopt a holistic approach had resulted in organisational change being less successfully introduced, resulting in less joined-up government and poorer customer service standards.

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Source: ESS1999 Case Studies

Workforce deployment also relates to how well companies perform. The engineering study cites the establishment that had created centrally a concentration of expertise that could be deployed globally. The aim was to retain centrally much of the knowledge that guided the worldwide business. The plan, still in its embryonic stage, was designed to offset critical skill gaps by developing a mobile and global capacity to develop and manage projects. The latent skill gaps for comparable competitor organisations may be the failure to similarly develop or utilise as efficiently their global human resources. Less speculative evidence was provided from the telecommunications sector which revealed how some smaller ICT companies were more 'entrepreneurial' in how they tapped into markets for key personnel - especially the use of personal networks - whereas their larger counterparts had much more rigid, bureaucratic methods of recruitment. Potentially, larger companies were at a disadvantage to their smaller competitors in obtaining the staff they wanted with consequences for the production of their services.

In local and central government major organisational change was more effectively managed where there was an integrated, holistic approach to the management of change. HR personnel were involved in the early planning of change, along with other key functional managers, such that skill needs could be anticipated. Here the relative gains from taking a more integrated approach resulted in recruitment problems and internal skill gaps being less of a constraint on achieving the goals of the change programme.

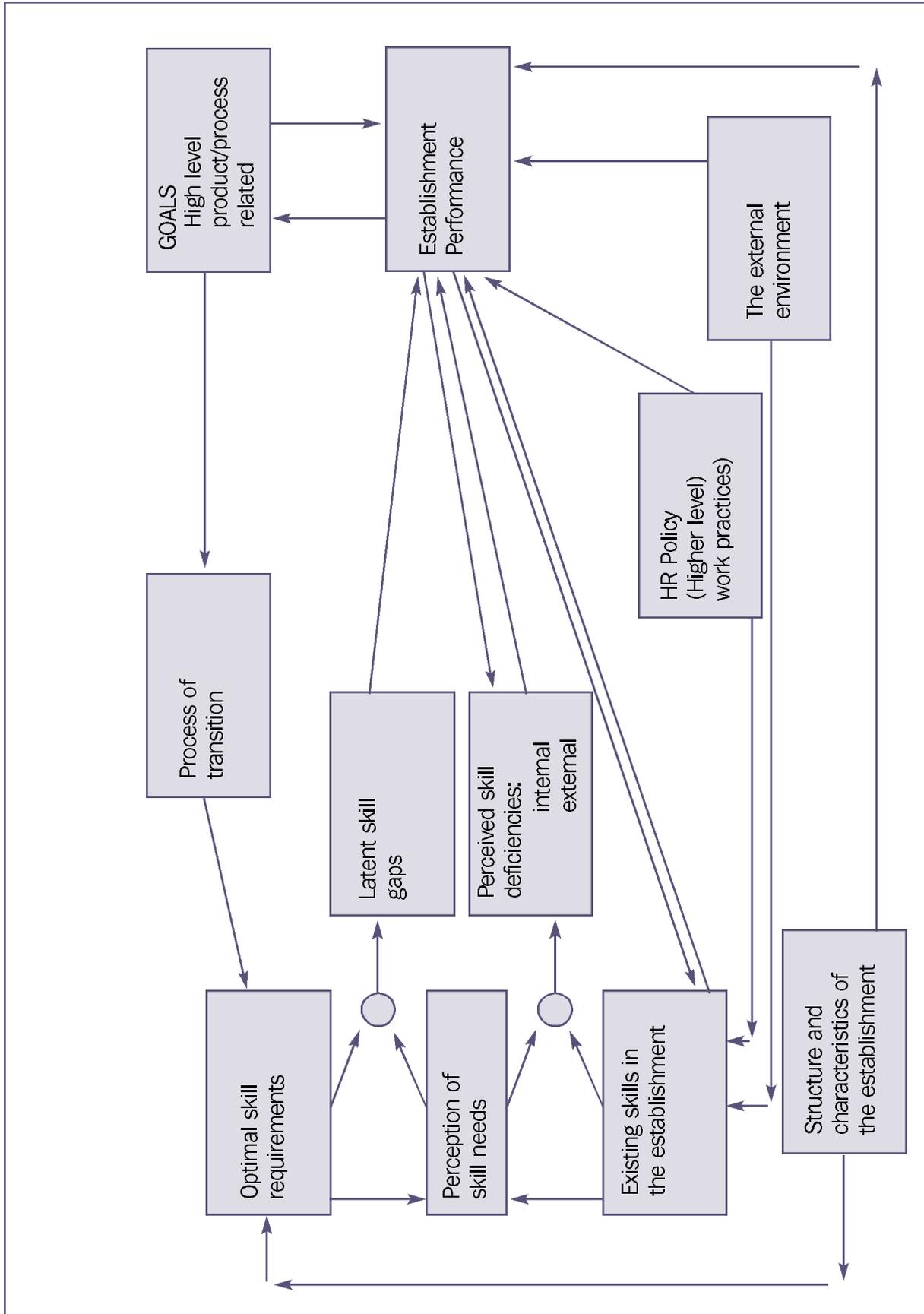
In general, the larger engineering, banking, finance and insurance, and public sector organisations were more likely to have engaged in an analysis of skill needs in relation to their business, with the result that policies designed to plug any gap between the two had been developed. These organisations, that were often simultaneously pushing through technical and organisational change, were more likely to report skill gaps, simply because they had assessed their skill needs in anticipation of the changes that were to be introduced. In contrast, they were less subject to latent skill gaps because of the future planning that had taken place.

### **Quantifying latent skill gaps**

The findings outlined above are indicative of how latent skill gaps affected organisational performance. There are a number of ways in which the information in the ESS1999 face-to-face survey can be used to operationalise the concept of latent skill gaps to provide a more quantitative assessment of their impact. This involves either comparing responses to the survey from establishments with different aspirations and levels of economic performance.<sup>35</sup> This can be done using simple cross-tabulation analysis, or in a multivariate context by an analogous analysis based on econometric results which show how performance or goals influence the level of skills deployed or skill deficiencies perceived (see Figure 4.4)

35 In deriving the results the analysis has been restricted to private sector establishments. The rationale for this is the potentially quite different goals of public sector establishments and the difficulties in comparing them with the private sector.

**FIGURE 4.4**  
 SKILLS AND PERFORMANCE: KEY RELATIONSHIPS, INCLUDING THE  
 REVELATION OF LATENT SKILL GAPS



The ESS1999 face-to-face survey contains a variety of goals and performance variables that can be adopted as being benchmarks for “best practice”. There are two main goals identified, both in a sense concerned with “moving up-market”. One relates to introducing new products or services and the other to improving existing products or services. As far as performance is concerned there are a number of potential measures such as sales growth, market share growth, and a self-designated, “most appropriate performance measure”.

The key dimension of the taxonomy concerns two main types of latent skill gaps:

- the skill levels needed to achieve “best-practice”; and the perceived skill deficiencies when best practice is achieved;
- transitional latent skill gaps are isolated for establishments which are, in some sense, attempting to make a positive goal change or those which are actually “turning the corner” in terms of their performance.

Establishing the existence of latent skill gaps, therefore, involves comparing the reported goals and aspirations and performance of the establishments and the corresponding responses regarding skill requirements and perception of skill problems. The aim is to attempt to identify “optimal” or “best-practice” behaviour, with a view to examining the skill implications of moving towards “best-practice”.

In order to demonstrate the existence of the first type of latent skill gaps it is necessary to compare the skills deployed and skill deficiencies perceived in best practice and other establishments. The key questions are whether more ambitious establishments (or better performing ones) have greater skill needs and perceive bigger skill deficiencies. This has been explored using simple cross-tabular techniques as well as more sophisticated multivariate analysis.

A further set of questions relate to whether those establishments in transition (i.e. raising their aspiration levels by moving further “up-market” or improving their economic performance), indicate greater skill needs than those in an equivalent “steady-state” position (i.e. those that have maintained their aspiration or performance levels).

This has important implications for additional skill needs. It would imply that, if it were possible to change more lowly performing and unambitious establishments to a higher goal level then there would be a transitional need for even more or higher level skills, confirming the existence of latent skill gaps. Even if it is not the case, it may be an indication of the failure of establishments to perceive the importance of skills.

The analysis of the survey data presents further evidence on both the existence and the potentially large magnitude of private sector latent skill gaps.

### **Quantifying goals and aspirations**

In order to identify the presence of latent skill gaps it is necessary to identify companies that have sustained high-level goals. These represent “best-practice”. This involves using information about the setting of such goals over the previous three years (past) as well as information about whether such goals are currently being set or are impending (present). There are two main goals: (i) relating to improvements in new products and services; and

(ii) relating to improvements to existing products and services.

Using these, a **Strategy Score** variable can be developed that takes a higher value the more that the establishment is committed to one or both of these goals. Establishments with the highest strategy score can be regarded as representing the “best practice” benchmark against which to compare other establishments. Attention can also be focussed on establishments that maintained the same level of commitment to these goals.

### Measuring performance

A number of measures of performance are available from the ESS1999 survey. These range from responses to questions about the success of strategic goals, through self defined measures of performance specific to the sector, to more conventional indicators such as sales growth. Measures of latent skill gaps can be defined relative to each of these, although of course they may overlap and cannot simply be added together<sup>36</sup>.

### Skill requirements and deficiencies

Direct measures of the skill implications of any movement up-market can be developed from data provided in the ESS1999 survey. These can be used to construct a **Skill Score**, similar to the strategy score defined above. These scores are based on the establishment’s reported intensity of commitment to improving its skills, education and training. The ESS1999 survey also contains direct measures of the extent of skill deficiencies, including both external measures (such as vacancies and skill-shortage vacancies) and indicators of internal skill gaps.

### Transitional needs

The final aspect is to address transitional needs. This requires the identification of those establishments that are in transition in terms of either goals and aspirations or performance. The various skill score and skill deficiencies indicators can then be compared between transitional and non-transitional establishments.

Transitional “improving” establishments can be identified in the survey from those establishments that reported a higher-level goal in the current period than over the last three years. This can take the form of an increased commitment to one or both of the goals identified above. Scores can be developed to indicate the extent of change. While only a small proportion of the total sample exhibited a major change by comparing their characteristics with others an estimate of the magnitude of latent skill gaps can be made.

In trying to identify transitional latent skill demands arising for those firms which were experiencing a transition in performance, it is important to focus attention on those establishments that appeared to have made a sea-change in performance in a positive direction. Obviously, this will overlook a number of other establishments which were also in transition, possibly in a negative direction.<sup>37</sup>

36 The face to face questionnaire also allows an investigation of the proportion of establishments in each (available) category that attribute a lack of success to the problem of a lack of skills in their existing workforce. In brief, about 24-25 per cent of establishments reported that inadequate skills were either fairly or very important in this failure in the case of new products, and around 18-21 per cent indicated skill inadequacies in the case of improvements to existing products and services. The more difficult and risky activity of new products and services appears to be more skill dependent, but skills play a significant role in the lack of success in both areas.

37 In addition, those exhibiting the very highest rates of sales growth rates may also be in some form of transition and experiencing transitional skill deficiencies, although they may appear in the “non-transitional” (in this case high) performing categories. There are several possible ways of using sales change to isolate the transitional establishments although the simplest is to adopt the same approach as adopted above to consider aspirations, focussing on those moving from poorer to better sales growth performance.

## **Increasing current skills levels to meet higher aspirations or achieve better performance**

The evidence from the ESS1999 survey indicates that there was a strong link between the “steady-state” aspiration level and the extent to which the establishments had been up-grading their skill levels. The proportion of establishments in the lowest observed aspiration category that reported “very applicable” to the up-grading of skills was only 23 per cent, but this rose with the level of aspiration, to a maximum of over 76 per cent of establishments reporting that this was very applicable. The corresponding results for the current/impending up-grading of skills revealed a similar pattern although this was not monotonic.

The differences between the skill scores for each sustained strategy score level, provides an initial indication of the scale of such latent skill gaps. If all firms were to be moved “one notch” up the strategy score ladder (i.e. take on higher aspirations) then this would lead to a significant need to upgrade skills.

“Upgrading of skills levels” is just one of a number of indicators which have been examined using this approach. An alternative focus is on whether having higher aspirations is linked to the recruitment of new staff. The extent of involvement with recruitment is again represented by a qualitative variable, where the greatest recruitment is associated with respondent saying that this was “very applicable” and the least is associated with “not applicable at all”. Again the ESS1999 evidence suggests a positive relationship for both past and current recruitment activity.

Other related indicators can also be analysed such as the corresponding relationship between sustained aspiration levels and the involvement of the establishment in both off-the-job and on-the-job training. This addresses the question of whether or not the attempted plans resulted in significant job training and development of staff. Again the overall result suggests a clear link between such indicators and the level of aspiration of the establishment over the last three years, and in terms of current/impending actions.

Similarly, it is possible to compare the differential in skill levels between best-practice and relatively poorly performing establishments. The ESS1999 survey suggests that better performing establishments employed a higher level of skills than less well performing ones

An examination of the relationship between sustained sales growth and attempted (past) and current plans (future) to upgrade the skills of the existing workforce has also been undertaken. No clear pattern emerges in the case of the sustained performance and the past up-grading of the skills of the workforce, but a much clearer pattern is evident for planned future up-grading. One interpretation is that establishments may have realised that the ability to repeat the high growth performance that they achieved over the past five years would require significantly more effort in terms of improving future skills.

The relationship between sustained growth and the recruitment process is also revealing. In this case, the skill score variable is constructed from the responses to the question as to whether the past/current plans have/will result in the recruitment of new staff with the skills required. In this case, it is not surprising to find that the skill score variable generally rises with the rate of growth.

## **Unperceived skill deficiencies related to changing strategy and improving performance**

Latent skill gaps also result from the fact that establishments which set higher aspiration levels or perform better tended to recognise and report that they had greater skill deficiencies. Thus, even though such establishments may already have had the higher skill levels than those with lower aspirations, they also had greater perceived skill deficiencies. This second dimension of performance-related skill gaps stems from the fact that even “better performing” establishments still reported skill deficiencies and indeed were often aware of even more problems than those who were less ambitious and who were performing less well.

Thus, encouraging establishments with low aspirations to be more ambitious or to improve their performance, means that they will require a higher level of skills but, as they attempt to achieve this they will then perceive additional skill deficiencies.

Analysis of the ESS1999 data suggests that better performing establishments were significantly more likely to report skill deficiencies than “moderate-performers”. Thus, if moderate and poor performers were transformed into optimal performers (which would also require an improvement in their skills base), this will still leave the transformed establishments with the same (greater perceived level) of skill deficiencies as the current ideal performers. In other words, the companies that performed “better” would start perceiving and reporting higher levels of skill deficiencies.

## **Transitional skill gaps**

The final type of latent skill gap arises because changing aspirations, targets or performance itself demands additional skills. Such a change will typically require additional investment and resource, including implications for skills. In essence, the workforce has to be educated to adopt, and adapt to, these higher-level goals. Suppose for example, that establishments with the highest aspirations have high levels of IT hardware, software and skills, which are largely absent from the moderately aspiring establishment. Setting up the computing network, choosing the most appropriate software, instigating training programmes to lift the whole of the skills base to best-practice levels may require quite different skill types and levels than those needed when the transformation is complete.

A shift in the focus of the “improving” company might involve the introduction of additional skills during the transitional phase. This may involve the need to alter the culture of the organisation and up-grade the skills of workers during this period. This intensive effort during the transitional phase may fall-back somewhat when the establishment achieves steady-state use of the higher level goals. It may show up in the failure of companies to successfully implement the higher-level policy if they fail to make this transitional investment.

Such gaps are latent because companies only realise the size and magnitude of such deficiencies when they begin to plan to improve their performance and start to execute this plan. For evidence on such transitional latent skill demands (either goal or

performance related), it is necessary to focus on establishments that are (radically) changing their goals and (rapidly) changing in terms of sales or focus (i.e. export versus domestic markets). In the absence of actual longitudinal data, this type of latent gap is potentially the most difficult of all of the latent skill gaps to isolate.

Evidence suggests that establishments that plan to change may underestimate the skills-base that they need to successfully make the change. The survey also suggests that failure in developing new product and service innovation and/or modifications to existing products and services is, in part, a function of skill inadequacies.

Cross-classifying establishment's skills scores (ie. the extent to which they believe it necessary to up-grade skills, etc), with their response to the question about the extent to which they were involved in moving "up-market" (via new products and services or planning improvements to existing products and services), enables an initial assessment of this type of latent skill gap to be made. Further comparison of past commitment to skills and current/impending commitment can also be considered.

The results of a comparison between broadly corresponding establishments in steady-state (i.e. that have maintained their goals over a significant period of time), with those that are attempting to raise their aspiration levels is most revealing. Generally a monotonically increasing skill score is observed as one moves from lower to higher aspiration levels.

The focus on establishments raising their goals also suggests that many of the establishments making more significant changes indicate that this will have greater skill implications than those reporting more modest changes. The same, however, is not true for those making the most significant changes. This may suggest that establishments underestimate the skill implications of the changes they perceive to be happening. This is reinforced by the fact that a comparison of the results with the "sustained aspirations, best practice" groups. It is interesting that, in every case, the skills implications for "transitional" establishments lie below "steady-state best-practice" (in some cases, such as on-the-job training, they lie a considerable way below). The general conclusion from this is that "improving" establishments seem likely to underestimate significantly the skills needed to achieve such a change in aspiration levels.

Comparison between the "sustained goals" and "improving goals" categories confirms that the "improving goals" group report a higher skill score than the "sustained performance" group. In addition, the gap between the current skills score (i.e. relating to the current/impending period) is generally higher than for the "past". This ratio is generally higher for the "improving" than the corresponding "sustained" group, but more particularly so for those engaged in developing "new products and services" as opposed to those improving "existing products and services". This again reinforces the perception that the former is a more exacting goal than the latter. Bearing in mind the difficulty of controlling for other factors in a cross-tabular analysis, these results provide quite strong evidence that transition from lower to higher aspiration levels has an additional skill implication.

### **Econometric evidence on latent skill gaps**

Building upon a taxonomy developed in the cross-tabular analysis, further evidence of the possible incidence and scale of latent skill gaps can be derived from the econometric results which relate skill scores and perceived skill deficiencies to the goals of the establishment and its economic performance in a multivariate context. This enables the identification of the additional skills needed by enterprises which set higher goals and achieve better performance taking into account all other factors. Similarly it is possible to assess the skills required in order to make the transition between different aspiration and performance levels.

The econometric analysis does not provide much evidence that higher-level goals (i.e. targets for productivity, profits or sales) influence the proficiency of the workforce or the average qualification level. However, it does suggest that second-level goals in support of product development or efficiency improvement strategies are important drivers of proficiency, with significant implications for skill needs and perceptions of skill deficiencies.

For example, enterprises that adopted either a cost reduction goal or new working practices were, on average, much more likely to report higher levels of proficiency amongst their workforce. Those that had adopted new technologies or new products were likely to be significantly less satisfied with the quality of their employees. By implication, an enterprise that switches from a cost saving to a product-improving goal is likely to downgrade its assessment of the proficiency of their current workforce.

Further evidence suggests that larger enterprises and, in particular, those with more than one manager were much more likely to report problems with worker proficiency. In so far as small enterprises grow they are likely to report increasing dissatisfaction about employee quality as they increase in size.

Another area where the econometric evidence on latency is particularly strong is in the area of investments in human resource development, although these effects are often felt via interactions with other factors. Consistent relationships are found between four different measures of human resource (HR) development activity (up-grading of skills, recruitment of new staff, off-the-job training and on-the-job training) and the higher level goals and performance of the enterprise. For example, there is evidence that profit-oriented enterprises behaved quite differently in this respect to sales or cost oriented enterprises. Thus, a greater profit orientation amongst enterprises would require significantly greater attention to skills. Similarly enterprises with consistently greater emphasis on product development (covering both new products and the improvement to existing products) also tended to make greater investment in human resource development. Thus, a greater emphasis on the range and quality of products amongst UK enterprises generally would probably require a much greater emphasis on skills-development. The introduction of new technologies was also positively linked to the four HR investments. Thus, increases in the rate of innovation and diffusion of new technologies amongst enterprises, typically required greater investment in skills-development.

The econometric results also demonstrate the influence of goals on the establishment's perception of external skill deficiencies. There is evidence that high-level, enterprise-wide goals play an important role. In particular, they show again the important difference between cost-oriented and profit oriented enterprises. The former were significantly less likely to advertise vacancies generally (and there is some evidence that they are less likely to report hard-to-fill vacancies). The profit-oriented enterprises were more likely to advertise vacancies and significantly more likely to report hard-to-fill vacancies. The implication is that an enterprise that shifted from a cost to a profit orientation would not only be more involved in recruitment from the external labour market, but would then face significantly greater problems in recruitment.

Providing an overall estimate of the scale of such problems is very difficult. By definition, the latent skill gaps cannot be observed. Their existence and importance can only be inferred by comparing the behaviour of different establishments, following different strategies.

The regression coefficients, obtained from the econometric analysis, indicate only the marginal effect (*ceteris paribus*) of changing various indicators (such as goals or performance) on the probability of (for example) reporting (perceiving) a skill deficiency. However, marginal effects tell only part of the story. To assess the overall scale of latency it is necessary to compare groups of establishments with different strategies and goals. However, because of the complex nature of the econometric specifications used (probits, ordered probits, etc) and the fact that many of the variables are in dichotomous or categorical rather than continuous form, even the calculation of the marginal effects is complex. Moreover, it is also important to consider not just the impact on the incidence of skill deficiencies but also any impact the indicator in question may have on the intensity of problems reported.

In order to illustrate the importance of such latent skill gaps, comparisons have been made between establishments who report having no strategic goals and the average establishment. These comparisons show that if such establishments could be encouraged to raise their aspirations and performance levels, the incidence and intensity of both internal and external skill deficiencies would rise sharply.

For example, the results suggest that if establishments with no goals could be changed to reflect the average establishment this would have the following effects.

- The incidence of internal skill gaps would rise by 2.5 percentage points (an increase of around 10 per cent).
- The incidence of reported vacancies would increase as follows:
  - All vacancies by 4.5 percentage points (an increase of about 10 percent);
  - Hard-to-fill vacancies by 8 percentage points (an increase of over a quarter);
  - Skill-shortage vacancies by 4.2 percentage point (an increase of almost a third).
- There would also be significant shifts in the intensity of reported vacancies.

It is notable that the scale of the latency problem seems to become progressively more acute as one focuses on hard-to-fill and then skill-shortage vacancies.

These estimates focus on just one small group. Such results suggest that the potential scale of latency over all establishments is quite large. Moreover such estimates do not include the more qualitative aspects of latency associated with higher-level human resource policies and practices. While the econometric evidence suggests that these are important, they cannot be translated into such simple indicators of potential impact.

These comparisons indicate that if efforts were made to raise the goals and achievements of a broader range of establishments (rather than just those at the extreme end of the spectrum), a considerable number of new skill deficiencies and problems would be revealed. There is plenty of evidence from the ESS case studies as well as other research, that a significant proportion of UK companies compare very poorly with their foreign counterparts. These results suggest that any attempt to improve this situation may founder unless steps are taken to meet the skill needs that this would imply. Indeed, it may well be that dealing with latent skill gaps at managerial level are a necessary prerequisite for the success of such a policy.

Together, all these elements suggest that significant latent skill gaps, would be revealed if there were a significant attempt to raise establishment aspirations and improve performance across the economy towards 'best practice' standards.

## 4.6 Conclusion

Where employers recognised that they had skill deficiencies they typically responded by addressing:

- recruitment and retention policies;
- whether work was efficiently organised; and
- the training that might supply sought after skills.

It was apparent that a degree of innovation and/or experimentation was taking place, especially in relation to recruitment, where there was a consensus that existing channels of recruitment were unlikely to supply the skills needed. Only a modest proportion of employers had done nothing in response to skill deficiencies.

Nevertheless, the impact of skill deficiencies can be serious. A small, but not insubstantial number of employers responded that they had lost orders to competitors. However, it needs to be borne in mind that employers were not passive in the face of skill deficiencies and had taken a number of measures to lessen their impact on the business, even if this was exceedingly difficult to accomplish. In some instances, establishments depended upon staff to work longer to overcome staff shortages. Often this would result in more pressure being applied to the very same staff the company was having problems recruiting such that a recruitment problem could easily metamorphose into a retention one.

In many respects skill deficiencies arise as a consequence of firms pursuing profit oriented rather than cost reduction strategies. In this sense, skill deficiencies may be seen as a natural consequence of economic progress, but this process needs to be carefully managed lest skill constraints impede that progress. Where HR strategies place an emphasis on developing staff, ensuring job satisfaction, and creating a good working environment - features often associated with more successful organisations - then the impact of skill deficiencies on business performance was lessened. In short, there is strong evidence that 'good' HR policy is able to offset the impact of skill deficiencies on business performance.

The results demonstrate the potentially significant role that latent skill gaps may play in the economy. They suggest that even fairly minor shifts from, for example, cost-reducing to product improvement amongst enterprises would produce a quite radical shift in the perceptions of the quality of their workforces. There is also considerable support for the hypothesis that higher rates of innovation and diffusion would also demand significant increases in skill levels. Broadly consistent results have been presented using both information about the proficiency of the stock of labour and investment in various aspects of human resource development. These findings suggest that latent skill gaps may be as significant as the reported ones and that there is, therefore, a case for policy interventions to make employers better aware of the importance of skills for their long-term business success and to assist them in addressing these hitherto hidden problems.

## 5. CONCLUSION

### 5.1 The extent and nature of skill deficiencies

ESS1999 provides an important new body of evidence about the extent and nature as well as the causes and implications of skill deficiencies in England. Various different types of skill deficiency have been identified. In particular, the study has made a distinction between external recruitment difficulties and internal skill gaps, although to some extent these can be regarded as opposite sides of the same coin, since a respondent's perception of external labour market problems is essentially a comment on the skills available and already employed in other establishments. A number of problem areas have been highlighted:

#### **Simple recruitment difficulties**

In general these relate to wages and working conditions and can be observed at a number of different occupational levels:

- at low skill levels (eg. operatives in the food manufacturing, residential care workers in social care, 'call centre' staff in banking);
- at medium skill levels (eg. physiotherapists in health care)
- high level (eg. lawyers in local government)

In many instances there is a supply of trained staff but the sectors are unable to compete with other sectors to recruit the labour it requires. In sectors such as food manufacturing and social care, which are low value-added, it relates to the problems posed by raising labour costs. In the public sector it may be more to do with pay systems being not sufficiently flexible to respond to the labour market.

#### **Training problems**

These relate to both the supply of technical skills in the open labour market and the development of staff within organisations. Shortages were reported across sectors and at different occupational levels:

- at medium skill levels (eg. chefs in hospitality, radiographers in health care);
- at high levels (eg. project managers in engineering and telecommunications).

#### **Management skills**

Managing change has been an on-going demand for managerial and professional staff in most sectors but especially in those most affected by IT, such as engineering and banking. In local government, at the time of the fieldwork, major organisational change was being implemented to meet Government's goals for this branch of administration.

Maintaining a position in relatively high value-added markets requires change to be anticipated and managed. For instance, companies in the food manufacturing sector, operating in niche markets and employing relatively few managers, recognised the need to introduce change to maintain their market niche. In higher value markets maintaining product market position was dependent upon keeping abreast or ahead of the competition to minimise the level of price competition (as explained in the engineering sector report).

## Multi-skilling

Much of the evidence points to workers at all levels within organisations taking on a wider range of skills either in response to recruitment problems, organisational change (eg. flatter management structures and team working), and/or in response to the changing nature of the markets where products and services need to be delivered more efficiently.

A number of features were apparent:

- combining technical skills with project management ones;
- combining multiple sets of technical skills;
- combining technical with customer/client relation skills.

Respondents paid considerable attention to the more qualitative, intangible skills such as managing client relationships. These types of skill were recognised as important, but they are not as easy to define or measure as technical ones. In some cases it is questionable whether one is discussing skills or personal attributes. These types of skills were mentioned in both the survey and case studies and were important elements of both recruitment problems and skill gaps.

In several instances employers were looking for a combination of technical and generic skills linked to certain personal attributes. At higher occupational levels it related to the combinations of technical and generic skills together with the personality characteristics allied to the ability to lead and motivate staff. To some extent these are generic skills but they are also features of an individual's personality which may not be fostered through training. At lower occupational levels personal attributes related more to the ability of employees to suitably present themselves to customers or devote interest or enthusiasm to the task at hand. In some instances personal attributes may have been a more important recruitment factor than the possession of technical or generic skills (eg. in hospitality)

The extent to which the personal attributes employers sought can be learnt is questionable, but it was apparent that possession of those attributes was an important determinant of applicants being recruited.

Evidence from the survey revealed recruitment problems and skill gaps to be widespread. It also provided some evidence about how critical different types of skill deficiencies were to business performance. Case study evidence confirms that skill deficiencies at all occupational levels can limit organisational performance but it is often at the professional/managerial level that they can be most critical. Deficiencies at this level may also be reflected throughout the occupational hierarchy in an establishment.

## 5.2 Causes

The survey and case studies provide direct evidence about respondents' perceptions of the causes of skill deficiencies. According to this evidence, the factors leading to skill deficiencies included:

- the introduction of new products and services;
- new working practices, and;
- new technology on the shopfloor and office.

Many respondents also reported that a failure to develop and train staff contributed to the emergence and continuing existence of skill deficiencies.

The vast majority of respondents indicated that both price and quality were important aspects of the products and services they provided. Supplementary questions on the degree of competition from imports and on the extent to which competitive success depends on quality, suggest that quality factors were more important for most establishments although price factors were crucial for a few.

When asked about their plans to try to improve their products and services, respondents answers made it clear that this required extensive skill change. Around 40 per cent of respondents in private sector companies indicated that their establishments were planning to improve the quality of their products or services. Much of the skill change required was perceived to be generic, especially skills such as communication, customer relations, team-working, problem solving and management skills. A significant proportion of those establishments which were not planning to make such changes, were planning to improve the efficiency with which they currently operated. This group represented about a quarter of all private sector establishments. The survey data confirms that these were also expected to result in demands for new and additional skills.

The multivariate econometric analysis throws further light on this issue, highlighting a range of factors which influence the scale and pattern of skill deficiencies reported. These include external labour market factors as well as internal ones. The latter include fundamental characteristics of the establishment (sector, size, other company characteristics), as well as company policy in terms of product strategy and HR policy and the overall level of economic activity in the establishment.

Skill deficiencies arise in many respects as a consequence of firms pursuing profit oriented rather than cost reduction strategies. In this sense skill deficiencies may be seen as a natural consequence of economic progress, but this process needs to be carefully managed lest skill constraints impede that progress. Where HR strategies place an emphasis on developing staff, ensuring job satisfaction, and creating a good working environment - features often associated with more successful organisations - then the impact of skill deficiencies on business performance was lessened. In short, there is strong evidence that 'good' HR policy is able to offset the impact of skill deficiencies on business performance.

## 5.3 Latent skill deficiencies

The foregoing analysis has been largely concerned with recognised and perceived recruitment problems and manifest skill gaps. There is also a need to address how establishments with higher aspirations and better performance, compared to less ambitious and successful ones, differed in terms of skill structure and perception of skill deficiencies. From this information, inferences about latent skill deficiencies can be drawn.

The analysis of the consequences of skill deficiencies suggests that there was a substantial latent skills gap in nearly all sectors. Better performing organisations were more likely to report a manifest skill gap because they were trying to change how they went about their business and consequently encountered problems raising the skills of the workforce to their required standard. In contrast, those less willing to introduce change were less likely to report that their staff were failing to meet performance standards because little appraisal of skills had been made. This latent skill gap, however, between the high and low performing organisations within sectors appears to be significant.

The results demonstrate the potentially significant role that latent skill gaps may play in the economy. They suggest that even fairly minor shifts from, for example, cost-reducing to product improvement amongst enterprises would produce a quite radical shift in the perceptions of the quality of their workforces. There is also considerable support for the hypothesis that higher rates of innovation and diffusion would also demand significant increases in skill levels. Broadly consistent results have been presented using both information about the proficiency of the stock of labour and investment in various aspects of human resource development. These findings suggest that latent skill gaps may be as significant as the reported ones and that there is, therefore, a case for policy interventions to make employers better aware of the importance of skills for their long-term business success and to assist them in addressing these hitherto hidden problems.

This, however, does not imply that if many more skills were made available in the labour market that performance would automatically improve. First, it is necessary to persuade companies to be more ambitious in their product strategies and to enhance their performance. Only then will these latent skill needs be translated into real demands for skill.

## 5.4 A final word

ESS1999 represents the single largest inquiry ever undertaken into the extent, causes, and implications of skill deficiencies in England. Implicit in the research agenda was the assumption that England has a skills problem. Investigations into the competitiveness of the national economy have drawn attention to the productivity gap compared with most OECD countries<sup>38</sup>. A relatively poorly educated, qualified, and skilled workforce have been identified as possible causes.

ESS1999 has been able to demonstrate definitively the extent of the skills problem in England based on employers' own perceptions of the skill deficiencies they encounter and, via analysis, a more objective assessment based on the examination of latent skill gaps. Overall, the evidence points to skill deficiencies impeding economic performance. Moreover, ESS1999 has been able to paint a national picture with a degree of precision - unavailable to the smaller scale and manifold local area studies previously undertaken<sup>39</sup> - the characteristics, causes, location, and implications of skill deficiencies. Using a clear set of definitions, a multi-faceted research design, and an analytical approach which related skill deficiencies to product and service market dynamics, a much more detailed understanding of the link between skills and business performance has emerged.

39 SNIB provided detailed national information on skill deficiencies but had a relatively small sample. Employers surveys undertaken by the then TECs offered little scope for comparison between localities because of the myriad of definitions used.

40 Completed interviews as a percentage of contacts.

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# ANNEX A

## SURVEY DETAILS

The surveys of establishments were intended to provide a robust quantitative data base upon which to assess the scale of such problems, including providing data at a regional level. They were also intended to provide the basis for an analysis of the relationships between skill needs, skill development, and economic performance.

The employer survey consisted of a total of 27,000 interviews of which 23,000 were conducted by telephone and 4,000 through face-to-face interviews. This compares to 4,000 telephone interviews conducted for the last wave of the Skill Needs in Britain (SNIB) survey in June 1998. In the event, a total of 26,952 interviews were achieved: 3,882 face-to-face and 23,070 over the telephone. The surveys were establishment based. The principal respondent was the senior person responsible for human resource or personnel issues. In establishments with 100 or more employees this was the human resource/personnel director or manager. In establishments with fewer than 100 employees it was the owner, proprietor, or general manager.

At the design stage, a choice had to be made between surveying at a company as opposed to establishment level. The former is in many ways preferable, especially if one is trying to obtain information on performance, which is most commonly reported at a company level. However, more practical considerations, including the difficulties of getting respondents to provide data beyond their immediate establishment, resulted in a final choice to survey establishments.

The survey also differed from SNIB in terms of its geographic coverage and its coverage by size of employer. Interviewing was restricted to the nine RDA areas of England (whereas SNIB - as its name suggests - extended coverage to Scotland and Wales). All employers surveyed had a minimum of five employees at the specific location sampled; SNIB included only employers with 25 or more employees at the location sampled.

All business sectors (public and private) were covered, with the exception of Agriculture, Hunting and Forestry (1992 SIC codes 01-02), Fishing (1992 SIC codes 05) and Private Households with Employed Persons (1992 SIC codes 95).

The main stage of interviewing was carried out between August and October 1999 for the telephone survey and between August and November 1999 for the face-to-face survey.

The overall response rate from employers was 59 per cent for the telephone survey and 54 per cent for the face-to-face survey.<sup>40</sup> A full analysis of responses to the survey at overall level and for each of the nine RDAs is available from the authors on request. The sample was drawn from BT's Business Database, a regularly up-dated list of all establishments with a business telephone line.

The drawn sample was stratified by RDA region, by industry sector (defined against 1992 SIC codes) and by establishment size (in terms of number of employees) using variable

40 Completed interviews as a percentage of contacts.

sampling fractions. This was done by:

- distributing half the sample equally across the nine RDA regions; and
- distributing the remainder of the sample on a 'probability proportional to size' basis.

Results were grossed up at the analysis stage (on a region by establishment size by industry sector matrix), to population estimates derived from the 1997/98 Annual Employers Survey. The results presented are therefore representative of the 533,616 employers in England who have five or more employees. Results are reported showing the survey totals (unweighted base) and the grossed up totals (weighted base).

# Annex B

## Summary of Case Studies

Case code	Region	No. of Staff	Sales £M	Growth/ Decline	Single site etc	Products/services
<b>Engineering</b>						
E1	NW	1,300	90m	Steady growth	UK-owned multisite	Aerospace
E2	NW	900	39m	Static	UK multi-site	Defence and Nuclear Industry
E3	WM	800	20m	Growth after period of decline	Foreign owned multinat	Engine Manufacturing
E4	WM	~ 450	(1500m Division)	Static	UK owned multinat	Automotive Industry
E5	WM	330		Decline	UK multinat	Component Manufacturer
E6	NW	8000		Steady growth	UK multisite	Aerospace
E7	SW	142	8.5m	Static, declining sales.	Foreign Multinat	Component Manufacturer
E8	WM	700	60m	Steady growth	UK multi-site	Real time computing systems for engine control
E9	WM	290	21m	Growing strongly	Foreign multinat	Precision Engineering
E10	GL/EM	600	220m	Growing	Foreign multinat	Mainly Transport and Communications
E11	W	1500		Static	Foreign multinat	Consumer Electrical
E12	WM	6000 company wide		Growing moderately	UK multisite	Automotive
E13	WM	400	150m	Static -beginning to contract	Foreign multinat	Consumer Electronics
E14	NW	5	2.5m	Growing	Foreign multinat	Transformer Design
E15	WM	650		Growing	Foreign multinat	Consumer Electronics
E16	WM	660	108m	Growing strongly	Foreign multi site	Automotive
E17	NW	900	650m	Decline	Foreign multinat	Automotive

Case code	Region	No. of Staff	Sales £M	Growth/ Decline	Single site etc	Products/services
<b>Food Manufacturing</b>						
F1a	SE	550 (HO) inc. 300 production	£166m (total co)	Aim is 4 to 5% real growth pa	Mini multinat	Tea - black tea and herbal infusions
F1b	NE	260	£166m (total co)	Aim is 4 to 5% real growth pa	Mini multinat	Tea - black tea and herbal infusions
F3	SE	100		Struggling to survive	Single site	Bakery - supply airline industry - rolls, pasties, patisserie products
F4	E Mid	c.700		c. 3 % pa	Multi-site in 2 countries	Cereals
F5	London	800	£700m	static / declining	UK multi-site (mainly London. Division of multi-national	Sweeteners and starches
F6	E Anglia	1000		declining	single site in multi-national	consumer food products
F7	North	2300	£500m	growth (mainly by acquisition)	UK multi-site, part of foreign-owned multi-national	Milk production and dairy products
F8	London				Single site (part of UK multi-site co)	Milk production
F9	NE				UK	Meat products - increasingly pre-prepared meals
F10	NI	3,500		Struggling		Ready made meals
F11	London			Recent rapid growth	Part of UK multi (recently taken over -previously independent)	
F12	E Mids					Sandwiches
F13	London					

Case code	Region	No. of Staff	Sales £M	Growth/ Decline	Single site etc	Products/services
<b>Hotels and Catering</b>						
SH1	Cotswolds	29	0.45	Stable, with signs of decline	Single site	Accommodation, F&B, meetings/ training events, packages, functions inc wedding ceremonies
SH2	Cotswolds	20	0.42	Stable	Single site	Meetings, accommodation, F&B, functions inc wedding ceremonies
SH3	South West	52	1.5	Growth, but plateauing because of strong £	Group of 3	Accommodation, F+B
SH4	South West	35	To be supplied	Stable	Single site, 1 of 12 in a private chain	Accommodation, F&B, business services and meetings
SH5	South West	not known	Haven't traded for a full year	Recent purchase - some growth	UK-owned multisite	Accommodation, F&B, meetings, dances, functions, packages, theme holidays, cybercafé, leisure club
SH6	South West	50	1.3	Rapid growth	UK-owned multisite	Conferences, accommodation, F&B inc pub/bistro, packages, theme holidays, functions, leisure club
SH7	South West	not known	1.3	Strong growth	UK-owned multisite	Accommodation inc self-catering, F&B, packages, theme holidays, leisure club, private beach, R&R/retreat
LH8	South West	223	Not provided	Plateaued	Part of a chain	Full range of hotel facilities, restaurants, banqueting and conference facilities
LH9	South East	150	8	Growth	Foreign-owned multinational	Accommodation, F&B, meetings, business services, packages, leisure club
LH10	West Midlands	Approx 200	4	Static	UK multi-site	Business and conference sector.
LH11	West Midlands	209	*	Growth until summer 1999 then decline.	Multinational	Conference and City event led. Diversified to include weekend family breaks.

Case code	Region	No. of Staff	Sales £M	Growth/ Decline	Single site etc	Products/services
<b>Hotels and Catering</b>						
LH12	North West	164	16	Steady growth	UK multi site.	Corporate and conference clients 80% of business. Remainder leisure and holiday market.
P13	England & Scotland	N/A	N/A	Growth	Marketing consortium of single sites	Accommodation, F&B, packages, link with car rental co.
P14	South Coast	8	0.18	Growth	Single site	F&B, accommodation, meetings, functions, external training company
P15	South East	6	-	Stable	single site	Drink, food & accommodation
R16	London & South East	128	4.5	Growth	UK-owned multisite	Pizzas and pasta
R17	South West	22	0.75	Growth	Single site, part of UK-owned global plc	F&B, functions, corporate, promotions, packages, cooker classes, external training
CC18	West & Wales	22,000 in the region	(1638 nationally for catering and restaurants division) region figs awaited	Plateaued with possible decline shortly in competitive position	Part of a UK multi-national	Food and vending service to public and private sector businesses
CC19	South West	3,000 in the South West	4,000 world-wide	Growth through acquisitions	Multinational	Food & related services (e.g. vending and facilities management)
CC20	London & Central Southern England	950	20	Very rapid growth	UK-owned multisite	Staff restaurants, bars, coffee-bars, takeaways, vending machines, shops, functions/hospitality
CC21	South Coast	19	0.75	Growth	Split site	Restaurant, coffee-shop, takeaways, vending machines, sundries, functions on and off site, branded snacks for retailers, credit cards

Case code	Region	No. of Staff	Sales £M	Growth/ Decline	Single site etc	Products/services
<b>Telecommunications</b>						
T01	Site: midlands Division: UK, Group: world	Approx 3000 (of 25,000 worldwide in division)out of out of group's 75,000 worldwide	Not given for establishment, only as part of a division of the MNE i.e. £1,858 million business in 1998 /99 of MNE's £7,625 million turnover	growth	UK-owned multisite	Telecoms equipment and services, but others in rest of business not covered in this case.
T02	UK	6800	\$17.6B world UK ~ 10%	20% world growth	MNC	Telecommunications hardware, software and services
T03	Thames Valley site studies	9,000	\$30bn; UK export sales £2.8bn	1% worldwide sales decline	MNC, with multi-sites in UK Foreign owned (USA)	Company wide: integrated global solutions & embedded electronic solutions, involving wireless technology Site: GSM infrastructure production, design & development
T04	North East	550		Static	UK Multi-site	Supply, installation and maintenance of telephone CII to call centres
T05	UK	119,000	£18,223m	7% profit growth	UK multi-site	National and local loop network operator
T06	Thames Valley	25	Start-up		Single site	Internet service provider
T07	South and NE (call centres)	5000	\$1213m '98	170%pa subscriber Highest '98/99	multi site in UK	Design, construction and operation of a national UK digital personal communications network (mobile telephone service)
T08	London (SE)	75	n/a	High	single site	Provision of wholesale high capacity bandwidth, and co location facilities moderate management and professional services to the telecommunications industry
T09	Surrey	500	Not available	Stable overall, but increasing at over 100% per annum in the telecoms area	Single main site with three satellite units	Multimedia software and systems development and testing for the major telcos
T10	Central England	96	Est. £12.5m	Growing but below market rate	UK	MIS providing real time data to improve management decision making and agent monitoring tools for call centres

Case code	Region	No. of Staff	Sales £M	Growth/ Decline	Single site etc	Products/services
<b>Banking and Finance</b>						
B01	Mainly London & South East	5,000	Double digit growth	Average 5-10% pa	Multinational (US). (parts higher) London & Bourne mouth	Banking 2 main UK sites,
B02	London	250 approx in unit, now 1250 in group.	Group operating income £166m	20% pa for last 5 years	UK national company	Corporate finance, corporate banking, investment advisory
B03	Global, UK sites, interview site in Cambridgeshire	20,000, worldwide, 4,500 in Cambridgeshire	Total operating income £1.456m	12% on profit	Foreign owned Multi-national	Travellers cheques; consumer and corporate foreign exchange; multi-national wholesale banknote dealing
B04	UK	56,852	PBT= £774m	-14% pa	UK	Retail Banking
B05	North West	2,500	PBT=£130m	13%	UK multi-site	Mortgages & savings
B06	South West	1400	£147m turnover	10% on profit	UK single site subsidiary of group	General insurance products & IFA.
B07	UK	1000	US\$> 10000m net premiums	10% on investment	London & Cheltenham	Reinsurance
B08	City of London, mostly EC3	Estimated about 40,000 in London over 150 companies	No consolidated figures available	No consolidated figures available	Both	Risk transfer intermediary services, insurance market making and risk management services
B09	City of London, mostly EC3	Estimated about 8,000 over 73 companies	No consolidated figures available	No consolidated figures available but Lloyd's income is declining slightly	Lloyd's managing agents are single site. Many of the insurance companies are multinational	Provision of risk transfer facilities and insurance assessment expertise
B10	City of London, mostly EC3	Estimated about 300 over 8 companies	Not available	86% decline in market over 10 years	Single Site.	Provision of access to Lloyd's for the ultimate providers of risk capital capacity, Provision of information and analysis of insurers' performance.
B11	City of London, mostly EC3 and Chatham	700, with 250 in MSU		Not available. Increase due to increasing scope of activities may be balanced by reduction in demand due to falling market and direct charges for services	London and Chatham	Shareholder support and administration of funds.

Case code	Region	No. of Staff	Sales £M	Growth/ Decline	Single site etc	Products/services
<b>Central and Local Government</b>						
G1	SE	750		3%		Services: enhancing quality of life for all residents and delivering a wide range of services, through working in partnership with other organisations
G2	SW					Services: enhancing quality of life for all residents and delivering a wide range of services, through working in partnership with other organisations
G3	SW	400		decline		Services: enhancing quality of life for all residents and delivering a wide range of services, through working in partnership with other organisations
G4	SE	5,000		decline		Services: enhancing quality of life for all residents and delivering a wide range of services, through working in partnership with other organisations
G5	SE	35,000	£1,000 million	variable	Multi-site within one UK county	Services: enhancing quality of life for all residents and delivering a wide range of services, through working in partnership with other organisations
G6	SE	17,000		sig decline	Multi within county	Services: enhancing quality of life for all residents and delivering a wide range of services, through working in partnership with other organisations
G7	UK	9,000	£3bn		UK multi-site and small overseas outposts	Services: promoting enterprise, innovation and productivity in UK economy and developing a legal and regulatory framework within which commercial activity has to operate
G8	UK	22,000		Growth	Multi-site all over UK	Would identify case study

Case code	Region	No. of Staff	Sales £M	Growth/ Decline	Single site etc	Products/services
S1	London & South East	50		Growth	Single site UK	All radiography services except for cardiac. Also radiotherapy
S2	North West	27		Growth	Multi-site UK	Full range of radiography services (paediatric)
S3	London & South East	118		Growth	Single site UK	Radiography
S4	London & South East	35			Single site UK	Range of physiotherapy services
S5	London & South East	111		Growth	Single site UK	Range of physiotherapy services
S6	North West	40			Single site UK	Range of physiotherapy services
S7	London & South East	54		Decline?	Multi-site UK	Outpatients and community physiotherapy services
S8	London & South East	100		Growth	Multi-site UK	Total nursing care
S9	London & South East	27 in-house + 1300 care staff registered				Domiciliary, with some residential care
S10	London & South East	29			Single site UK	Residential care
S11	North West	17		Growth	Single site UK	Residential care
S12	North West	104 employees + 1200 volunteers			Multi-site UK	Domiciliary, with some residential care



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