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**The Demand for Skills in England:
from product market strategies to skill deficiencies**

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Editor's Foreword

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PREFACE

The report is based on the survey and case study data collected as part of the *Extent, Causes and Impact of Skill Deficiencies* project. The report has been made possible through study leave granted to Terence Hogarth in early 2001 and by funding from the ESRC's Skills Knowledge Organizational Performance (SKOPE) research centre.

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This report draws on several of the studies undertaken as part of the Employers Skill Survey programme. The reports published by the Department for Education and Skills include:

- N. Blake et al (2000) *Employer Skill Survey: Existing Survey Evidence and its use in the analysis of skill deficiencies*
- D. Bosworth et al (2000) *Employer Skill Survey: Statistical Report*
- S. Woodward et al (2000) *Employer Skill Survey: Banking Finance and Insurance*
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- P. Tamkin et al (2000) *Employer Skill Survey: Local and central government*
- C. Hendry et al (2000) *Employer Skill Survey: Telecommunications*
- T. Hogarth et al (2001) *Employer Skill Survey 2001*
- D. Bosworth et al (2001) *Employer Skill Survey: Econometric analysis*

CONTENTS

| | | |
|-----------|--|-----------|
| 1. | A SKILL PROBLEM? | 1 |
| 1.1 | From a union problem to a skill problem? | 1 |
| 1.2 | The importance of skills | 1 |
| 1.3 | The Skills Task Force | 3 |
| 1.4 | Extent, Causes and Implications of Skill Deficiencies Study | 4 |
| | <i>Surveys of workplaces</i> | 5 |
| | <i>Case studies</i> | 5 |
| 1.5 | Aims of report | 6 |
| 2. | CYCLICAL AND STRUCTURAL EXPLANATIONS OF THE 'SKILLS PROBLEM' | 7 |
| 3. | SKILLS SUPPLY AND DEMAND MISMATCHES | 10 |
| 3.1 | The demand for skills | 10 |
| 3.2 | Defining and measuring skill mismatches | 12 |
| 3.3 | Extent of skill-shortage vacancies | 13 |
| 3.4 | Extent of skill gaps | 16 |
| 3.5 | Reported impact on business performance | 19 |
| 3.6 | Conclusion | 20 |
| 4. | PRODUCT MARKET STRATEGY AND HUMAN RESOURCE PLANNING | 22 |
| 4.1 | Introduction | 22 |
| 4.2 | What is product market strategy? | 23 |
| 4.3 | Product market strategy across the case study sectors | 23 |
| 4.4 | Product Market Responses: Improvements in Efficiency | 25 |
| | <i>Cutting costs</i> | 25 |
| | <i>Technical change</i> | 27 |
| | <i>Organizational change</i> | 27 |
| | <i>Improving customer service</i> | 28 |
| 4.5 | Product Market Responses: Product Innovation | 29 |
| 4.6 | The human resource response | 30 |
| 4.7 | Product market strategy, human resource planning, and skill deficiencies | 32 |
| 5. | HUMAN RESOURCE POLICY AND THE MANAGEMENT OF SKILL DEFICIENCIES | 34 |
| 5.1 | Overcoming skill deficiencies | 35 |
| 5.2 | Recognition of skill gaps | 36 |
| 5.3 | Manifest <i>versus</i> latent skills gaps | 40 |
| 5.4 | Impact of skill deficiencies | 41 |
| 6. | CONCLUSION | 44 |

TABLES

| | | |
|-----------|---|----|
| Table 1.1 | Case study sectors | 6 |
| Table 3.1 | Projections of replacement demand by occupation 1999-2010 | 11 |
| Table 3.2 | Overall number of vacancies, hard-to-fill, and skill-shortage vacancies | 13 |
| Table 3.3 | Internal skill gaps and employee proficiency levels, analysed by occupation | 16 |
| Table 4.1 | Summary of Product Market Pressures in Case Study Establishments | 26 |
| Table 4.2 | Human resource implications of responses to product market pressures | 31 |
| Table 4.3 | Hard-to-fill vacancies by occupation and sector | 33 |
| Table 4.4 | Totality of skill gaps by occupation and sector | 33 |
| Table 5.1 | Manifest skill gaps across sectors | 39 |
| Table 5.2 | Skill deficiencies and implications for organizational performance | 42 |

FIGURES

| | | |
|------------|---|----|
| Figure 1.1 | Comparison of international productivity levels (uk=100) | 2 |
| Figure 2.1 | Percentage of workplaces reporting hard-to-fill vacancies, 1990-98 | 8 |
| Figure 2.2 | Proportion of workplaces reporting hard-to-fill vacancies over the economic cycle | 8 |
| Figure 3.1 | Distribution of skill-shortage vacancies by occupation | 14 |
| Figure 3.2 | Distribution of skill-shortage vacancies by industry | 15 |
| Figure 3.3 | Skills required for skill-shortage vacancies | 15 |
| Figure 3.4 | Distribution of skill gaps by industrial sector | 17 |
| Figure 3.5 | Distribution of skill gaps by occupation | 18 |
| Figure 3.6 | Skill characteristics of internal skill gaps | 18 |
| Figure 3.7 | Impact of recruitment problems on establishment performance | 19 |
| Figure 3.8 | Main impacts of internal skill gaps | 20 |

1. A SKILL PROBLEM?

1.1 From a union problem to a skill problem?

Though the provision of education and training had been long recognised as an institutional weakness, much of the competitiveness debate over the 1980s related to the then Government's ideological belief that the trade unions had a stranglehold over the economy. Accordingly, competitiveness at that time was seen very much in the context of an inflexible labour market. During the 1960s, and throughout the 1970s, unions were thought to have used the bargaining power provided by full employment to bid up wages, defend restrictive practices thereby slowing productivity increases and creating inflationary pressures¹. During the 1960s, Britain held a respectable place in league of northern European economies on a level with France but behind Scandinavia and Germany, but by 1980 incomes in Britain were amongst lowest in Europe, such that Britain was seen by some commentators as a relatively low wage economy that tended to handle its comparative international productivity gap by lowering wages². Over the same period, industrial relations appeared to fare badly. During the 1970s, Britain had more industrial disputes compared to other countries: Germany lost 26 minutes *per* employee due to strikes between 1970 and 1980 compared to 274 in the UK³. Whether this was a cause or an effect of Britain's relatively poor economic performance has been subject to much analysis and discussion. Without doubt there were many other factors underlying Britain's economic performance. Lower productivity in Britain compared to Germany, for example, has been explained with reference to differences in product mix, plant and machinery, capacity utilisation, and length of production runs⁴. Evidence comparing the UK and the USA pointed to management skills and worker motivation accounting for the productivity gap between the two countries⁵. European comparisons revealed that the take-up of micro-electronic processes over the late 1970s and early 1980s was less in the UK compared to France or Germany and revealed that this stemmed from complacency or inertia amongst UK management^{6,7}. Gradually from the 1980s onwards concern about the UK's competitiveness has become centred on skills, qualifications, and training.

1.2 The importance of skills

By the mid-1990s few would argue that Britain had a union problem of a type that so exercised the Government over the 1980s. At the same time, it was far from obvious that Britain had comprehensively solved the manifold problems described above. Nevertheless, by the end of the 1990s most workplaces practised a level of both functional and numerical flexibility that would have been unthinkable at the beginning of the 1980s⁸. Yet, the productivity gap with countries with comparatively less flexible labour markets persisted.

¹ J.T. Eldridge, P. Cressey, and J. MacInnes *Industrial Sociology and Economic Crisis*, Harvester Wheatsheaf, Hemel Hempstead, 1991.

² PB. Beaumont, *Change in Industrial Relations*, Routledge, London, 1990.

³ MP. Fogarty, *Change in Industrial Relations*, Policy Studies Institute, London, 1986

⁴ F. Blackaby, *Deindustrialisation*, Heinemann, London, 1979.

⁵ R. Caves and LB. Krause, *Britain's Economic Performance*, Brookings Institute, Washington, DC 1980.

⁶ J. Northcott and P. Rogers, *Microelectronics in Industry*, Policy Studies Institute, London 1982

⁷ J. Cox and H. Krugbaum, *Innovation and Industrial Strength*, Policy Studies Institute, London 1987.

⁸ K. Purcell 'Changing Boundaries' in K. Purcell (ed.) *Changing Boundaries in Employment*, Bristol Academic Press, Bristol, 2000.

- a strong base in high value-added, high-skill sectors of the global economy such as finance and the creative industries.

Nevertheless, there is *prima facie* evidence that the supply and utilisation of skills in the UK is responsible, in part, for relatively poor productivity performance. A strong body of evidence is beginning to emerge that indicates education and skills can contribute to bridging the productivity gap¹². Much of the research has concentrated on the link between education and skills on wage levels. If one accepts that wages reflect workers' marginal productivity then, in aggregate, this gives an indication of the impact on the national economy¹³. Other evidence suggests that training can also improve labour productivity, indeed even more so than wages¹⁴. Much less, however, is known about the impact of skills and training on the performance of the firm investing in it, although recent evidence relating to SMEs suggests that it can stimulate firm growth¹⁵.

The skills problem has been summarised, by some, as a system failure which recognises that the deficiencies of the compulsory education system are such that post-16 vocational education and training is unable to compensate for them. Related to this is the 'low skill equilibrium' analysis that speculatively suggests that the supply and demand for skills has reached equilibrium at a sub-optimal level in relation to productivity¹⁶.

Where the stylised facts presented above can be misleading is in that:

- there is an over-concentration on measuring the supply of skills rather than the use to which they are put. Little is known about how skills are utilised in the economy which suggests that increasing or improving supply will not necessarily improve productivity unless it is possible to be sure about how skills are being deployed¹⁷; and
- not much is known about the quality of training provided by employers. Training provided (or funded) by employers remains something of 'black box' measured typically with reference to its type, duration, and cost¹⁸.

1.3 The Skills Task Force

The National Skills Task Force (STF) was established in 1998 by government to create a National Skills Agenda in the context of concerns about the competitiveness of the economy. The aim of the National Skills Task Force, according to its first report, was:

"...the establishment of a national culture of high skills and an education and training system able to deliver appropriately and at the right time"

¹² M. O'Mahoney, 'Productivity Levels in British and German Manufacturing Industries', *National Institute, Economic Review*, February, pp25-37, 1992.

¹³ A. Barrett and P. O'Connell, *Does Training Generally Work? The Returns to Company Training*, Economic and Social Research Institute, Dublin, 2000; S. Machin and A. Vignoles, *The Economic Benefits of Training to the Individual, the Firm, and the Economy*, Report prepared for the Cabinet Office Workforce Development Project, 2001.

¹⁴ L. Dearden *et al.*, *The Returns to Academic and Basic Skills in England*, Department for Education and Employment, Sudbury, 2000.

¹⁵ A. Cosh and A. Hughes. *Investment and Training and Small Firm Growth and Survival: An Empirical Analysis for the UK 1987-1995*, Department for Education and Employment, 2000.

¹⁶ D. Finegold and F. Soskice, 'The failure of training in Britain: analysis and prescription' *Oxford Review of Economic Policy*, 1988.

¹⁷ S. Coleman and E. Keep, *Background Literature Review for PIU Project on Workforce Development*, Report prepared for the Cabinet Office Workforce Development Project, 2001.

¹⁸ See for example, D. Spilsbury *Learning and Training at Work Survey 2000*, Department for Education and Skills, Nottingham, 2001, for the most comprehensive range of training measures.

Surveys of workplaces

The surveys of workplaces 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 in 1999 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. The overall response rate from employers was 59 *per cent* for the telephone survey and 54 *per cent* for the face-to-face survey.²⁰ This survey has become known as ESS1999.

At the end of the year 2000 the telephone survey was repeated. This survey covered 27,031 workplaces using a similar questionnaire to that used in ESS1999²¹. Whereas ESS1999 excluded agriculture and workplaces with less than five employees, ESS2001 included both these groups of employers. The response rate to ESS2001 was 49 per cent.

Case studies

Concurrent with ESS1999 a series of case studies of companies were undertaken. The case studies were designed to analyse in greater detail the relationship between skill needs and organizational performance. Each case study was structured as follows:

- i. the product/service market demand experienced by the workplace;
- ii. analysis of how work was organized to meet the demand of the market and identification of critical functions within the organization;
- iii. the skill needs the above gave rise to;
- iv. exploration of any recruitment problems;
- v. exploration of skill gaps (including scenario building);
- vi. adaptation to recruitment problems and skill gaps;
- vii. impact of recruitment problems and skill gaps on establishment performance.

Cross cutting each of the above subject areas were:

- questions about the past, the present and anticipated future change;
- comparisons with good practice.

²⁰ Completed interviews as a percentage of contacts.

²¹ T. Hogarth, J. Shury, D. Vivian, and R. Wilson, *The Employers Skill Survey 2001*, Department for Education and Skills, Nottingham, 2001.

2. CYCLICAL AND STRUCTURAL EXPLANATIONS OF THE 'SKILLS PROBLEM

Evidence presented in the previous chapter points to a positive relationship between skills (measured by qualification, training, or occupation) and rates of return (measured by productivity or wages) for the firm or the individual. Such evidence, however, does not point to the existence of a skills problem in that it does not explicitly reveal whether there has been an under- (or over-) investment in skills development. To identify whether there is a skills problem requires an analysis of the extent to which there is a mismatch between the demand for and supply of skills that is not simply explained by the economic cycle and which constrains economic performance.

A measure of mismatch between the supply and demand for skills is provided by the incidence of hard-to-fill and skill-shortage unfilled vacancies. Unfortunately, a time-series of skill-shortage vacancies does not exist, but such data are available for hard-to-fill vacancies from the Skill Needs in Britain (SNIB) surveys conducted between 1990 and 1998. At the end of the 1990s the situation stood much as it had been at the beginning of the decade with around 40-45 per cent of workplaces reporting that they had vacancies over the past year which they considered to be hard-to-fill (see *Figure 2.1*). Yet over the decade there had been a sharp fall and subsequent rise. There was a fairly sharp decline in incidence between 1990 and 1992 - which bears in imprint of the economic cycle over the period. The relationship between both the proportion of workplaces with hard-to-fill vacancies and the total number of hard-to-fill vacancies and the economic cycle can be seen a little more clearly in *Figure 2.2*.

Using CBI data, Blake *et al*²⁵ compared data on skill-shortages to capacity utilisation – a measure of the business cycle – and confirmed a high correlation between skill constraints and business performance. Other evidence reveals findings consistent with skill deficiencies actually contributing to the slowdown of the economy rather than simply reflecting the position in the economic cycle^{26,27}. Blake *et al*'s interpretation of the time series was that of a 'stop-go' sequence where increases in labour demand resulted in an increase in skill constraints on production, which led to a decline in output, resulting in a decrease in labour demand. This consequently reduced the skill constraint on production, allowed output to increase, followed by an increase in labour demand, and the cycle started over again.²⁸ The inference is that skill deficiencies constrain the potential for economic growth. 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.

²⁵ 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.

²⁶ J. Haskel and C. Martin, 'Do skill shortages reduce productivity? Theory and evidence for the United Kingdom', *Economic Journal*, Vol. 103, 1993.

²⁷ 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.

²⁸ 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.

TABLE 3.1
PROJECTIONS OF REPLACEMENT DEMAND BY OCCUPATION 1999-2010
(000s)

| Levels (000) | Expansion Demand (or Decline) | Total Loss (Replacement Demand) | Net Requirement |
|---|-------------------------------|---------------------------------|-----------------|
| 1. Corporate Managers | 222 | 435 | 657 |
| 2. Managers / Proprietors in agriculture and services | -151 | 649 | 498 |
| 3. Science and Technology Professionals | 252 | 300 | 552 |
| 4. Health Professionals | 95 | 104 | 199 |
| 5. Teaching and Research Professionals | 257 | 564 | 821 |
| 6. Business and Public Service Professionals | 261 | 162 | 423 |
| 7. Science and Technology Associate Professionals | 1 | 140 | 142 |
| 8. Health and Social Welfare Associate Professionals | 221 | 325 | 546 |
| 9. Protective Service Occupations | 54 | 33 | 88 |
| 10. Culture, Media and Sports Occupations | 149 | 259 | 408 |
| 11. Business and Public Service Associate Professionals | 363 | 428 | 791 |
| 12. Administrative and Clerical Occupations | 160 | 1178 | 1338 |
| 13. Secretarial and Related Occupations | -104 | 526 | 422 |
| 14. Skilled Agricultural Trades | -39 | 154 | 115 |
| 15. Skilled Metal and Electrical Trades | -114 | 565 | 452 |
| 16. Skilled Construction and Building Trades | -65 | 389 | 324 |
| 17. Textiles, Printing and Other Skilled Trades | 21 | 435 | 456 |
| 18. Caring Personal Service Occupations | 471 | 673 | 1144 |
| 19. Leisure and Other Personal Service Occupations | 174 | 301 | 475 |
| 20. Sales Occupations | 172 | 939 | 1111 |
| 21. Customer Service Occupations | 6 | 43 | 49 |
| 22. Process, Plant and Machine Operatives | -126 | 581 | 455 |
| 23. Transport and Mobile Machine-Drivers and Operatives | 23 | 402 | 425 |
| 24. Elementary Occupations: Trades, Plant and Machine Related | -23 | 481 | 458 |
| 25. Elementary Occupations: Clerical and Services Related | -154 | 1327 | 1172 |
| Total | 2127 | 11395 | 13522 |

Source: RA Wilson, Projections of Occupations and Qualifications 2000/2001, Warwick Institute for Employment Research, University of Warwick, Coventry, 2000 [CE/IER estimates, based on LEFM Replacement Demand Module, F02F9 Forecast].

Notes: a) Numbers may not sum due to rounding.
b) Geographical mobility is assumed to be zero for the purposes of these estimates.

existing staff were fully proficient in any occupation. A second measure is **employee based** and is an overall estimate of the number of employees who are less than fully proficient. This is based on applying estimates of the proportions of employment in each occupational category regarded as less than fully proficient and summing over all occupations.

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. This can take two main forms. First, for a variety of reasons, employers may fail to report some problems. This may be because the respondent is unaware that they exist or they may chose not to report vacancies (for example, if they feel that there is no hope of resolving them). Second, and potentially much more important, respondents 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. These are referred to as **latent skill gaps**. In essence, latency is based upon some concept of *ideal* or *optimal* behaviour or performance. Given the current goals, behaviour and, hence, performance of an organization, skill deficiencies may not be perceived or observed. Latent skill gaps would be revealed if an establishment attempted to move from its current behaviour or performance towards this *ideal*.

3.3 Extent of skill-shortage vacancies

Approximately 32 per cent of workplaces reported vacancies at the time of the survey in 1999 and 27 per cent in 2001 (see Table 3.2). About 14 per cent of workplaces (16 per cent in 1999) reported hard-to-fill vacancies in 2001. That is, approximately half of all establishments with vacancies. Some 6 per cent reported skill-shortage vacancies (8 per cent in 1999). ESS2001 had a more comprehensive coverage of the population of workplaces, since it included organizations in the agriculture sector and workplaces with fewer than five employees. Using this as the base for percentages reveals that 14 per cent of workplaces had vacancies, 8 per cent had hard-to-fill vacancies, and just 4 per cent had skill-shortage vacancies in 2001.

TABLE 3.2
OVERALL NUMBER OF VACANCIES, HARD-TO-FILL, AND SKILL-SHORTAGE VACANCIES

| | % of all workplaces reporting | Number of vacancies (a) '000s |
|--|-------------------------------|-------------------------------|
| 2001 | | |
| All workplaces | | |
| All vacancies | 14 | 766 |
| Hard-to-fill vacancies | 8 | 358 |
| Skill-shortage vacancies | 4 | 159 |
| 2001 | | |
| Establishments with 5 or more employees^c | | |
| All vacancies | 27 | 535 |
| Hard-to-fill vacancies | 14 | 233 |
| Skill-shortage vacancies | 6 | 95 |
| 1999 | | |
| Establishments with 5 or more employees | | |
| All vacancies | 32 | 560 |
| Hard-to-fill vacancies | 16 | 255 |
| Skill-shortage vacancies | 8 | 110 |

Base: All establishments

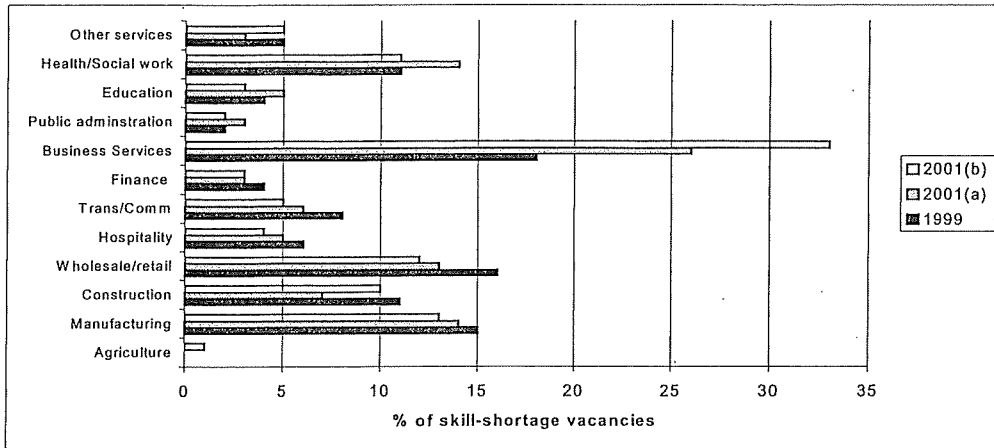
Source: ESS199/ESS 2001 (IER/IFF); Hogarth *et al.*, 2001.

Note: (a) Grossed up survey-based estimates.

(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) This is the corresponding sample to that used in ESS1999.

FIGURE 3.2
DISTRIBUTION OF SKILL-SHORTAGE VACANCIES BY INDUSTRY



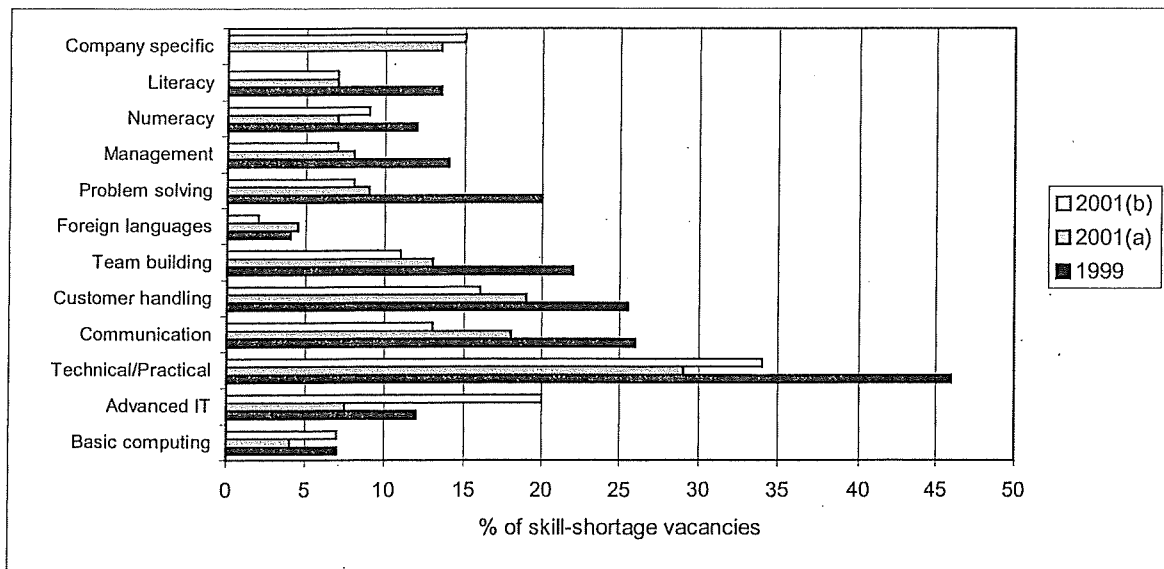
Source: ESS1999/ESS2001 Surveys of Employers.

Note: (a) Using the same base as the 1999 survey.

(b) Based on all establishments surveyed in ESS2001.

The employers survey also obtained information about the particular skills which establishments had found difficulty in obtaining, which resulted in a vacancy persisting. (see *Figure 3.3*). Technical and practical skills other than IT, communication, customer handling, and team building were the skills most commonly reported by establishments as accounting for the difficulty of filling a skill-shortage vacancy. 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 on offer is the main skill factor associated with the emergence of both hard-to-fill vacancies and skill-shortage vacancies.

FIGURE 3.3
SKILLS REQUIRED FOR SKILL-SHORTAGE VACANCIES



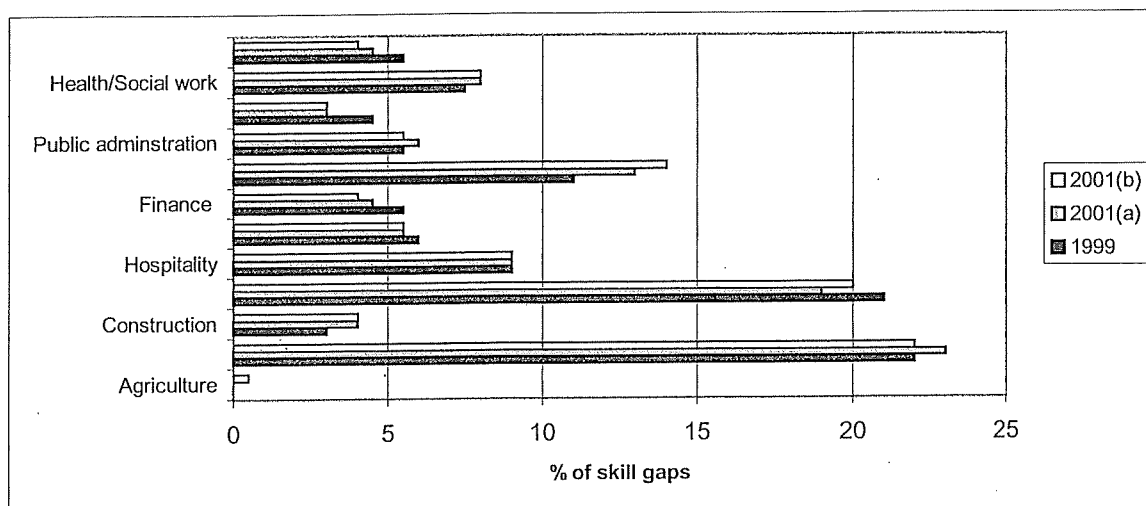
Source: ESS1999/ESS2001 Surveys of Employers.

Note: (a) Using the same base as the 1999 survey.

(b) Based on all establishments surveyed in ESS2001.

The distribution of internal skill gaps by sector is presented in *Figure 3.4*. 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 two sectors appear to have a disproportionate share of such skill gaps.

FIGURE 3.4
DISTRIBUTION OF SKILL GAPS BY INDUSTRIAL SECTOR



Source: ESS1999/ESS2001 Surveys of Employers

Note: (a) Using the same base as the 1999 survey

(b) Based on all establishments surveyed in ESS2001

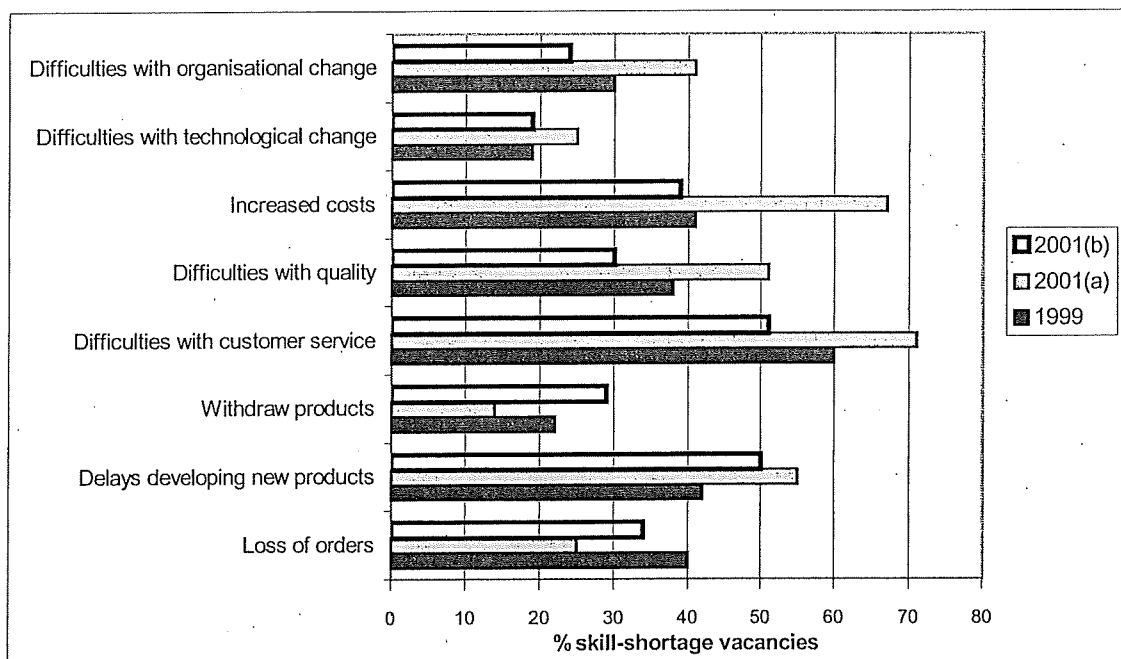
Skill gaps appeared to be more evenly spread across occupations than was the case for skill-shortage vacancies, and are more prevalent across lower level occupations where the skill content of the job is quite low (see *Figure 3.5*).

Figure 3.6 summarises the *skill characteristics* of reported skill gaps across all occupations. Customer handling, communication, and technical practical skills were reported as those in which staff were less than fully proficient.

3.5 Reported impact on business performance

The impact of skill-shortage vacancies on the performance of the establishment is summarised in *Figure 3.7*. Overall, 'difficulties meeting customer service standards' was the most commonly reported response, affecting about 70 per cent of skill-shortage vacancies in 2001. 'Delays in developing new products or services' (55 per cent), 'increased operating costs' (66 per cent) and 'difficulties meeting required quality standards' (51 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 are having a serious impact on establishment performance.

FIGURE 3.7
IMPACT OF RECRUITMENT PROBLEMS ON ESTABLISHMENT PERFORMANCE



Source: ESS1999/ESS2001 Surveys of Employers

Note: (a) Using the same base as the 1999 survey

(b) Based on all establishments surveyed in ESS2001

The previous sections have revealed that the impact of recruitment problems on organizational performance was substantial where they were reported. 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. The main effects of *internal skill gaps* on business performance were reported as difficulties in meeting customer service objectives and required quality standards – see *Figure 3.8*. These problems were widely cited as a consequence of lack of full proficiency in nearly all occupations.

deficiencies in terms of what the organisation could do if it were to achieve best practice. This problem is referred to as latent skill deficiencies and is also discussed in more detail below.

studies in engineering, food and drink manufacture, banking and finance, hospitality, telecommunication services, health and social care, and local/central government.

4.2 What is product market strategy?

In the context of the present study, product market strategy can be most readily defined by what it is not. In the majority of case study establishments, product market strategy was not really concerned about developing the skills of the workforce. As noted elsewhere, product market strategy is concerned primarily with new product development, maximising market share, cost-control, the efficiency with which goods or services are produced, *etc.*³⁸. Where human resource issues arose in the case studies they tended to do so as a reaction to change being introduced on the shopfloor or into the office. In this sense, it was very much a reaction to events, rather than being an intrinsic part of the plan that led to the change being introduced.

Product market strategy can be analysed from a static perspective, with reference to how organizations position themselves in the market relative to their competitors. This may be simply viewed across two dimensions: (i) whether organisations compete principally on price or quality; and (ii) the extent to which they serve mass or specialist markets. This needs to be complemented by a dynamic perspective that attempts to understand how organizations respond to the various product market pressures with which they are faced. In many respects it is this latter perspective that is likely to shape skill needs, if only because it is when organizations attempt to introduce change that their skill requirements are addressed and made manifest.

From a skills perspective two product market strategy responses are of interest:

- i. whether the response is to provide the existing range of products and services to the same quality³⁹ but more efficiently; and/or
- ii. adapt the existing range of products and services to meet changing market demand.

In other words, the extent to which organizations sought to improve their production processes, alter the product range, or both. From here the role of skills in either defining the current product market position, shaping responses to it, or bringing it to fruition, can be analysed with respect to:

- a. the ability of the organization to identify skill requirements that are consistent with its product market strategy;
- b. the capacity to obtain and retain skilled employees; and
- c. the role of work organization and human resource strategy in efficiently deploying skills across the organization.

The above also need to be viewed with respect to the wider set of human resource strategies that are germane to recruitment, retention, and skill utilisation.

4.3 Product market strategy across the case study sectors

Comparable measures of output are difficult to gauge in the public sector, but one is broadly looking at low productivity sectors serving a mass market where employment is in long-run decline, and there are substantial political pressures to improve service quality in an

³⁸ J. Purcell, 'The impact of corporate strategy on human resource management' in J. Storey (ed.) *New Perspectives on Human Resource Management*, Routledge, London, 1989.

³⁹ Quality has two meanings. First the capacity to produce a good or service to specification (quality of production), and second, the quality of the product.

4.4 Product Market Responses: Improvements in Efficiency⁴¹

Cutting costs

Across all sectors there was a recognition that continual improvements were required in the efficiency with which goods and services were produced in an effort to drive down costs. In the public sector this was often as a result of specific government initiatives that sought to improve the quality of service provision and to obtain value for money for tax-payers, in other sectors it was a recognition that consumers were conscious of price. Regulation, especially those rules that had opened domestic markets to increased competition, especially so in telecommunications and the banking, finance, and insurance industry, provided a further stimulus to obtain efficiency gains. Contained in the selection of case study establishments were several 'world class' producers, especially so in engineering, telecommunications, and banking, finance and insurance. Arguably, the organizations in these sectors traded much more on quality than price compared to those in the other sectors. In the engineering sector, for instance, some of the larger manufacturers had few competitors and operated in higher value-added markets. Even here, however, there was a drive to improve efficiency with pressures being placed on suppliers to obtain a yearly percentage decrease in price of components. Though original equipment manufacturers (OEMs) at the head of the supply chain were often willing to work with suppliers to assist them obtain efficiency savings, quality maintenance in sectors such as aerospace, linked to continuous efficiency improvements, created its own set of tensions that needed to be carefully managed with consequent implications for skills.

⁴¹ Differentiating between (i) process innovations that improve production efficiencies and (ii) product innovations, becomes exceedingly difficult in the service sector where changing the process of production may result in a marked change in the nature of the service being provided.

In several instances the pressures to drive down prices were quite acute. This was particularly the case in the food manufacturing where supermarkets – the principal customer for many manufacturers – were driving down prices at the same time as imposing other pressures on suppliers that had cost implications, such as lead-times between the initial order, the right to alter the order at short-notice, and delivery time. In banking, finance, and insurance similar pressures accrued from the emphasis on improving shareholder value. In the engineering sector, as noted above, pressures were being passed down the supply-chain with annual cost savings being demanded throughout the chain. Here the threat of low cost foreign imports was more to the fore, with some multi-national corporations (MNCs) having the capacity to source components on a global basis.

Technical change

In local and central government many of the initiatives that the government has introduced will be realised through greater use of IT. It is anticipated that IT will provide a greater opportunity for communication across departments and agencies and will free more time to develop a more customer facing service. But obtaining the personnel to realise such efficiency saving could be exceedingly difficult. In engineering, IT systems provided more scope for partnership between links in the supply-chain. For example, where designs were shared over the internet between various partner organizations, there was much greater scope for simultaneous product development and design for manufacture, thereby cutting design to production lead times. It also allowed the design process to be dispersed over several companies and locations with implications for the skills required by organizations. In banking, finance, and insurance, where the demands to realise cost-savings were substantial, one of the principal responses of the business was to automate many aspects of service delivery. This is a process which has been on-going since the late 1970s and is now seeing the provision of services over the internet.

Investing in new production technologies was a commonly cited response to generate cost savings. At the lower end of the value-added scale the capacity to do this was often limited, especially where the activity was labour intensive. Smaller food manufacturers tended to rely on a labour intensive production process and argued that the scale of production did not warrant increased investment in automated production techniques. Hospitality, other than the use of cook-chill techniques and some limited use of IT, such as room reservations over the internet, did not see new technology as providing cost-savings. Similarly in health and social care there was limited scope to invest in new technologies either because the appropriate technologies did not exist or because a rate of return on the investment could not be justified. In these sectors, efficiency savings needed to be obtained through other means, principally related to the organization of the business and of work within it.

Though investment in automated production technologies was a response recorded in several several sectors, it was not – with the possible exception of the banking, finance, and insurance sector – the principal means of obtaining efficiency gains. In sectors such as engineering investment in new technologies was an on-going process and incremental in scale. In other sectors, technical change was not a principal means of obtaining greater efficiency because either the production process did not readily lend itself to automation, or because it would not generate the cost saving required. Here the response was to initiate a number of organizational changes to working practices that, arguably, relied far more on the mass of existing employees to deliver efficiency savings.

Organizational change

For some organizations the starting point for achieving efficiency gains was to review, either formally or informally, the way work was undertaken. At its most strategic level this was observed in the local government sector where the government's White Papers had led to a

4.5 Product Market Responses: Product Innovation

Product innovation may take two forms: (i) substantial qualitative improvements to the existing range of product or services such that the nature of the product is changed; or (ii) the introduction of new products or services. It may also be seen as an attempt to either: (a) maintain the current product market position of the establishment; or (b) or to move into (typically) higher value-added markets.

Where cost pressures were especially high, some establishments had sought protection through the introduction of a wider range of products and services. This was noted in food manufacturing and in hospitality. In the latter sector, establishments had attempted to obtain a better mix of leisure and business customers, in what is a highly cyclical market. The cost of introducing new products in these sectors was relatively small compared to some of the other sectors and such changes appeared to leave the product market position of the establishment unaltered or make only a modest impact.

In much higher value-added markets, such as engineering and telecommunications, the evidence points towards continuous product and service development being expected by the market. For instance, the introduction of a new automobile every five years or so. The risk attached to these investments was exceedingly high and often establishments that were part of MNCs were competing globally with other parts of their company to acquire investment, usually on the basis of past record. In the engineering sector investments were being made in established technologies, but in telecommunications it was apparent that there was no standard technology but a series of competing ones. Though the rewards for developing and marketing the technology that becomes standard are substantial, the cost of failing to develop the right technology can be exceedingly high. Arguably, successful innovation would improve the value-added generated by establishments. Conversely, failure would perhaps terminally damage the product market position of the establishment.

In the higher value-added markets where relatively large scale investments were being made – either in relation to the capitalisation of the organization or the norms of the sector – the investment had at least some of the following characteristics:

- large scale investments, such as those in engineering, involved other organizations spread across different locations and sometimes involved strategic alliances being developed;
- close co-operation and liaison forged between supplier and customer;
- product life-cycles shortening;
- IT tending to be integral to the production process and the product;
- tight cost controls being implemented.

Overall, the evidence from the telecommunications and engineering sectors, where much of the large-scale investment in new products was taking place, suggested that failure to develop new products would result in severe damage to organizational performance. Moreover, because the life-cycle of products was shortening, sometimes as a consequence of rapid advances in the capacity of IT, the pressure to bring new products to market was increasing. Because this increased the number of new products on the market, greater uncertainty was attached to the success of those products.

As will be reported in subsequent sections, the overwhelming demand from those engaged in high value-added, new product development was for personnel capable of managing high risk projects from both a technical and business perspective. That is personnel capable of conceptualising new products and delivering them to the market.

The responses of organizations to product market pressures were identified in the previous section, and it is apparent that each has skill implications (see Table 4.2). As noted previously, the principal response was to address how work was organized, especially where efficiency savings were being sought. This took on a variety of forms – team working, cell manufacturing, etc. – but the common component would appear to be devolving responsibilities down the occupational hierarchy. This has been given added impetus by organizations' insistence on lean manufacturing techniques and flatter management structures. It also has a functional flexibility component to it, insofar as devolving responsibilities also assumes that employees take on a wider variety of tasks than hitherto. This is not simply a skill issue, as it strikes at the heart of the wage-effort bargain and thereby calls up a wider set of human resource issues.

TABLE 4.2
HUMAN RESOURCE IMPLICATIONS OF RESPONSES TO PRODUCT MARKET PRESSURES

| Product Market Response | Human Resource Implications |
|-------------------------------------|---|
| Improving efficiency through IT | Development of IT skills throughout organization; sourcing professional IT staff |
| Changing work organization | 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 organizations 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 |
| New product and service development | Identification of how new products and processes affect work organization Identification of skill requirements |

Source: ESS Case Studies

There were only a few examples, notably in central and local government, of organizations strategically reviewing the human resource implications of changes in product market strategy. In central and local government, there was more concrete evidence that the HR function was more actively involved in setting the 'vision' of the organization and developing policies accordingly to support that vision. Similarly, there was a close relationship between NHS Trust strategies, departmental business plans, and human resource policies in the health sector. In all of the public sectors covered in the study, there was a tendency for human resource policies that had been designed at an organization-wide level to be applied in the search for the solution to a highly departmental or job specific problem. Where this occurred in the private sector it was amongst the larger establishments. As noted earlier, the impact of product market change was to alter incrementally the way in which work was undertaken in the organization, but over time, the process of incremental change can result in significant change having taken place. A strategic response, however, to changing skill

TABLE 4.3
HARD-TO-FILL VACANCIES BY OCCUPATION AND SECTOR

| | row percentages | | | | | | Total Base | | | | |
|--------------------------------|-----------------|---------------|-------------------------|----------|-------|-------------------|------------|-------|------------|-------|-------|
| | Managers | Professionals | Associate Professionals | Clerical | Craft | Personal Services | | Sales | Operatives | Other | |
| Food and drink | 2 | 2 | 1 | 2 | 6 | 2 | 8 | 74 | 4 | 100 | 5752 |
| Engineering | 5 | 15 | 10 | 3 | 29 | 0 | 7 | 28 | 3 | 100 | 7892 |
| Hospitality | 4 | 0 | 0 | 4 | 1 | 56 | 7 | 1 | 27 | 100 | 1516 |
| Telecommunications | 18 | 11 | 45 | 6 | 14 | 0 | 5 | 0 | 0 | 100 | 5752 |
| Banking and financial services | 8 | 6 | 19 | 34 | 0 | 0 | 33 | 0 | 0 | 100 | 7148 |
| Central and local government | 7 | 11 | 12 | 63 | 2 | 3 | 0 | 1 | 1 | 100 | 4447 |
| Health care | 0 | 3 | 70 | 4 | 0 | 19 | 1 | 0 | 3 | 100 | 17603 |
| Social care | 3 | 5 | 16 | 3 | 1 | 61 | 3 | 3 | 5 | 100 | 16792 |

Source: ESS1999 Survey of Employers

TABLE 4.4
TOTALITY OF SKILL GAPS BY OCCUPATION AND SECTOR

| | row percentages | | | | | | Total Base | | | | |
|--------------------------------|-----------------|---------------|-------------------------|----------|-------|-------------------|------------|-------|------------|-------|-------|
| | Managers | Professionals | Associate Professionals | Clerical | Craft | Personal Services | | Sales | Operatives | Other | |
| Food and drink. | 7 | 2 | 1 | 3 | 12 | 2 | 2 | 54 | 17 | 100 | 30873 |
| Engineering | 15 | 7 | 5 | 7 | 17 | 0 | 3 | 39 | 6 | 100 | 51532 |
| Hospitality | 11 | 1 | 0 | 2 | 6 | 60 | 9 | 1 | 10 | 100 | 67042 |
| Telecommunications | 42 | 0 | 8 | 11 | 2 | - | 36 | - | 1 | 100 | 4421 |
| Banking and financial services | 18 | 8 | 5 | 53 | 1 | 1 | 14 | 0 | 0 | 100 | 47535 |
| Central and local government | 23 | 10 | 4 | 50 | 3 | 8 | 0 | 0 | 2 | 100 | 49251 |
| Health | 15 | 10 | 22 | 15 | 3 | 24 | 0 | 0 | 11 | 100 | 35116 |
| Social care | 14 | 8 | 10 | 10 | 5 | 32 | 2 | 2 | 17 | 100 | 32617 |

Source: ESS 1999 Survey of Employers

supply in engineering and telecommunications, organizations 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, there were constraints on increasing salaries to retain and recruit highly skilled staff.

At managerial and professional levels there was evidence that organizations 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 at the time of the study.

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. Of course, this begs many questions about who should bear the cost of supplying suitably skilled staff: the state, the individual or the employee? Several establishments recognized the importance of reviewing, from time-to-time, the entry qualifications for recruits, to ensure that qualifications sought and skills required were suitably matched. 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.

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. It was more likely to be 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 difficult, 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.

Strategic responses to solving recruitment problems related to improving recruitment technique, targeting selected university departments to acquire 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. It tended to be in those situations, where recruitment problems affected a large number of vacancies and had been persistent, that a strategic response had been developed. Thus the larger organizations in telecommunications and engineering, and selected examples in central and local government, had engaged in a comprehensive review of their recruitment needs and how they might be met.

Organizations tended to play down the impact of recruitment difficulties. An impact on the productive capacity of establishments was seldom an issue because the number of recruitment problems at any one time was limited and management could compensate for the shortfall in skills through the variety of methods: overtime, contracting out, *etc.* Nevertheless, recruitment problems imposed short-term financial costs, for instance, either through contracting out work or paying for overtime, and more qualitative costs such as expecting staff to take on more tasks, unpaid overtime, and such like. Across the case study

would expect to a skill gap to emerge, if only temporarily, when change of whatever type is introduced.

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 more temporary in nature. This may be contrasted with the telecommunications sector where the merging of telecommunication and computer technologies was creating a rapidly changing industry with respect to both products and processes. This has posed establishments 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 technologies⁴⁶; and
- the problems that arise as companies become mature organizations.

An indication of the skill gaps experienced by the case study establishments is provided below (see Table 5.1). At first glance the evidence points to a degree of commonality in the content of skill gaps across sectors. 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, as illustrated above, the pace of technical development of both products and processes was 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, the difficulty emerges 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 products⁴⁷. In fact, what emerges from the case study evidence is that the principal skill gap that existed in each sector was the failure to develop the combination of skills needed 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 often rudimentary level of skill required in the above sectors the impact of failing to develop a combination of skills could be significant, such as in food manufacturing where the ability to read 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

⁴⁶ A. Pettigrew *et al* (1989) *Training in Britain*, Training Agency, Sheffield; C. Hendry *et al.*, *Employees Skill Survey: Telecommunications Report*, Department for Education and Employment, Nottingham, 2000.

⁴⁷ 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

TABLE 5.1
MANIFEST SKILL GAPS ACROSS SECTORS

| Skills | Engineering | Food Manufacturing | Hotels and Catering | Telecoms | Banking and Finance | Local and Central Government | Health and Social Care |
|---------------------|---|--------------------------------|---|---|-------------------------------------|--|--|
| IT Skills | | ✓ | Gap exists at a low level | ✓ Especially relating to the latest ICT developments | ✓ At all levels | ✓ IT skills lacking at all levels | |
| Technical Skills | ✓ 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 | |
| Communication | ✓ Team leading; at shopfloor and managerial levels | | ✓ | ✓ | ✓ | | ✓ |
| Customer Handling | | | ✓ | ✓ | ✓ | | ✓ Managing diverse customer groups with limited resources |
| Team Working | ✓ At all levels | | | ✓ | ✓ | ✓ | |
| Foreign languages | | | | | ✓ | | |
| Management Skills | ✓ | | | ✓ | ✓ | ✓ | ✓ |
| Literacy & Numeracy | | ✓ For production levels | | | | | ✓ |
| | | | | | | | ✓ Care workers |

Source: ESS Case Studies

recognise or report skill gaps or recruitment problems because their product market strategies were static. Though latent skill gaps were more apparent in sectors that contained leading edge organizations such as in telecommunications and engineering, sectors such as hotels and catering also revealed latent skill gaps even if they were on a more modest scale. Those hotels that had succeeded in joining strategic alliances to better market themselves or had widened the range of their services to counter the cyclical nature of demand – all of which had skill implications – were better placed to maintain or improve their product market position compared to those had not done so.

Econometric analysis of ESS1999 also revealed that if companies were to shift their product market position to match the better performers in their market sector, then the skill implications of this would be substantial. Hence the evidence points to latent skill gaps being a substantial problem for the economy.

5.4 Impact of skill deficiencies

Establishments reported a number of impacts of skill deficiencies on their business. These related to delays in product development, loss of business, delivery of a less than ideal service and delays in introducing change. Overall, however, there was a sense if not of 'muddling through' then certainly of organizing around problems. This might serve to rather play down the impact of skill deficiencies. In fact skill deficiencies posed manifold problems. The telecommunications sector suggests that cumulative recruitment problems leading to skill deficiencies posed severe operational problems. Arguably this sector was trading rather more on new knowledge than other sectors, but the evidence points to skill deficiencies having had a significant impact on performance.

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

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

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 deficiencies posed severe operational problems. In local government, for instance, 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.

Can a skill deficiencies lead to opportunities being developed elsewhere? The evidence from the recruitment problems suggests that problems relating to IT can be 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 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.

often found. Similarly, the evidence points to the nature of skill deficiencies not being necessarily of a temporary duration.

were more likely to report manifest skill gaps, because they were often looking for a specific combination of skills in an individual that they recognised to be scarce in the labour market and which the organization could not develop quickly enough in-house. Intra- and inter-sectoral comparisons reveal that the skill gap between the better performing and the average or below average performers was potentially substantial. At the higher end of the value-added spectrum, employers reported that they required employees of the highest calibre to lead product development teams, combining a wide range of management and technical skills to maintain and improve market position in a rapidly changing market. In the engineering and telecommunications sector, for instance, organizations that were not competing to attract these type of skill had the potential to be left behind if they lacked the personnel capable of managing product development. But even amongst lower value-added segments of the market, some organizations were developing innovative responses to their product market position, with skill implications that were in advance of others. These included acquiring staff with a willing attitude to meet performance standards, or who were willing to be functionally flexible.

By inference, this suggests that there was a substantial latent skills gap in nearly all sectors. Better performing organizations 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. Such latent skill gaps between the high and low performing organizations within sectors would appear to be significant.

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