People and the Bottom Line

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the work foundation

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The Work Foundation believes that productive, high performance companies are those committed to making work more fulfilling, inspirational and effective, and which succeed in integrating the many aims crucial to organisational success through engaging their workforces.

Acknowledgements

Glossary

ABI	Annual Business Inquiry
BERR	Department for Business, Enterprise and Regulatory Reform
CDP	Career development plan
CIPD	Chartered Institute of Personnel and Development
DFES	Department for Education and Skills
DTI	Department for Trade and Industry
DIUS	Department for Innovation, Universities and Skills
EAP	Employee Assistance Programme
FTE	Full-time equivalent employee
HPWPs	High performance working practices
HR	Human Resources
HRM	Human Resource Management
IDBR	Inter-departmental business register
IIP	Investors in People
NESS	National Employer Skills Survey
PDP	Personal development plan
PRB	Profit related bonus
PRP	Performance related pay
PSA	Public service agreement
R&D	Research and Development
SMEs	Small and medium enterprises
SSDA	Sector Skills Development Agency
UFI	University for Industry
WERS	Workplace Employee Relations Survey

Contents

Executive Summary

Does the way people are treated at work make a difference to the performance of the organisations that employ them? Are there returns to investment in human capital in a similar way to investments in physical capital? These seem straightforward enough questions but they have generated huge amounts of debate. On one side, there is plenty of evidence strongly suggesting that investment in people has important business performance benefits, and yet on the other hand, the research that arrived at this conclusion has been subject to detailed criticism.

And whilst academics gather and dispute the evidence, it would seem that practitioners are not completely convinced either. The take-up of what have been termed High Performance Working Practices (HPWPs) has been slow and many organisations do not adopt them. The doubts of practitioners reflect concerns over what it might mean for individual firms and sectors, and confusion over which people management practices are likely to show the greatest link to performance. Many studies adopt complex measures which are outside the capabilities of most firms to replicate. In terms of a step change in employer behaviour what is needed are some measures that have been linked to performance, that employers can capture for themselves and which do not require considerable academic resource to make useful.

Against this background, this study takes into account concerns from both academics and practitioners, and provides a convincing argument that the investments firms make in their workforce make a difference.

Background to the research

This report presents findings and analysis from *People and the Bottom Line*, the third part of a research project exploring the link between the way employees are managed and organisational performance.

The project began in 2004, when Investors in People UK (IIP UK) – together with the Sector Skills Development Agency (SSDA), the Chartered Institute of Personnel and Development (CIPD) and the Department for Education and Skills (DFES) – began drawing together evidence of the links between skills and organisational performance. This work began with two phases:

■ *Phase one* involved an extensive literature review which explored the relationship between skills investment, employee commitment, high performance workplaces, and organisational performance.

■ *Phase two* drew on the literature to generate a framework of capability against which organisations could consider all aspects of people management, together with their own investment in people. It drew together a theoretical framework – the 4A Model – alongside a list of 40 measures (related to skills development and wider people management practices) which employers could use in order to monitor performance in each of these areas.

This third phase of activity was developed to assess the link between the measures presented in the 4A model and organisational performance, and to determine which of the candidate 40 measures show the strongest association.

Theoretical framework

The work conducted in phase two of the project[1] identified two key dimensions to the expression of and improvement of human capability in the workplace:

■ The first dimension encompasses the development of capability at one end and its deployment at the other.

■ The second dimension explores the roles of individuals at one end and organisations at the other and the way in which capability depends on an appropriate partnership.

The resulting four quadrants of activity form the 4A model (see Figure 1):

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[1] Tamkin P (2005), *Measuring the Contribution of Skills to Business Performance: A Summary for Employers*, Institute for Employment Studies

- **Access** — the effective resourcing of roles in the organisation in terms of initial recruitment, ongoing job moves and succession activity. The focus here is on deliberative organisational activity including policy and practice.

- **Ability** — the skills and abilities of the workforce. In essence, the quality of people that the organisation has at its disposal, and the ongoing development activity of those individuals which maintains and further develops their capability.

- **Attitude** — it is clear that skills are not the totality of what makes people do an excellent job. There is also the engagement, motivation and morale of the workforce and the meaning they find in work, their beliefs about the workplace and their willingness to put in additional effort.

- **Application** — the opportunities made available to individuals to apply themselves. This recognises that people need an appropriate working environment to prosper provided through information, job design, organisational structure and business strategy.

Figure 1: The 4A model of capability
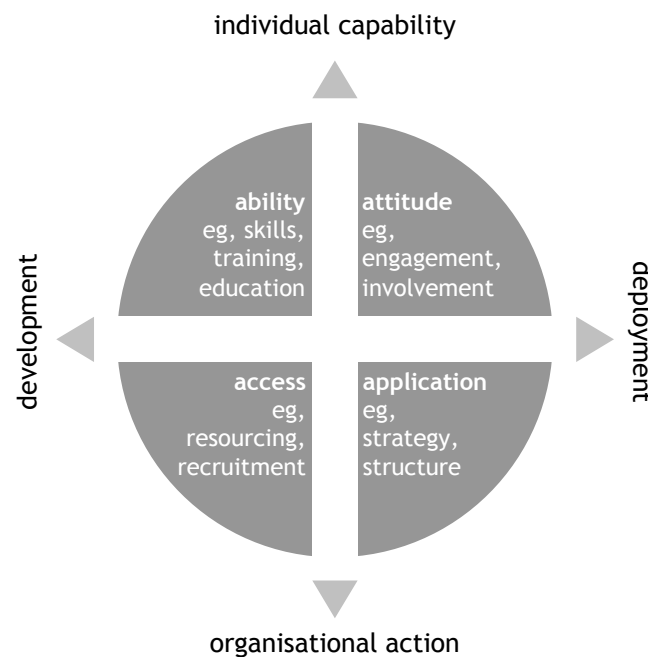
individual capability

ability
eg, skills,
training,
education

attitude
eg,
engagement,
involvement

development

deployment

access
eg,
resourcing,
recruitment

application
eg,
strategy,
structure

organisational action

Source: Tamkin P, Giles L, Campbell M, Hillage J (2004), *Skills Pay: The Contribution of Skills to Business Success*, SSDA Research Report 5

Each quadrant of the model was then populated with measures that had either been tested within the literature reviewed, were already used elsewhere (and were therefore accepted by organisations), or were new measures that had been developed to provide a reasonable test of investment by an organisation in that quadrant of activity. The criteria used to identify potential measures included resonance with employers (ie they should be meaningful to employers and align as far as possible

with measures already in use); rigour and lack of ambiguity; and the capacity for longitudinal study (ie the measures should be able to track organisational inputs, outputs and performance over time).

This analysis led to a set of 40 measures across the quadrants of the 4A model: a list of core and desirable measures of HR practice.

Objectives and methodology

The main aim of this new research was to examine the link between the measures presented in the 4A model and organisational performance, and to determine which measures show the strongest association. In addition, it was to provide a method that will enable examination of a causal link in the future.

In doing so, the initial 40 measures underpinning the 4A framework were to be tested and reduced to a smaller set which show the greatest correlation with organisational performance.

More specifically, the objectives were:

■ *Using the framework of human capital, Human Resource Management (HRM) and organisational performance measures/indicators, identify a core set of indicators which show the most robust relationship with business performance and which organisations can feasibly collect.*

■ *Test if this core set can be collected in a consistent way so that aggregate data can be generated.*

■ *Explore how easily employers can identify the information required, and the feasibility of future data collection.*

■ *Use the generated core set of indicators to test the association with business performance across a broad and representative cross sector of employers.*

At a more detailed level it was hoped that the project would answer some key questions:

■ Can the measures be collected in a consistent way so that aggregated data could be generated for analysis at organisational size, sectoral, regional and national levels?

■ Can meaningful correlations be drawn?

■ What methodology should be adopted to assess a causal link in the future?

To achieve these objectives, the researchers conducted a telephone survey across a wide range of employers. The survey was first piloted, in order to test the effectiveness of the questionnaire, and then rolled out to cover 2,905 organisations with 25 or more employees, of which 2,500 were private sector and 405 were public sector.

The questionnaire was designed to explore each element of the 4A model, collecting employers' views on how they invest in people and the processes they use to manage the capability and contribution of their staff. Questions were based on elements identified from the earlier phases of research plus additional questions requested by the IIP Human Capital working group. Responses allowed each of the four quadrants of the model to be populated, whilst additional information on organizational performance was also gathered which could be compared to performance information from an independent business database. This enabled the researchers to explore the link between the quadrants of the 4As model both separately and as an integrated model, and to assess which measures had the strongest relationship with on organisational performance.

Analysis: factors influencing index scores

Initial analysis of responses, involving frequencies and cross-tabulations, revealed that a number of characteristics affected an organisation's performance on measures that make up the 4A model. These included variations of size and sector, plus three elements of an organisation's strategy: its approach to innovation, its efforts to create a great working environment, and the emphasis placed on meeting the needs of external stakeholders. The impact of being IIP-recognised was also investigated and found to have a positive and significant effect across all 4A indices, and in each case the scale of this effect was substantial. The data demonstrate that IIP recognised organisations have greater investment in their workforces and more sophisticated processes and practices than non-IIP organisations.

Analysis: relationship with business performance

Next the data were analysed in greater depth to explore the relationship between scores on the index and company performance, in order to understand whether the way in which employees are managed affects performance regardless of organisational characteristics.

To do this, regression techniques were used to help understand the correlations between the variables (ie questionnaire responses) in more depth. Regression enables us to hold constant all the factors we have identified as influencing index scores, including previous company performance. Initially the focus was on whether specific clusters of HR practices are linked to organisational performance:

- Is it access policies (ie careful recruitment and resourcing) that has an effect?

- Is it the ways in which the firm looks to increase ability (ie through high levels of workforce training and development)?

- Is it attitudes that are important – the ways in which the workforce is motivated, engaged and aligned to the needs of the business?

- Is it the application of people in the workplace – the ways in which the organisation ensures that employees are given appropriate opportunities to apply their skills and motivation through job design, etc?

Statistical tests found only a weak relationship between these individual quadrants of the 4As model and performance, suggesting that no single sub-system of HR practices impacts on performance in isolation. However, if we combine our measures across all parts of access, ability, attitude and application, we find much more powerful statistical relationships between the degree to which firms invest in their people and a wide array of organisational performance measures.

These are clearly very significant findings. The size of the effects are also of note and provide, in tangible terms, a sense of the relationship between the index and the organisation's performance. The results imply that if a business increases its investment by the equivalent of increasing its combined index score by one (around 10 per cent), this would equate to[2]:

- an increase in gross profits per employee of between £1,083 and £1,568.

- an increase in operating profit per employee of between £1,139 and £1,284.

- an increase in profit margins per employee of between 1.19 per cent and 3.66 per cent (ie the ratio of profit over sales).

- a 0.09 per cent increase in sales growth per employee.

- a 3.1 per cent increase in the probability of achieving sales from new technology.

These results are congruent with the literature reviewed within Tamkin et al[3], which suggests that bundles of HR practice are more impactful than single HR practices. This makes intuitive sense as firms need to create a strategically consistent HR environment. It suggests for example, that there will be limited benefits to firms creating great recruitment or succession practices if they do not attend to staff development or motivation. The results also show that as IIP recognition is strongly associated with higher index scores and higher index scores with better performance, achieving the Standard could provide the framework to improve policy and increase investment, which in turn is associated with better performance.

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[2] All figures are based on annual company accounts data

[3] Tamkin P, Giles L, Campbell M, Hillage J (2004), *Skills Pay: The Contribution of Skills to Business Success*, SSDA Research Report 5

Analysis: comparing upper and lower quartile scores

Further analysis of the data was conducted to compare those organisations that were in the top 25% of index scores (the upper quartile) with those in the lowest 25% of scores (the lowest quartile). The results of this comparison showed that:

■ Younger firms are significantly less likely to be located in the lowest quartile. This might suggest a degree of inertia in HR strategy development in older firms. It was also noted that large firms are more likely to be in the upper quartile and medium-sized firms in the third quartile.

■ The most consistent differences between the lowest quartile firms and the highest quartile firms are in terms of their innovation strategy and positioning, and their overarching strategic objectives. Upper quartile firms are significantly more likely to develop their own new technologies or buy in up-to-date technologies. This contrasts with the lowest quartile firms who are more likely to use tried and tested technologies.

■ Upper quartile firms are also much more strongly orientated towards creating a great working environment for their employees, meeting the needs of other external stakeholders and being innovation led.

■ Finally, it was observed that multiple establishment firms are more likely to be located in the upper quartile of the index.

Taken together, such results show that – if factors such as size, sector, previous performance and the strategic objectives of the firm are held constant – then better scores on the index (and therefore greater investment in people) are associated with better financial performance. This suggests that there may be potential benefits to all firms of adopting a coherent range of HR practices and investments in their people, irrespective of their circumstance.

Even where firms are already investing in their workforce, there would seem to be benefits of doing more; there was no evidence that higher scores on the index show diminishing returns.

Analysis: identifying key measures

In addition to exploring the link between people management and organisational performance, the project sought to distil the measures (76 in total including the 40 original measures and those added from the human capital group) which were tested to identify a core set which show a robust relationship to performance, and which organisations can feasibly collect.

This total was initially reduced, removing measures which:

■ had achieved relatively low response rates in the survey (perhaps because employers found it difficult to provide data)

■ had relatively little variation in responses (and therefore gave us little with which to differentiate organisations)

■ did not help raise the reliability of the individual 4A indices.

This still left a relatively long list of measures (37), which form the basis of our regression analysis of the link to performance. For most organisations this would prove to be too many, and so to distil these further, the items which accounted for the greatest impact in terms of variability between responses from organisations were identified and studied. Each item within each quadrant of the 4A model was looked at, which then led to the identification of the items that had the greatest impact in each case.

This analysis gave a scaled down set of 12 measures, as captured in the table below.

Table 1: The key 12 measures

Area	Measures
Access	1. Proportion of new appointees tested on recruitment
	2. Proportion of new appointments for which there was a person specification
	3. Proportion of employees covered by a succession plan
Ability	4. Proportion of workforce that have a current personal development plan
	5. Proportion of the workforce that have a career development plan
	6. Proportion of employees qualified to degree level
Attitudes	7. Proportion of managers that left voluntarily over the last twelve months
	8. Proportion of staff that receive profit related pay
	9. Proportion of staff that have a regular appraisal
	10. The frequency with which staff have one-to-ones
Application	11. Who decides on the pace of work (1 = exclusively managers; 5 = exclusively workers)
	12. Who decides on task allocation (1 = exclusively managers; 5 = exclusively workers)

Source: IES, 2008

These 12 measures provide a core set for organisations to use to measure their own investment in people within the organisation and which could be used to provide further evidence or the base for tracking research.

In addition, there are three items from the survey which have not been suggested as a measure as they do not test *degree* of adoption, rather they capture whether a process exists or not. As the presence or absence of the process is indicated as important in the

regression analysis they are included and it is suggested that organisations ensure that these three processes are in place:

Table 2: Key processes

Area	Items
Ability	1. The organisation evaluates development in a systematic way
	2. The organisation focuses on the long term development of its managers
Application	3. The organisation encourages and captures the suggestions of the workforce

Source: IES 2008

Conclusion

Overall, the findings from this project demonstrate that organisations that adopt an integrated range of HR practices, captured by the 4A model, are likely to perform better on key indicators like profit and sales growth. The research has also demonstrated that employers of all types and sizes could benefit from this strategic investment in people.

Whilst this research was not intended to demonstrate causality, it has laid the ground for future work that could do so by providing a tested set of measures that were both acceptable to employers and shown to relate to performance.

1 Introduction

The first Skills Strategy White Paper: *21st Century Skills: Realising our Potential* argues that as a nation we do not invest enough in skills, and that both raising and effectively deploying skills are essential to sustaining a productive and competitive economy. The White Paper also suggests that PSA workforce development targets should not be pursued in isolation – shared targets are essential to join up the efforts of national, regional and local organisations. The second Skills Strategy White Paper upholds and strengthens this message by emphasizing the need to tackle the skills challenge by taking a partnership approach. Most recently, the Leitch Review also concluded that the skill levels in the UK, despite recent efforts to secure improvement, are weak by international standards. The Leitch Review suggests that the responsibility for raising skill levels needs to be taken jointly, with employers and individuals playing their part where they benefit from such an investment. The review makes the point that the benefits of doing so are huge with potential increases in productivity and reductions in unemployment. A key recommendation is to increase employer engagement and investment in skills.

The main underlying principle emerging from the policy approach to skills, is that organisational investment in people should, all other things being equal, improve overall business performance. Understanding just what kinds of investment make a difference should help businesses focus their training and people investment strategies where it will have greatest impact. Providing evidence to enhance this understanding is a key driver for this research.

In 2004 IIP UK together with SSDA, CIPD and DFES began drawing together evidence of the links between skills and organisational performance under the Skills and the Bottom Line project. Phase one involved an extensive literature review which explored the relationship between skills investment, employee commitment, high performance workplaces, and organisational performance. Phase 2 of the project drew on the literature to generate a framework of capability against which organisations could consider all aspects of people management, together with their own investment in people within four quadrants of what has been termed the 4A model. Alongside

this was a list of measures which employers could use in order to monitor performance in each of these areas, the proposition being that if an organisation improves in these areas, it should improve its overall business performance. Knowing this will help businesses focus their training and people investment strategies where it will have greatest impact.

These earlier phases of work were summarised in 'Measuring the Contribution of Skills to Business Performance: A Summary for Employers'[4]. The list of measures was included within it.

The next stage of this ongoing work (Phase 3 of what by now had been renamed the People and the Bottom Line project) was for the project Steering Group, made up of representatives from IIP UK, SSDA, UFI, BERR and DIUS, to commission a project to test the validity of the measures to show a beneficial link with organisational performance and this report presents the findings of that work.

1.1   Context for the project

The broad context for the project can be seen to be the ongoing concerns over UK productivity and the need to understand the factors that contribute to the productivity gap between the UK and its competitors. This debate has frequently highlighted skills as one of the areas where there is a gap (particularly at intermediate levels) between skill levels in the UK compared to key competitor nations especially the US, France and Germany (eg National Statistics online,[5] DTI, 2006[6].)

Analysis by HM Treasury suggests that there are five key drivers of productivity: skills, investment, innovation, enterprise and competition. HM Treasury also argue that the UK has weaknesses in these areas because of:

- Lower levels of investment and capital stock

- Difficulty in applying and reaping the benefits of best practice

- Poor record in innovation and investment in R&D

- Problems with workforce skills, particularly intermediate skills.[7]

The argument that skills are part of the UK problem is matched by other research that also strongly implies that skills can be an important part of the solution. There is now considerable research that suggests that skills and other HR inputs are associated with

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[4]   Tamkin P (2005) *Measuring the Contribution of Skills to Business Performance: A Summary for Employers*, IES; Tamkin P (2005) *Measuring the Contribution of Skills to Business Performance,* IES.

[5]   www.statistics.gov.uk/cci/nugget.asp?id=160

[6]   DTI (2006) *UK Productivity and Competitiveness Indicators 2006*, DTI Economics Paper No 17.

[7]   HM Treasury (2000), *Productivity in the UK: The Evidence and the Government's Approach.*

higher levels of productivity. An extensive review of this evidence was conducted by IES for IIP UK, SSDA, CIPD and DfES and published as 'Measuring the Contribution of Skills to Business Performance' and 'Measuring the Contribution of Skills to Business Performance: A Summary for Employers'. Both place skills within a broader context of how people are managed within organisations.

There remains however, a key challenge of engaging employers in the skills agenda. Despite the evidence of positive impact, only a minority of firms significantly engage in such 'high performance working practices'. WERS 98 for example suggested only 14 per cent of respondents adopt High Performance Working Practices (HPWPs).[8] This may be a combination of ignorance, resistance to the message, or inability to embrace within the context of the firm. Hyde et al[9] for the UK and MacDuffie[10] for the US suggest adoption is limited by management incompetence, different management views on the most appropriate approach towards employees, competition, financial market pressures favouring short term HRM strategies and conflicts of interest between management and labour. More recent evidence may suggest that penetration of HPWPs is increasing. The 2005, Skills for Business Network Employer Survey[11] found that overall three in ten (29 per cent) respondents are adopting high performance working practices but this varies from 14 per cent of the smallest firms to 88 per cent of the largest organisations. This suggests that although the message may be being heard, many organisations still do not find the evidence base either accessible or compelling, and even if they are convinced, struggle to understand how they might apply, measure and monitor such practices in their workforce.

1.2   Research issues

1.2.1   Problems of measurement

It is important to point out that most research evidence of the link between HR inputs and business performance tends to be research that demonstrates *association* between skills and measures of individual benefit or organisational performance rather than that which attempts to demonstrate a link by monitoring relationships or impact *over time*. The latter is methodologically more difficult and therefore scarcer, but would be more compelling. Indeed much of the literature on the link between people

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[8]   Hyde P, Sparrow P, Marchington M, Boaden R, Harris C, Cortvriend P, Sibbald B (2005), *Improving Health through HRM*; Interim Report, Manchester Business School, Department of Health.

[9]   ibid.

[10]   MacDuffie J (1995), 'Human Resource Bundles and Manufacturing Performance', *Industrial and Labour Relations Review*, Vol. 48, No. 2, pp. 197-221.

[11]   Ipsos MORI (2006) *Skills for Business Network 2005: Employer Survey*, Research report No 18, SSDA, Wath on Dearne.

management practices or HPWPs has been criticised for presenting too optimistic a view of the association to performance (eg Wall and Wood[12], 2005). They suggest that a number of criteria need to be borne in mind when judging the methodological rigour of studies. Those criteria are:

■ the sample and response rate (they criticise small samples (<300 in 18 out of the 25 studies, and <100 in 9) and low response rates)

■ the reliability and validity of the HRM measure and source of data for it (they argue for a common set of measures to be explored – sophisticated selection, appraisal, training, teamwork, communication, job design, empowerment, participation, performance-related pay/promotion, harmonization, and employment security)

■ the adequacy of the research design; the extent to which other factors have been controlled (they argue that the dependent and independent variables should be gathered independently of each other, that there should be independent rating of the quality of HR practice by at least two raters, that raters should be ignorant of the performance of the organisation, that the dependent variable should be independently and objectively gathered, and that more longitudinal or quasi longitudinal research is needed)

■ the strength of the findings on the HRM-performance link (they criticise some studies for reporting moderate levels of significance and small size effects)

■ whether there has been a test for fit (*'investigating possible interaction effects is a means of more fully understanding the nature of any observed relationship between HRM practices and performance'* Wall and Wood)

■ and finally if the effects of individual HRM practices have been considered alongside those of the composite HRM measure (*'examination of the relative effects of different component practices adds to the construct validity of the investigation'* Wall and Wood).

These criteria are rigorous and unsurprisingly, no existing studies fully meet them. The study we report here was not intended to demonstrate causality but to lay the ground for work that could do so, by providing a tested set of measures which were both acceptable to employers and which were shown to relate to performance.

These measures derived from the earlier IES report (Tamkin, 2005)[13] are an attempt to provide quantitative measures that can provide data that varies by degree ie is not a binary yes/no response. The ranges of suggested measures were arrived at with

[12]   Wall T D, Wood S J, (2005), *The Romance of HRM and Business Performance, and the Case for Big Science*, Institute of Work Psychology, Sheffield.

[13]   Tamkin P (2005), T*he Contribution of Skills to Business Performance*, IES.

regard to the ease of collection by firms. They are therefore a relatively pragmatic set of measures that could be collected by firms, rather than measures that would require significant resource or expertise to arrive at. Inevitably there are compromises between what ideally we might wish to measure and what is possible. For example:

■ Qualifications are used as a proxy for skill, and a broad brush one at that. Not all investments in education are considered equal in the labour market eg arts degrees have much lower returns than science degrees.

■ Education and training are only part of the input to skill. Ongoing informal learning is much harder to codify, although we make some attempt to do so.

■ Not everyone fully utilises the skills they have or applies them to their current job.

■ Not all training will be of good quality, relevant to the individual or applicable in the workplace.

■ As has been noted elsewhere[14] much of the discussion on skills assumes that training and skills are synonymous and it needs to be remembered that training is only one route to skill acquisition.

■ Some of the measures are intended to capture HR inputs eg the training which takes place, the proportion of the workforce which receives performance related pay, and others attempt to capture output eg the numbers of days of absence or employees views on engagement. This spread is because in some areas input measures are quite difficult to derive in a way that would provide a scale of difference between organisations.

■ Strategy is considered a major influence on the links between workforce investment and capability. The contingent view of HPWPs suggests that they are most effective if embedded within the strategic approach of the firm and yet it is very difficult to capture the strategic intent of organisations.

Most of the proposed measures have been used in previous studies and found to relate to business performance.

1.3   The findings from the previous research

Before exploring the findings from this current research it is important to ground it in the emerging conclusions and the subsequent model which have informed it. The previous research which this current study helps progress, involved a large literature review focusing on three elements of the literature: linking skills to performance, the wider HR and High Performance, and studies on engagement.

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[14]   Bloom N, Conway N, Mole K, Moslein K, Neely A, Frost C, (2004), *Solving the Skills Gap*, Summary Report from a CIHE/AIM Management Research Forum.

This work highlighted a considerable body of evidence of benefits from skills, training and development for individuals and organisations. Further there is a large literature on HPWPs that has tended to demonstrate a positive link between a range of HR practices and organisational performance. The engagement and involvement of the workforce appears to be an essential part of the success of implementing such practices, often mediated by the capability of managers.

This review suggested a chain of impact from a number of inputs (HR investment on peoples' skills and abilities, HR practices impacting on those skills and the motivation of the workforce), that in turn might be seen to have increased the capability of the workforce or their willingness to deploy that capability, which in turn affects the activity of people at work; their productivity and the quality of what they do (see Figure 1.1). What is clear is that the academic literature which looks at the factors which relate to organisational performance, has identified a considerable range of inputs which seem to show a correlation with various outcomes.

Figure 1.1: The chain of impact
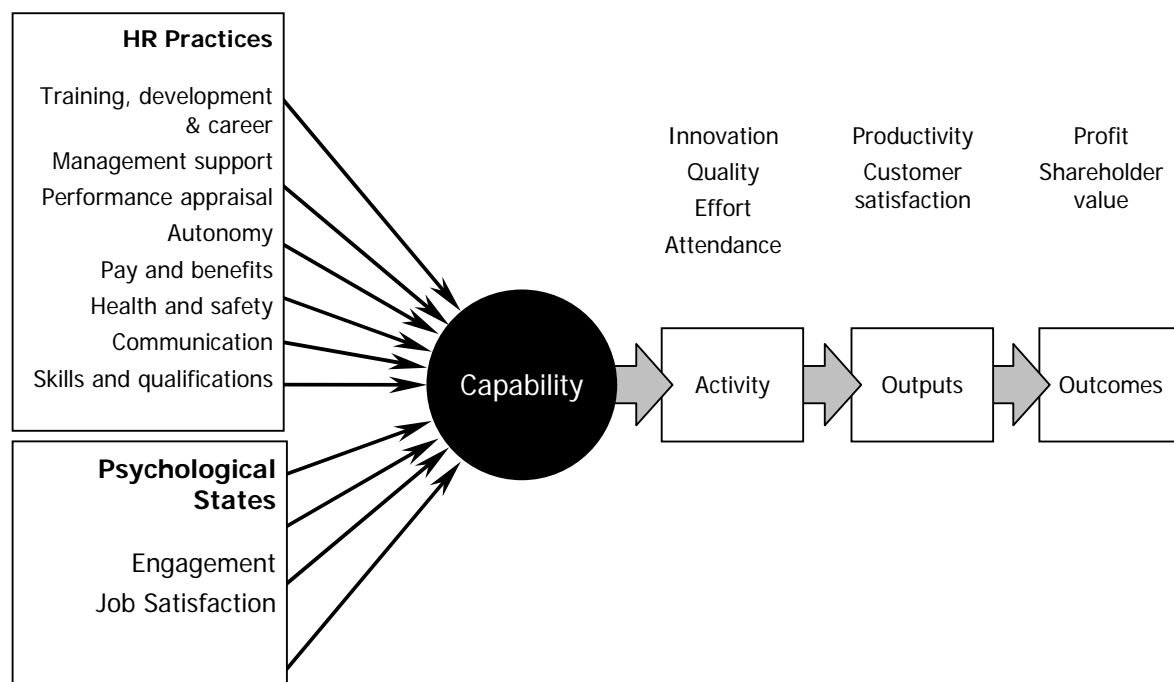
Source: IES, 2005

It was important to us to try and understand what this array of practices represents, and to create a simpler conceptualisation of the elements of activity which make the difference. So having explored the wide range of practices which have been correlated with organisational performance we then sought to identify the underlying factors that emerge from this. This analysis identified two key dimensions to the expression of and improvement of human capability in the workplace: the first dimension encompasses the development of capability at one end and its deployment at the other; the second dimension places the individual within the organisational context

with the activities of individuals at one end and the organisation at the other. The resulting four quadrants of activity form our 4A model (See Figure 1.2):

■ **Access** — the effective resourcing of roles in the organisation in terms of initial recruitment, ongoing job moves and succession activity. The focus here is on deliberative organisational activity including policy and practice.

■ **Ability** — the skills and abilities of the workforce. In essence, the quality of people that the organisation has at its disposal, and the ongoing development activity of those individuals which maintains and further develops their capability.

Figure 1.2: The 4A model of capability
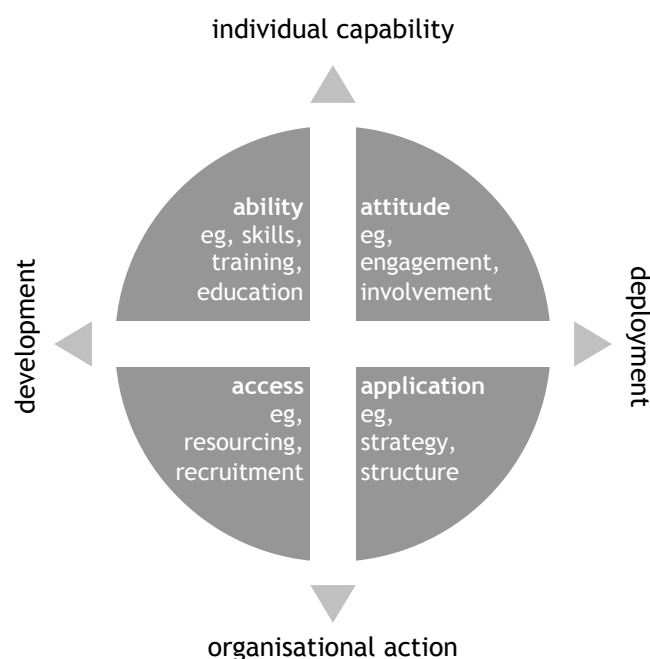
Source: Tamkin P, Giles L, Campbell M, Hillage J (2004), *Skills Pay: The Contribution of Skills to Business Success*, SSDA Research Report 5

■ **Attitude** — it is clear that skills are not the totality of what makes people do an excellent job. There is also the engagement, motivation and morale of the workforce and the meaning they find in work, their beliefs about the workplace and their willingness to put in additional effort.

■ **Application** — the opportunities made available to individuals to apply themselves. This recognises that people need an appropriate working environment to prosper provided through job design, organisational structure and business strategy.

This model was evolved from the academic literature and was further tested by mapping a range of existing models and approaches to human capital management from the literature. This exercise was designed to check if there were important areas

of activity which others have suggested as elements of the link between people and performance. This exercise demonstrated that the existing models and lists of important activities could all be successfully mapped against the 4A model.

Having identified the aspects of the underlying model the next stage was to populate each quadrant of it with measures which had been tested within the literature or which were already used elsewhere, and therefore well accepted by organisations. Where necessary we developed measures which would provide a reasonable test of investment by an organisation in that quadrant of activity. The criteria used in the selection of indicators were:

- Resonance with employers, ie the measures should be meaningful to employers and align as far as possible with measures already in use.

- Alignment and compatibility with existing national and international measures to ensure that data generated can be used in comparison or in conjunction with other data that is tracked and reported.

- Rigour and lack of ambiguity — the measures should generate data which is as valid, reliable and unambiguous as possible.

- Capacity for longitudinal study — the measures should be able to track organisational inputs, outputs and performance over time.

- Actionable indicators — the input measures should be able to reflect activities that are under the control of employers or by policy makers.

We detail in Appendix 3[15] all the measures which were developed to form a list of core and desirable measures of HR practice.

1.4   Aims and research issues

The previous work was originally conceptualised as exploring the literature on the link between skills and business performance, just what measures of the link had been made and the size of any correlations found. As that work progressed, it was clear that relating measures of skills to performance was one aspect of people investment that had been explored but that there were also a number of others such as the existence of appraisals, effective recruitment processes, the use of performance related pay etc. These other investments appeared to also be important and were built into the resulting model and suggested measures.

The main aim of this research was to test and populate the 4A model through examining the link between the measures presented in the 4A model and organisational performance and determining which measures show the strongest

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[15]   Appendices can be downloaded from www.employment-studies.co.uk/pubs

association. In addition, it was to provide a method that will enable examination of a causal link in the future.

In doing so, the initial 40 measures underpinning the 4A framework (and additional measures added at the request of the steering group), were to be tested and reduced to a smaller set which show the greatest correlation with organisational performance.

The objectives were:

■ *Using the framework of human capital, Human Resource Management (HRM) and organisational performance measures/indicators, identify a core set of indicators which show the most robust relationship with business performance and which organisations can feasibly collect.*

■ *Test if this core set can be collected in a consistent way so that aggregate data can be generated.*

■ *Explore how easily employers can identify the information required and the feasibility of future data collection.*

■ *Use the generated core set of indicators to test the association with business performance across a broad and representative cross sector of employers.*

At a more detailed level it was hoped that the project would answer some key questions:

■ Can the measures be collected in a consistent way so that aggregated data could be generated for analysis at organisational size, sectoral, regional and national levels?

■ Can meaningful correlations be drawn?

■ What methodology should be adopted to assess a causal link in the future?

In scoping the project it was fully acknowledged that the difficulties in establishing causal relationships between skills investment and productivity are great, but the project was seen as an opportunity to provide a valuable contribution to the debate by measuring the association and providing the mechanism to measure the causal link in the longer term. These objectives are clearly ambitious and we seek to measure investments and practices which have proved difficult to so do in the past. It should be borne in mind that this is an exploratory piece of work designed to inform future development.

The study involved two separate phases: an initial pilot phase to test the questionnaire and employers understanding of it and the meaning of their responses (details of which can be found in Appendix 1[16]) and then the full study.

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[16]   Appendices can be downloaded from www.employment-studies.co.uk/pubs

1.5   Main survey

From our model and framework of indicators we devised a detailed questionnaire designed to explore each element of the model with respondents, and collect their views on how their organisation invests in people and the processes they use to manage their capability and contribution. We also included some human capital indicators at the request of the IIP Human Capital working group which wished to test some measures other organisations had found particularly helpful in their context. The result was a comprehensive questionnaire.

The survey was intended to provide quantitative data in order to:

■ Collect data against each of the key measures in the framework of indicators.

■ Build up a picture of behaviour in the key fundamental HR investment areas of access, ability, attitude and application.

■ Identify competitive strategy.

■ Identify how businesses invest in their workforce.

■ Provide insights into the sectoral distribution of investment into the workforce.

■ Identify high performance work practices used.

■ Explore how investments differ by size and other factors.

■ And crucially, test the relationship between HR investment and business performance.

The survey was piloted to ensure that respondents understood the questions and then conducted in 2,905 organisations. Of these, 2,500 were from the private sector across a range of eight sub sectors:

■ Financial Mediation (referred to as Finance in the report)

■ Wholesale and Retail Trade; Repair of Motor Vehicles, Motorcycles and Personal and Household Goods (referred to as Retail)

■ Real Estate, Renting and Business Activities (referred to as Real Estate)

■ Construction

■ Manufacturing

■ Transport, Storage and Communications (referred to as Transport)

■ Agriculture, Hunting and Forestry; Mining and Quarrying; and Fisheries (referred to as Agriculture)

■ Hotels and Restaurants (referred to as Hotels)

The remaining 405 were distributed across two parts of the public sector: Primary Schools which our pilot had shown would be able to respond to our questions appropriately; and elements of the criminal justice system: Police; Courts Service; Probation Service and Prisons.

Our sample deliberately did not reflect the overall population of firms in the UK. Our interest in people management practice and investment suggested a concentration on organisations large enough for this to be of concern, set at organisations of 25 or more employees. Other research has shown that the adoption of HR practices tends to be limited to such larger organisations. This skew is very obvious when our sample is compared to the distribution of businesses in the Annual Business Inquiry (ABI) – an annual survey which collects information across the UK economy on both employment and financial issues. Its sample is drawn from the IDBR (Inter-departmental business register) which is a register of UK businesses and is comprehensive in its coverage of economic activity. ABI data suggests that the distribution of businesses is heavily skewed to small firms (see Table 1.1 for a comparison of distribution).

Table 1.1: Distribution of UK businesses and private sector survey respondents by size

Size	0-24	25-49	50-299	300+
% ABI	93.9	3.1	2.6	0.3
% survey respondents	0	27.8	48.9	23.3

Source: ABI

Our public sector sample showed considerable differences in size by sub sector, with primary schools tending to be much smaller then those organisations from the criminal justice sector.

Our response rates were good and varied from 32 per cent in the private sector, 75 per cent in schools, and 87 per cent in the criminal justice sector (the National Employer Skills Survey reports response rates of 43 per cent in 2005 and 33 per cent in 2004).

We undertook three key processes of analysis with the survey data: factor analysis to determine which items in the survey were most powerful; regression analysis to understand the factors that influence companies' scores on the quadrants of the 4A model; and then further regression analysis to explore the link between the scores on the 4A model and business performance.

The areas covered by the full survey are given in Appendix 3[17] and full details of the survey methodology are given in Appendix 2.

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[17]   Appendices can be downloaded from www.employment-studies.co.uk/pubs

1.5.1   Discussion of method

As previously noted, this field of research has been much criticised for making claims of association between HR inputs and business performance when the methods adopted can be criticised. We were sensitive to these charges and whilst not able to resolve all of the issues raised, have taken some account of them within the framework of the methodological approach. To take the points raised by Wall and Wood, 2005):

- The sample was large and response rates were good.

- The reliability and validity of the HRM measure and source of data for it: a broad set of measures were tested to cover all aspects of HRM practice.

- The adequacy of the research design; the dependent and independent variables were gathered independently of each other ie evidence of HR practice was sought from company respondents whilst evidence of performance was sought from the same respondents and also from the FAME database. We found very high correlation between the two. Wall and Wood suggested that raters should be ignorant of the performance of the organisation and that there should be independent rating of the quality of HR practice by at least two raters. We were not able to meet these requirements in this initial study and indeed, as part of the remit for this work was to assess the ways in which this study could be used to inform a method whereby employers could gather information on their HR investment, this would not have been appropriate. Finally it was suggested that more longitudinal or quasi longitudinal research is needed which we would support and hope that this work might help underpin.

- The strength of the findings on the HRM-performance link (they criticise some studies for reporting moderate levels of significance and small size effects) are reported here and found to be good.

- We have included possible interaction effects in the design of the study eg size, sector, age of company etc.

- We also have explored the impact of individual HRM practices alongside those of a composite HRM measure.

1.6   Analysis

In terms of the analysis we have explored the data in several different ways:

■ Frequencies and cross tabulations to understand how our sample responded to different questions and to see how this response varied by the characteristics of the firm. (the results of this bivariate analysis are described in detail in Appendix 4[18]).

■ Non-response levels and factor analysis[19] of questionnaire responses to explore the structure of the questionnaire (described in detail in Appendix 5).

■ Finally we conducted regression analysis[20] of the data to further understand the correlations between the variables and to explore the link to performance (described in detail in Appendix 5).

1.6.1   Measuring performance

One of the key objectives of this research is to be able to make the link between the various measures of HR investment and business performance. The measurement of performance is therefore important and we have devised two means to collect it.

Firstly our survey collected self reported measures of performance. We asked respondents for details of turnover and costs, and the degree to which their turnover comes from new products (to understand the level of innovation), from domestic sales, and from repeat business.

We have also related the results of the survey of private sector organisations with independent performance measures from the FAME database. We were keen to determine whether it is possible to identify which aspects of performance are most strongly affected by investments in human capability.

We explored:

■ Gross profits per Full Time Equivalent employee (FTE) (volume of profit before interest and taxation, divided by number of full-time employees).

■ Operating profit per FTE (Profits after interest and tax divided by number of full-time employees).

■ Sales per FTE (Sales turnover divided by number of full-time employees).

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[18]   Appendices can be downloaded from www.employment-studies.co.uk/pubs

[19]   Factor analysis is a statistical data reduction technique that takes a large number of variables (eg questionnaire items) and aims to identify a small number of factors that explain the relationships among the variables.

[20]   Regression analysis is the analysis of the relationship between an outcome variable and one or more input variables. Its purpose is to determine whether a relationship exists and the strength of the relationship. It is also used to determine the mathematical relationship between the variables, predict the values of the outcome variable and control other input variables when evaluating the effect of one or more input variables.

■ Investment per FTE (Total volume of new investment per annum per full-time employee).

■ Profit margins (Profit divided by sales turnover).

■ Gearing (The ratio of debt to equity in the business).

■ Sales growth (Change in sales turnover in current year compared to previous year).

■ New technology sales intensity (Share of total sales turnover accounted for by sales of new technology products and services).

■ Exporting intensity (Share of total sales accounted for by exports).

1.6.2 Correlations with performance

An important part of this research has been a test of the relationship between the various measures of human capability and the organisational performance measures (both those built into the survey and independent measures). We have used the results of the factor analysis to create a set of items (an index) for each quadrant of the model. These new indices are used for all further analyses. The factor analysis helps us identify which items have the greatest contribution to the variability in how organisations across our sample are responding. Variability is important as it enables us to explore the link to performance – if we think more training is linked to better performance but all firms do exactly the same amount, we cannot test our hypothesis.

Our analysis has adopted a multivariate modelling approach. In conducting this analysis we have sought to test the influence of a range of known factors such as size and regional location on each quadrant of the model. This is to check the degree to which all the measured characteristics of the firm can be seen to affect firm performance and hence what is left unexplained by these measured characteristics – what is termed the 'residual' ie the other unmeasured factors. We would hope that there is more to performance on the model than the measured variables of sector or size and therefore would want to see that the residual was a reasonable size.

Our items and the 4A indices were tested for internal consistency (the extent to which individuals are responding in a consistent manner to the questions that make up each of the 4A indices) and predictive power in terms of the available harder performance measures. The linkage between the various input and output measures has been modelled statistically.

It is important to note that statistical analysis of a cross sectional sample can only show that various factors of people management practice are correlated with performance, it cannot provide evidence that they cause changes in performance. We have sought to allow for this by including time-series data on previous performance in our factors affecting current performance.

1.7 The report structure

In the rest of the report we do four things:

- We focus on the questionnaire and use the results of our factor analysis to reduce our measures to a smaller set which can be used for the detailed statistical analysis of the relationship between firms' investment in their workforce and business performance.

- We explore the characteristics of our sample which vary with scores on the indices to understand those factors which are influencing scores and in what way.

- We explore the relationship between the 4A model and performance.

- Finally we summarise our findings, consider the implications of these findings for the measures and methods, and make recommendations as to the key measures to collect and other research that would help develop this work further.

Our appendices contain considerable detail underpinning the report:

Appendix 1:   The Pilot Study

Appendix 2:   The Sampling Approach

Appendix 3:   The Questionnaire

Appendix 4:   Detailed Bivariate Analysis of survey responses by size and sector

Appendix 5:   The Technical Appendix with full details of the factor analysis and regression analysis

The appendices can be downloaded from www.employment-studies.co.uk/pubs

2 Reviewing the Model and Questionnaire

Our questionnaire was deliberately exploratory and included a wide range of measures that previous research had identified as useful, plus a range of measures that practitioners suggested as important. We sought to arrive at a more coherent set of indicators, firstly by eliminating those questions which were not contributing to our understanding of the differences between organisations and which could be removed from our regression analysis, and; secondly, to arrive at a set of maximally discriminating items to provide a core set for employers to use. We achieved this by checking the level of response on each item, which we report first; and then by exploring the relationships between the responses through factor analysis.

2.1   Response rates

One way in which we can decide if questions should remain in the questionnaire is the ease with which they are answered. Questions which prove difficult to answer may not be viable for wider usage. This veto needs to be used judiciously as failure to answer the question in a single respondent survey may not be the same as inability to secure the information if the organisation is convinced of the value of a measure. It is important therefore to also take into account the quality of an item. However we begin with analysing the refusal rates amongst respondents, in the tables below we have highlighted where more than a quarter of respondents said they didn't know the answer to a question.

2.1.1   Access measures

As can be seen in Table 2.1, most measures have relatively low proportions of the sample responding 'don't know'. The exceptions are the proportion of interviews conducted using criterion based interviewing techniques, the proportion of new recruits fully experienced on promotion, the proportion of jobs covered by a succession plan ie jobs with clearly identified internal successors, the proportion of new appointments filled by high potential individuals, and job offers made to secure new appointments.

Table 2.1: Don't know rates for access measures (private sector)

Item	Don't know rates
Do you monitor the age profile of your workforce?	0
Do you monitor the length of service of your workforce?	0
Thinking over the last 12 months, how many new appointments have you made? (not strictly a measure – used as a base)	5.4
And how many of the new appointments were filled internally? ie with internal rather than external candidates	5.5
Thinking of all your new appointments, how many job offers did you make to secure appointments?	13.1
Thinking of all your new appointments, how many left within 12 months of appointment?	8.9
How many of the new appointments were subject to a test on recruitment?	3.1
Approximately what proportion of interviews (in the last 12 months) were conducted by interviewers who had received interviewing skills training?	8.4
Thinking of the new appointments over the last 12 months, how many of those were fully experienced on appointment?	**15.0**
For how many of these appointments was there a person specification – ie a document – detailing skills needed for the role?	3.6
Approximately what proportion of interviews were conducted using criterion based interviewing techniques?	**16.6**
What proportion of jobs are covered by a formal organisational succession plan?	13.5
Do you have processes in place to enable you to identify high potential individuals?	0
Do such high potential individuals receive special treatment eg in terms of development opportunities, reward, retention strategies?	0
Thinking of your new appointments in the last 12 months which were filled internally, what proportion of them were filled by your high potential Individuals?	13.0
Do you have policies or processes in place to promote diversity in your workforce?	0
Do you monitor data on the diversity in your workforce?	0
How much do you agree or disagree with: when filling management vacancies, we promote from within the organisation whenever possible?	0
How much do you agree or disagree with: we expect to retain most of our managers for five years or more?	0

Source: IES, 2008

An analysis of don't know responses by size showed that for several of the measures there were increasing levels of don't know responses as firm size increases (Table 2.2). This suggests that despite generally more and more sophisticated systems in larger firms, they find data gathering across the organisation more difficult.

Table 2.2: Don't know responses by size (private sector)

Items	25-49	50-299	300-499	500+
How many new appointments	1.7	4.0	10.2	14.1
What proportion of new appointments were internal	0.6	4.6	8.2	16.9
Proportion left within 12 months	2.2	6.8	15.3	26.3

Source: IES, 2008

2.1.2   Ability measures

Generally, questions in this segment of the model attracted much higher levels of don't know responses and this is likely to be because we were seeking quite specific information on numbers of individuals or training days. We had particularly low levels of response for training spend, the number of informal training days, and days training for managerial staff.

Table 2.3: Don't know rates for ability measures (private sector)

Item	Don't know rates
How many of your non-managerial employees have been given time off from their normal daily work duties to undertake training or development in the last year?	13.2
In total across your establishment, how many training days away from normal daily work duties were provided in the last 12 months for non-managerial staff?	**28.7**
How many of your non-managerial employees received informal training or training embedded in the delivery of their normal daily work in the last year?	**16.8**
In total, how many informal training days or days of training embedded in the delivery of their normal daily work were provided in the last 12 months for non-managerial staff?	**43.3**
How many informal training days or days of training embedded in the delivery of their normal daily work in total, are provided per annum for managerial staff?	**37.0**
In total, how many days are provided per annum for training away from normal daily work duties for managerial staff?	**35.2**
Approximately what proportion of the workforce has a current PDP – personal development plan?	6.3
Approximately what proportion of the workforce has a career development plan?	8.7
Do you conduct a training needs analysis?	0
We evaluate development in a systematic way.	0
We monitor the relationship between the effectiveness of managers and business performance.	0
We evaluate the impact of training on customers.	0
We conduct formal return on investment evaluations of the cost/benefits of training.	0
What proportion of your non-managerial employees are qualified to degree level?	**19**
What proportion of your managerial employees are qualified to degree level?	**17.5**
How many of your total workforce have formal qualifications to school leaving level ie five GCSEs grade C or above?	**27.2**
Approximately what proportion of your managers would you describe as fully proficient?	4.3

Approximately what proportion of your NON-MANAGERIAL employees would you describe as fully proficient?	6.0
How much approximately does your business spend on training and skills development, just for managers per year?	**66.5**
How much approximately does your business spend on training and skills development in total?	**55.7**
Approximately what proportion of all your training is firm-specific – (ie training provided which is directly related to the operation of the company and which would be of little or no relevance to another organisation?	7.9
How much do you agree or disagree with: 'we are primarily concerned with the long term development of managers'?	0

Source: IES, 2008

Once again, the ability to respond to the questions is related to size, with smaller firms generally more able to provide data.

Table 2.4: Don't know responses by size (private sector)

Items	25-49	50-299	300-499	500+
Proportion of non-managers given time off for training	6.6	12.7	22.0	22.4
Proportion of non-managers receiving informal training	9.4	18.4	21.0	23.2
Average number of formal training days per non-manager	17.9	28.7	42.6	39.7
Average number of informal training days per non-manager	37.9	42.9	51.7	49.9
Average number of informal training days per manager	28.2	37.5	43.4	48.3
Average number of formal training days per manager	26.0	36.2	43.9	44.0
Proportion of employees qualified to degree level	12.4	17.7	29.8	29.4
Proportion of managers qualified to degree level	11.2	16.1	28.3	28.0
Training spend	49.4	55.7	63.9	69.3

Source: IES, 2008

2.1.3   Attitude measures

As for the other indices in our model, there are higher rates of don't know responses where hard data is sought from respondents. The highest levels of uncertainty occur when respondents are asked for monetary responses, in this case the proportion of the total annual pay bill which goes towards variable pay. But there were also surprisingly high levels of uncertainty regarding the average number of days absence per employee which is generally believed to be a standard HR metric. One of the items we were asked to include by the IIP Human Capital working group was the proportion of 'regretted' voluntary leavers ie those leavers who were judged to be high performers. Nearly three-quarters of our sample could not respond to this question.

Table 2.5: Don't know rates for attitude measures (private sector)

Item	Don't know rates
Voluntary leavers in last 12 months.	11.7
Managerial voluntary leavers in last 12 months.	10.8
And how many of those did you consider to be high performers?	**72.1**
Do you undertake exit interviews or leavers surveys?	0
How many people have you laid off ie made redundant over the last 12 months?	6.5
Average number of days sick absence per year per employee.	**30.2**
How many of your employees have taken more than two weeks off?	16.7
Do you have an absence management policy?	0
How confident are you that absence is managed effectively?	0
Of your total workforce, how many members of staff receive some form of profit related bonus or share options?	5.8
Of your total workforce, how many employees receive performance related pay (ie where some element of pay is performance related)?	6.0
What proportion of your total annual pay bill goes towards performance related pay (eg performance related bonuses or variable pay)?	**60.5**
Of your total workforce, how many employees receive a flexible benefits package (ie formalised systems that allow employees to vary their pay and benefits package in order to satisfy their personal requirements)?	7.6
How many staff receive a regular appraisal (ie at least annual review of performance)?	1.9
Do you benchmark your pay and benefits package to ensure that they are competitive?	0
How confident are you that your pay and benefits package is competitive?	6.4
On average, how often are one-to-ones held between managers and their staff (ie a regular, formal and private discussion between an individual and their line manager)?	.1
What proportion (percentage) of the workforce receive regular one-to-ones with their manager?	1.8
Does your workforce participate in upward appraisal (ie means by which staff provide feedback on their line manager's performance)?	0
Does your workforce participate in a regular staff survey (review of staff attitudes and morale)?	0
Do you have access to the services of Occupational Health Specialists?	0
Do you use Employee Assistance Programmes or a welfare service (ie access to trained counsellors to assist employees with personal matters)?	0
How many staff grievances have there been over the last 12 months?	9.7
How many tribunal cases have been bought against you in the last 12 months?	6.1
To what extent do you agree with the following statement 'employees are fully committed to the values of this organisation'?	3.1
To what extent do you agree with the following statement 'given the chance, employees at our workplace sometimes try to take unfair advantage of management'?	3.3

Source: IES, 2008

Table 2.6: Don't know responses by size (private sector)

Items	25-49	50-299	300-499	500+
Voluntary leavers in last 12 months	2.9	9.5	23.4	28.8
Managerial voluntary leavers in last 12 months	2.2	7.5	20.0	32.3
Average number of days sick absence per year	19.1	32.2	38.0	39.5
Staff receive some form of profit related bonus/share options	4.2	5.1	7.8	9.9
Staff receive performance related pay	4.9	5.6	6.3	9.3

Source: IES, 2008

2.1.4 Application measures

Respondents were generally able to answer the items which cluster into the application index. This is probably because these were not questions of number or quantity but rather questions of whether certain policies and procedures exist. Throughout the questionnaire these kinds of items produce higher response rates.

Table 2.7: Don't know rates for application measures (private sector)

Items	Don't know rates
Does your workforce participate in team briefing ie regular communication from their manager to a cascaded brief?	0
Does your workforce participate in suggestion schemes – formal system to encourage ideas for business improvement from employees?	0
Does your workforce participate in teams/groups which meet to discuss quality/service/ product improvement possibilities sometimes called 'quality circles'?	0
Does your workforce participate in receiving organisation-wide newsletter – internal communication brief to staff?	0
Do you have regular meetings per annum with staff representatives to discuss employee matters?	0
If a non-managerial employee needed to take a day off at short notice due to child-carer problems or their child was sick, how do they generally do this?	8.8
If a managerial employee needed to take a day off at short notice due to child-carer problems or their child was sick, how do they generally do this?	9.1
What entitlements for employees are there for working at home in normal working hours?	2.4
Generally, who decides the pace of work?	5.9
Generally, who decides how tasks should be allocated?	2.3

Source: IES, 2008

2.1.5 Overview of don't know responses

The broad finding is that those questions which require hard data are the most difficult for respondents to answer and this tendency increases with size of firm.

Unfortunately some of these questions have been shown in the academic literature to be most closely linked to firm performance and so this creates something of a dilemma.

2.2   Factor analysis

Another way to consider the value of an item is to explore the degree to which it discriminates amongst respondents. A particular investment may have a high relationship to performance but if all firms invest exactly the same amount, it will not confer competitive advantage. Neither will the relationship to performance be visible as we explore this through contrasting changes in investment in the workforce, with changes in business performance measures. The best items are those where responses are widely spread, and we can explore the impact of those differentiated inputs on performance. Our next stage therefore was to use factor analysis to identify those items which were most discriminating ie explained the greatest amount of the variability in the data set.

In doing so, a number of items in our original questionnaire were excluded from further analysis of the impact of the model on performance. These items were excluded either because they had relatively low response rates, there was relatively little variation in responses, or they did not help raise the reliability of the indices. An item with very poor levels of response will almost inevitably also explain low levels of variance in the dataset and therefore also be rejected by the factor analysis.

2.3   The new indices

The items remaining in each of the indices are shown below.

Table 2.8: Access scale items

Items retained	Items rejected	Reason rejected
Proportion of appointments that were internal	Number of appointments fully experienced	High don't knows
Proportion of new appointees tested on recruitment	Processes to identify high potential individuals	High no processes
Proportion of new appointments for which there was a person specification	Number of appointments who left within 12 months	Low variability
Proportion of jobs covered by a succession plan	Policies to promote diversity	Low variability
When filling managerial positions we promote from within wherever possible (1 = strongly disagree; 5 = strongly agree)	Presence of data monitoring on diversity	Low variability
	Expect to retain managers for five years or more	Low variability

Items retained	Items rejected	Reason rejected
	Number of offers made per appointment	Similar responses
	Proportion of interviews conducted by trained interviewers	High don't knows
	Proportion conducted using criterion based interviewing	High don't knows
	Proportion of vacancies filled by high potentials	Low base
	Special treatment for high potentials	Low base
	Monitor age profile	Low variability
	Monitor length of service profile	Low variability

Source: IES, 2008

Table 2.9: Ability scale items

Items retained	Items rejected	Reason rejected
Proportion of non-managerial employees given time off for training	Number of formal training days for non-managerial staff	High don't knows
Proportion of non-managerial employees receiving informal training	Number of days informal training for non-managerial staff	High don't knows
Proportion of workforce that have a current personal development plan	Number of days informal training for managerial staff	High don't knows
Proportion of the workforce that have a career development plan	Number of days formal training for managerial staff	High don't knows
Proportion of employees qualified to degree level	Conduct a TNA	Low variability
Proportion of managers qualified to degree level	Proportion of managers described as fully proficient	Low variability
Proportion of employees that are qualified to at least school leaving level	Proportion of non-managers described as fully proficient	Low variability
We evaluate development in a systematic way (1 = strongly disagree to 5 = strongly agree)	All training spend	High don't knows
We monitor the relationship between the effectiveness of managers and org. performance (1 = strongly disagree to 5 = strongly agree)	Training spend for managers	High don't knows
We evaluate the impact of training on customers (1 = strongly disagree to 5 = strongly agree)	What proportion of your training is firm specific	High don't knows

Items retained	Items rejected	Reason rejected
We conduct formal return on investment evaluations of the cost/benefits of training (1 = strongly disagree to 5 = strongly agree)		
We are primarily concerned with the long term development of managers (1 = strongly disagree to 5 = strongly agree)		

Source: IES, 2008

Table 2.10: Attitudes scale items

Items retained	Items rejected	Reason rejected
Proportion of employees that left voluntarily over the last 12 months	Proportion of leavers considered high performers	High don't knows
Proportion of managers that left voluntarily over the last 12 months	Undertake exit interviews	Low variability
Number of people laid off in the last 12 months (relative to size of establishment)	Use of occupational health specialists. Use of employee assistance programmes	Low variability
Proportion of employees that have had more than two weeks off sick over the last 12 months	Have an absence management policy	Low variability
Proportion of staff that receive a performance related bonus	Confident that absence managed effectively	Low variability
Proportion of staff that receive profit related pay	Proportion of staff that receive performance related pay	High levels not used
Proportion of staff that receive a flexible benefits package	Proportion of pay bill that is variable	High don't knows
Proportion of staff that have a regular appraisal	Benchmark pay and benefits package	Low variability
Proportion of staff that have a regular one-to-one	Have upward appraisal	Low variability
Number of staff grievances over the last 12 months (relative to size of the establishment)	Have staff survey	Low variability
Number of employment tribunals brought against the establishment over the last 12 months (relative to size of the establishment)	Employees are fully committed to the values of organisation	Low variability
Average number of days off sick per employee	Employees sometimes take advantage	
How often do staff have one-to-ones	Confident pay and benefits package is competitive	

Source: IES, 2008

Table 2.11: Items included in the Application scale

Items retained	Items rejected	Reason rejected
Does your workforce participate in: Team Briefings?	How do non-managerial staff take time off for caring responsibilities?	Low variability
Does your workforce participate in: Suggestion Schemes?	How do managers take time off for caring responsibilities?	Low variability
Does your workforce participate in: Quality Circles?	Entitlements for home working	Low variability
Does your workforce participate in newsletters or internal communication briefs?		
Do you have regular meetings between management and staff representatives?		
Who decides on the pace of work (1 = exclusively managers to 5 = exclusively workers)?		
Who decides on task allocation (1 = exclusively managers to 5 = exclusively workers)?		

Source: IES, 2008

2.3.1   The contribution of each item

Below, we present the results of the factor analysis for the remaining items. We report two statistics: the impact of deleting the item on the reliability of the scale (which is a measure of the consistency with which respondents answer all items on the one scale), and the degree to which scores on the item are correlated with scores on the scale as a whole. The best items are those which most diminish the reliability of the scale if they are not included and show the greatest correlation with the scale as a whole. We report these findings for each of the 4As in Tables 2.12 – 2.15 below:

Access

Table 2.12: Items included in the Access scale, and item-scale correlation

Item	Reliability if item deleted	Item-scale correlation
Proportion of appointments that were internal	.377	.208
Proportion of new appointees tested on recruitment	.354	.248
Proportion of new appointments for which there was a person specification	.363	.244
Proportion of employees covered by a succession plan	.360	.234
When filling managerial positions we promote from within wherever possible (1= strongly disagree to 5= strongly agree)	.413	.132

N = 1,812
Alpha 0.428

Ability

Table 2.13: Items included in the Ability scale, and item-scale correlation

Item	Reliability if item deleted	Item-scale correlation
Proportion of non-managerial employees given time off for training	.755	.374
Proportion of non-managerial employees receiving informal training	.759	.242
Proportion of workforce that have a current personal development plan	.738	.519
Proportion of the workforce that have a career development plan	.737	.550
Proportion of employees qualified to degree level	.749	.433
Proportion of managers qualified to degree level	.761	.331
Proportion of employees that are qualified to at least school leaving level	.764	.320
We evaluate development in a systematic way (1= strongly disagree to 5= strongly agree)	.734	.586
We monitor the relationship between the effectiveness of managers and business performance (1= strongly disagree to 5= strongly agree)	.753	.403
We evaluate the impact of training on customers (1= strongly disagree to 5= strongly agree)	.759	.334
We conduct formal return on investment evaluations of the cost/benefits of training (1= strongly disagree to 5= strongly agree)	.751	.417
We are primarily concerned with the long term development of managers (1= strongly disagree to 5= strongly agree)	.753	.401

N = 1,207
Alpha= 0.768

Attitudes

Table 2.14: Items included in the Attitudes scale, and item-scale correlation

Item	Reliability if item deleted	Item-scale correlation
Proportion of employees that left voluntarily over the last 12 months	.435	.170
Proportion of managers that left voluntarily over the last 12 months	.420	.228
Number of people laid off in the last 12 months (relative to size of establishment)	.443	.144
Proportion of employees that have had more than two weeks off sick over the last 12 months	.457	.096
Proportion of staff that receive a performance related bonus	.436	.171
Proportion of staff that receive profit related pay	.423	.221
Proportion of staff that receive a flexible benefits package	.454	.099
Proportion of staff that have a regular appraisal	.419	.232
Proportion of staff that have a regular one-to-one	.439	.157
Number of staff grievances over the last 12 months (relative to size of the establishment)	.434	.177

Item	Reliability if item deleted	Item-scale correlation
Number of employment tribunals brought against the establishment over the last 12 months (relative to size of the establishment)	.449	.117
Average number of days off sick per employee	.452	.118
How often do staff have one-to-ones?	.420	.217

N= 1,301
Alpha= 0.457

Application

Table 2.15: Items included in the Application scale, and item-scale correlation

Item	Reliability if item deleted	Item-Scale correlation
Does your workforce participate in: Team briefings	.390	.196
Does your workforce participate in: Suggestion schemes	.370	.229
Does your workforce participate in: Quality circles	.388	.184
Does your workforce participate in: Communication brief	.416	.115
Do you have regular meetings between management and staff representatives	.385	.191
Who decides on the pace of work (1 = exclusively managers to 5 = exclusively workers)	.368	.231
Who decides on task allocation (1 = exclusively managers to 5 = exclusively workers)	.358	.238

N= 2,342
Scale Alpha= 0.421

It is notable that some of our indices show greater reliability than others. Responses on the ability index are the most consistent and therefore implies the index is measuring practices which are dealt with consistently at firm level. Previous research has suggested strong correlations between the qualification levels of the workforce and levels of training and development[21]. What the reliability of our index also suggests is that those who have the most highly qualified employees and train most, are also those who evaluate training most too. Lower reliability scores on our other indices is likely to be indicative of organisations responding less consistently to items within the same scale suggesting greater variability in practice.

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[21] Bloom N, Conway N, Mole K, Moslein K, Neely A, Frost C (2004), *Solving the Skills Gap*, summary report from a CIHE/AIM Management Research Forum

3 Variations in Scores Across the Model

We would expect that investment across the model varies considerably by the different characteristics of the firm, such as sector and size. Once we had created a single index of those items with the greatest contribution for each quadrant, we then explored at a descriptive level how index scores vary by basic firm level characteristics (ie sector and size) to test this[22].
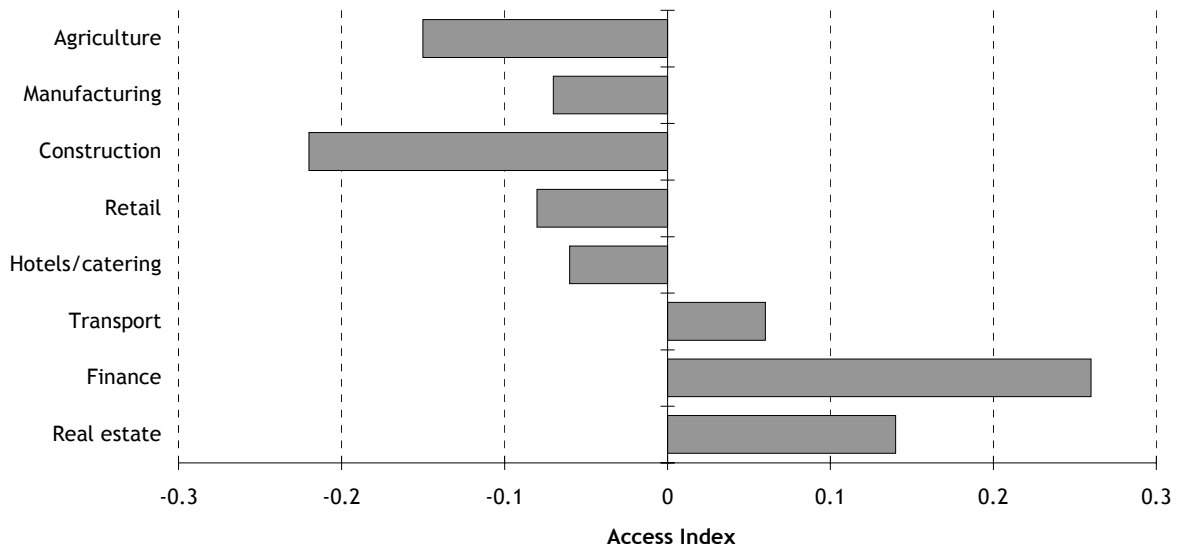
3.1   Sectoral variations

To help clarify the relationships between the indices and sectors we began by calculating an overall mean score for each index and then a mean score for each of the sectors for each of the four indices. The sectoral performance can then be illustrated relative to the mean.

Access

Figure 3.1 shows the variation in mean scores across sectors for our access index. Firms in the Finance sector score very highly on our access measure and firms in Real Estate and Transport also have above average scores for access.

By contrast, firms in Construction and Agriculture score well below average for access. The differences between sectors are highly significant.

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[22]   In arriving at an index score for organisations it is important to bear in mind that some of the items that make up the index are scored in reverse eg greater levels of voluntary turnover

Figure 3.1: Sector and access index

Source: IES, 2008

Ability

Figure 3.2 shows sectoral variation in our ability index. Here again, we note that Real Estate and Finance have well above average scores, and the Hotel sector also scores slightly above average. Once again, the Agricultural sector scores well below average, the Transport sector and Manufacturing even more so. Wholesale and Retail sector companies also score below average. Once again this sectoral variation is statistically significant.
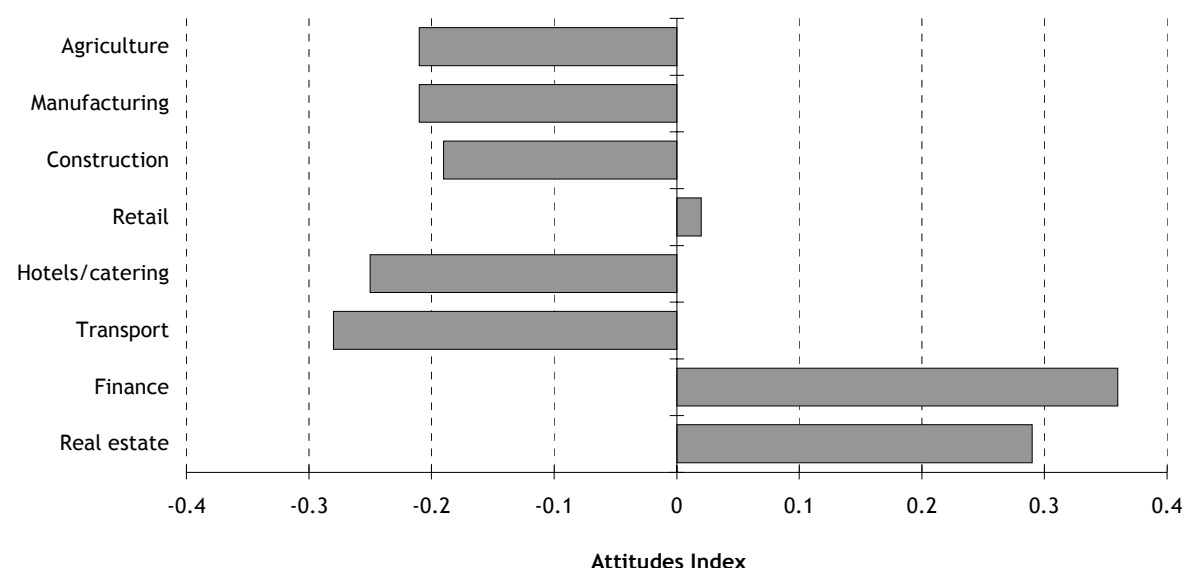
Figure 3.2: Sector and ability index
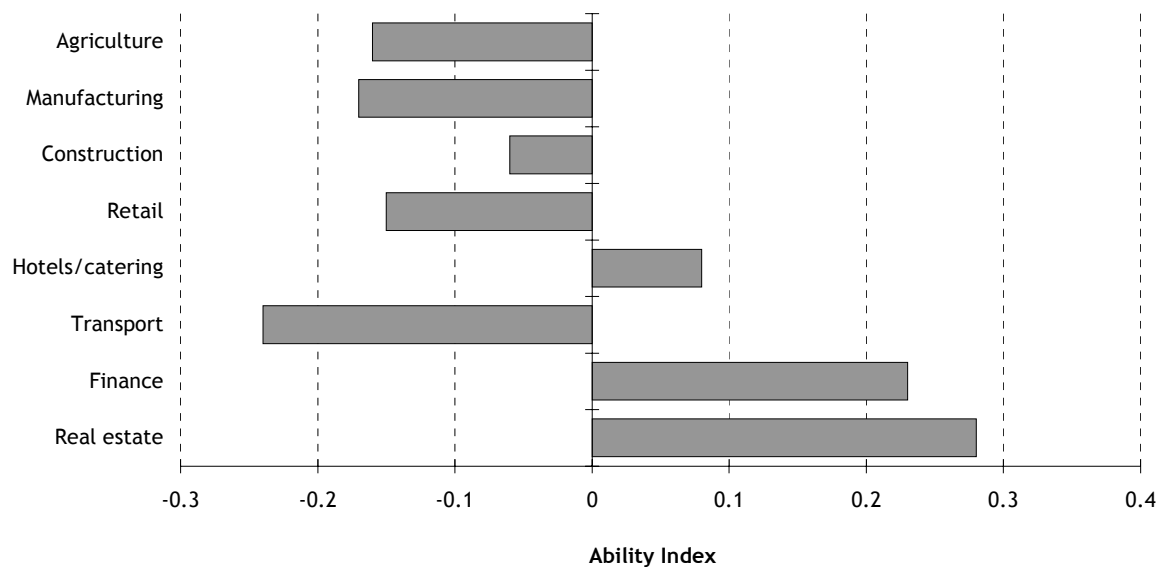
Source: IES, 2008

Attitude

As identified in Figure 3.3, there is also substantial and statistically significant variation across sectors in average scores on the attitude index.

**Figure 3.3: Sector and attitudes index**

As for our access and ability indices, the Finance and Real Estate sectors have above average scores for attitude. Aside from these two sectors, only the Retail sector is also above average and then only slightly. On this index, the Transport and Hotels sectors have particularly low attitude scores on average.

Application

Finally, Figure 3.4 shows the sectoral variation on our application index. Again these differences are statistically significant. On application, we note that the Hotels sector has a score well above the average. Again, we note that the Real Estate sector scores above average, but on this index the Finance sector scores well below average, as does the Construction sector.

Figure 3.4: Sector and application index
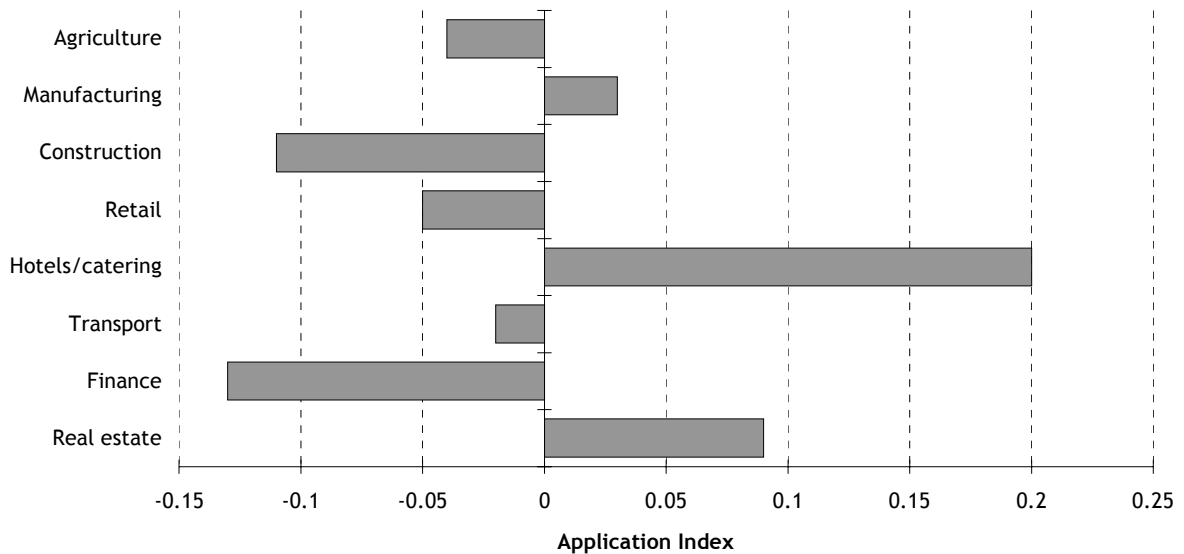
Source: IES, 2008

On all four indices the Real Estate sector scores above average and the Finance sector scores above average on three out of the four indices. On the other hand Agriculture and Construction score below average consistently across the model and Manufacturing, Transport and Retail score low on three out of the four indices.

This is summarised in Table 3.1 below and shows whether sectors score above or below the mean on each of the indices, a cross signifies a score below the mean, a tick above it:

**Table 3.1: Summary of scores by sector across the indices**

	Access	Ability	Attitude	Application
Agriculture	X	X	X	X
Manufacturing	X	X	X	√
Construction	X	X	X	X
Retail	X	X	√	X
Hotels/Restaurants	X	√	X	√
Transport	√	X	X	X
Finance	√	√	√	X
Real estate	√	√	√	√

Source: IES, 2008

3.2   Size variations

We might also anticipate variation in responses by size of organisation and this was tested (see Figure 3.5 for the variation in mean scores by size).

Figure 3.5: Size and 4A indices
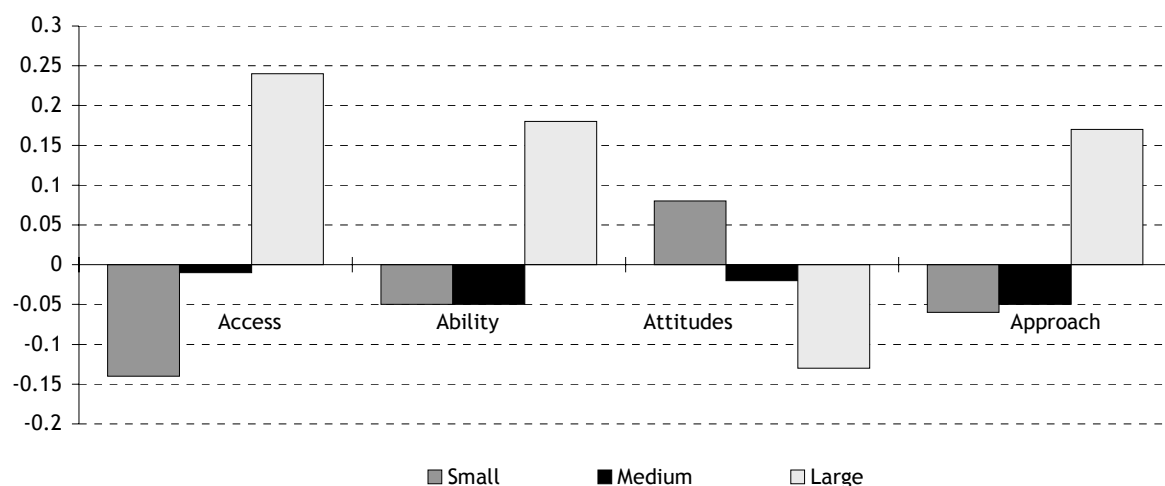
Source: IES, 2008

On three indices (access, ability and application) large firms score above small and medium sized firms, whereas on attitudes this is not the case. Here large firms score below average and small firms above average. This is likely to be a reflection of higher absence levels amongst large firms and sometimes higher turnover. Medium-sized firms are on a par with small firms on ability and application and significantly higher on access.

This suggests that larger firms have an advantage with regard to securing good staff, developing them and providing appropriate communication and engagement opportunities so that individuals can apply themselves at work. However they do relatively less well on our items in the attitude index: turnover and absence rates are higher in larger firms for both employees and managers even though larger firms tend to have more attitude directed practices in place.

3.3   Factors affecting scores on the 4A indices

This initial analysis suggests that there are important variations in scores on the indices by such characteristics of the firm, eg size and sector. In understanding this relationship we were keen to further explore what factors affect organisations' scores on the indices (a high 'score' means that more processes are in place, or a greater proportion of employees are affected, or a process is carried out more often). We can assume that certain characteristics of the firm will affect the practices they adopt and hence how they respond to our items and we have seen that sector and size would appear to be important. There will be other factors too – perhaps less tangible – that

will influence firms' behaviour. This likelihood of firms to respond in particular ways may be reflective of their approach to their employees, their market and the environment in which they operate – what might be termed the strategy of the firm. Firms with similar characteristics operating in similar environments might be expected to adopt similar approaches (strategies) and therefore we can try and explore the impact of such factors by statistically modelling these relationships using regression analysis[23]. We do so by developing equations to capture the measurable aspects of firm characteristics. These measurable aspects are:

■ Size

■ Sector

■ Age

■ Direct measures of the firm's strategic approach[24]

■ Achieving IIP

In each case it is likely that these measurable aspects will only represent part of the story and therefore such equations always include an unknown term which represents the unmeasured factors that will also be affecting scores on the indices (termed the residual). Full details of the equations and models are given in Appendix 5[25].

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[23] Regression analysis is a statistical modelling technique used to estimate or predict the relative influence of several variables on something: in this case eg, the effect of sector, size, and strategy on economic performance

[24] These were captured as follows:

To what extent do you agree or disagree that:

■ our industry sector is characterised by highly skilled workforce/high levels of innovation?
■ ours is a knowledge-intensive industry?
■ our industry is characterised by skills shortages?
■ as a business, we attach great importance to collecting detailed market intelligence?
■ as a business, we attach great importance to collecting detailed customer intelligence?

How much of a focus is:

■ meeting the requirements of shareholders?
■ meeting the needs of other external stakeholders (eg the community, suppliers)?
■ ensuring that products services offered to customers are of the highest quality?
■ achieving substantial growth?
■ ensuring this business leads the way in terms of innovations in the way that products or services are offered or delivered?
■ creating a great place to work?

[25] Appendices can be downloaded from www.employment-studies.co.uk/pubs

3.3.1   Factors potentially affecting performance on the 4A indices

The first element of our analysis is to determine the degree to which the various factors which are hypothesised to affect the link with the indices actually do so. Regression analysis is a more sophisticated form of analysis than the findings we reported in Section 2.2 as it isolates the effect of a factor, such as sector, from the other factors being considered, such as size or strategy. We can be more confident that any relationships found to be statistically significant are due to the factor of interest rather than the result of another factor which is associated with it. For example, if both large firms and financial organisations are associated with better performance and yet Finance sector organisations are larger on average, regression will help us determine if it is size or sector which is most strongly correlated with performance.

Access

The age of the firm did not have an identifiable effect on access scores. However, there was a positive relationship between firm size and access scores (ie the bigger the firm the higher the score). There were also sectoral effects. In order of magnitude, Finance, Real Estate and Hotels all had significantly higher index scores and this shows the pure sector effects on access scores holding age, size, objectives and IIP constant. Of the corporate objectives we explored, innovation and creating a great working environment were both associated with higher access index scores. Thus businesses pursuing an innovation strategy and aligning this with a desire to create a great working environment are (on average) likely to have much higher access index scores. This is consistent with previous work linking HR practice and innovation systems as complementary. But we also note that the innovation objective has a much stronger effect on access scores than creating a great working environment. IIP was also found to have a positive and significant impact on access scores.

Ability

Scores for ability were lower for older firms, whilst higher for larger sized firms. The Finance sector had significantly lower scores and the magnitude of this was fairly large. This is worthy of explanation as we have seen that Finance sector organisations tend to do well in measures of ability. This would indicate that when size, age and other characteristics of the firm are accounted for, the advantages of the Finance sector disappear. Again we note that three corporate objectives, meeting the needs of other external stakeholders, innovation and creating a great working environment, were all associated with higher ability index scores. Again, we find that IIP has a positive and significant association with higher index scores.

Attitudes

There were no age or size effects for this index so although size was noted earlier as a differentiator in terms of scores, this was not significant in the regression. However, we did find positive sector effects in Real Estate and Hotels with the former being the largest. In line with our findings on access and ability, there were associations between corporate objectives of innovation and creating a great working environment and higher index scores. Here the magnitude of the correlations suggests that on this index, creating a great working environment is more important than innovation. In line with our findings for access and ability, we also observe that IIP is associated with higher attitude index scores.

Application

The regression analysis for this index didn't identify any age effects, but found larger firms tended to do better. Firms in the Manufacturing and Hotels sector both had higher index scores than firms in any other industry sectors. Again, we observe that a meeting the needs of external stakeholders objective, an innovation objective, and the desire to create a great working environment were all associated with having a higher application index score. Once more, we find that IIP is significantly associated with higher index scores.

Impact of organisational objectives

We have seen from our analysis that the three measures of corporate objectives taken from our survey (innovation, creating a great working environment, and meeting the needs of external stakeholder) and achieving the IIP Standard were all related to scores on the indices. We summarise below (Table 3.2) the correlations between these characteristics and our 4A index scores – the greater the correlation the greater the relationship between the adoption of the objective and scores on the indices. We can see that there is a correlation between organisations agreeing that their 'business sector is characterised by high levels of innovation' and better scores across the indices and that this is highest for ability, with application and access scores showing similar levels of correlation and attitudes being less affected. This suggests that having a focus on innovation is associated with a highly skilled and trained workforce, greater autonomy and communication and good selection processes. It is less likely to affect the attitudinal measures (gain sharing, absence levels, appraisal and other forms of performance management). The other correlation is between organisations stating that 'creating a great place to work', is a focus for them and scores on the indices with the highest correlations being with ability and then with attitudes and application but less so with access measures. This suggests that wanting to achieve a great place to work is associated with a skilled and well trained workforce, and to a lesser degree with attitudinal measures and with autonomy and communication.

Table 3.2: Corporate objectives and impact (coefficients reported)

Objective	Access	Ability	Attitudes	Application
Innovation	0.20	0.27	0.13	0.23
Creating Great Working Environment	0.10	0.48	0.21	0.15
Meeting Needs of External Stakeholders	0.00	0.12	0.00	0.10
IIP Standard	0.20	0.26	0.20	0.29

Source: IES, 2008

An objective of meeting the needs of other external stakeholders has a smaller impact and only on two of the four indices (ability and application). Interestingly, objectives of wanting to achieve substantial growth and meeting the needs of shareholders did not differentiate between businesses across any of our 4A indices.

IIP was found to have a positive and significant effect across all 4A indices, and in each case the scale of this effect was substantial. If we average out the effects of IIP and each objective across the four indices, we find that IIP is the most important with creating a great working environment a close second in terms of average impact. This suggests that IIP accreditation is strongly related to higher levels of investment in the workforce, and more sophisticated processes as captured by our indices.

Taking all the characteristics we examined including age, size, sector and corporate objectives, we found that their impact on our indices were highly significant and explained between 15 and 22 per cent of the variability in index scores (Table 3.3). This means that these measured characteristics account for a substantial amount of the observed differences in index scores across firms. If they accounted for 100 per cent of the difference it would imply that scores on the indices were completely determined by these factors and nothing else was impacting, if they accounted for none of the difference it would mean that these factors had no effect.

Table 3.3: Variability explained by measured characteristics and index scores

Index	Variability explained (%)
Access	15.8
Ability	21.9
Attitudes	17.2
Application	14.6

Source: IES, 2008

The coherence of the 4A model

We have presented the 4A model as a coherent model which provides a broad explanation of how organisations can invest in human capability. It suggests that this capability can be enhanced through attending to two dimensions and the resulting four quadrants. As such, we would expect that the four indices we developed would be affected by similar factors and we have seen above how our measured characteristics impact across the indices. As we noted above, we anticipated that these measurable characteristics will not account for all aspects of the variation of scores across our sample on each of the indices, and that there will be other factors that we have not directly measured which will also be influencing scores. We might expect that the factors which are not measured (the residual) are also related for each index, ie many of the unmeasured factors influencing scores on access will also be influencing scores on ability etc.

We have tested this hypothesis through quite complex statistical tests, and found that indeed these residuals are related. This offers support to our belief that the 4As provide a coherent explanatory model.

It is also useful to explore the degree to which the variations in index scores across our sample are explained by the variables we have included. What we might hope is that a reasonable degree of variance is explained, not too little as that would suggest that our model is not too robust, not too much as that would suggest that firms would have relatively little discretion to influence scores. What we would hope is that the amount of variance explained is reasonable but not sizeable which would mean that good performance on the indices is only partly explained by such variables and suggests there is discretionary influence firms can make regardless of size/sector etc. We have seen that our specifications including age, size, sector and corporate objectives account for 15-22 per cent of the differences in index scores. There are therefore, significant and positive correlations between these known factors and index scores but they do not explain a large proportion of the variance.

What we are now interested in, having constructed four separate indices reflecting a subset of items across the 4As, is testing whether they have any impact on, or association with, superior performance. We now present the results of our analysis of the link to performance.

4 The Relationship Between the 4A Model and Performance

In this section we analyse the relationships between scores on the 4A indices and organisational performance. We focus on private sector respondents because of the readily available data from the FAME database which is common across the sample and therefore gives us common performance outcomes. We begin by exploring the relationship between scores on the individual indices and performance, and then test a combined index.

4.1   The impact of individual indices

The final part of our regression analysis is to test if our indices have any impact on, or association with, superior performance. We have used a range of performance measures as our dependent variable:

■ Gross profits per Full Time Equivalent employee (volume of profit before interest and taxation divided by number of full-time employees).

■ Operating profit per FTE (profits after interest and tax divided by full-time employees).

■ Sales per FTE (sales turnover divided by number of full-time employees).

■ Investment per FTE (total volume of new investment per annum per full-time employee).

■ Profit margins (profit divided by sales turnover).

■ Gearing (the ratio of debt to equity in the business).

■ Sales growth (change in sales turnover in current year compared to previous year).

■ New technology sales intensity (share of total sales turnover accounted for by sales of new technology products and services).

■ Exporting intensity (share of total sales accounted for by exports).

To check the relationship between business performance measures and various characteristics of the firm, we build a statistical model for each performance measure to test how a range of factors affect it[26].

4.1.1 Gross profits per FTE

For Gross Profits per Employee, our model explains 19.5 per cent of the variation across organisations. We note that larger businesses generate lower gross profits on average per employee. Age of business did not appear to make a difference. Two sectors, Transport and Retail were found to be associated with lower gross profit per FTE, although the latter was only significant at the ten per cent level. Two strategic objectives, growth and innovation, were also found to have a positive association with gross profits per FTE with innovation exerting a greater influence than a growth objective. IIP was not found to be significant. Only the attitudes index was found to be significant (highly so) with higher scores on the index associated with higher gross profits (see Figure 4.1).

**Figure 4.1: Gross profits per FTE and attitudes index**
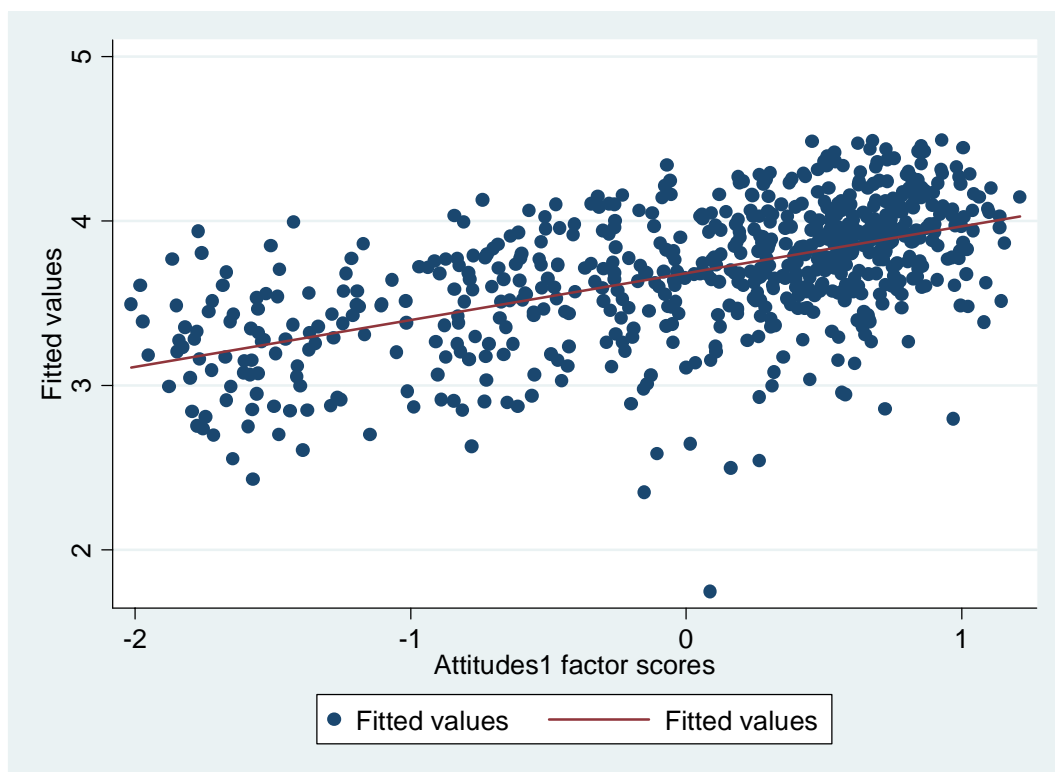
Source: IES, 2008

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[26] In each case our model contains our core business characteristics (size, age, objectives, sector), a dummy variable for IIP and the individual 4A indices (access, ability, attitudes and application). We show graphically the relationship between the model and the individual index where there is a significant association. We used an econometrically derived 'fitted value' per firm which reflects the performance measure and the range of characteristics we have included in the model.

4.1.2   Operating profits per FTE

This model explains 13.2 per cent of the variation in operating profits per FTE. Here again, we find that larger sized businesses generate increasingly lower profits per FTE. Older businesses were also found to have lower operating profits. Being in the Finance sector was positively related to operating profits. Corporate objectives and IIP were not found to be important. Regarding our 4A indices, we note that only the attitudes index was found to be significant. In this case higher scores on the attitudes index were associated with higher operating profits and the relationship was highly significant.

Figure 4.2: Operating profits per FTE and attitude index
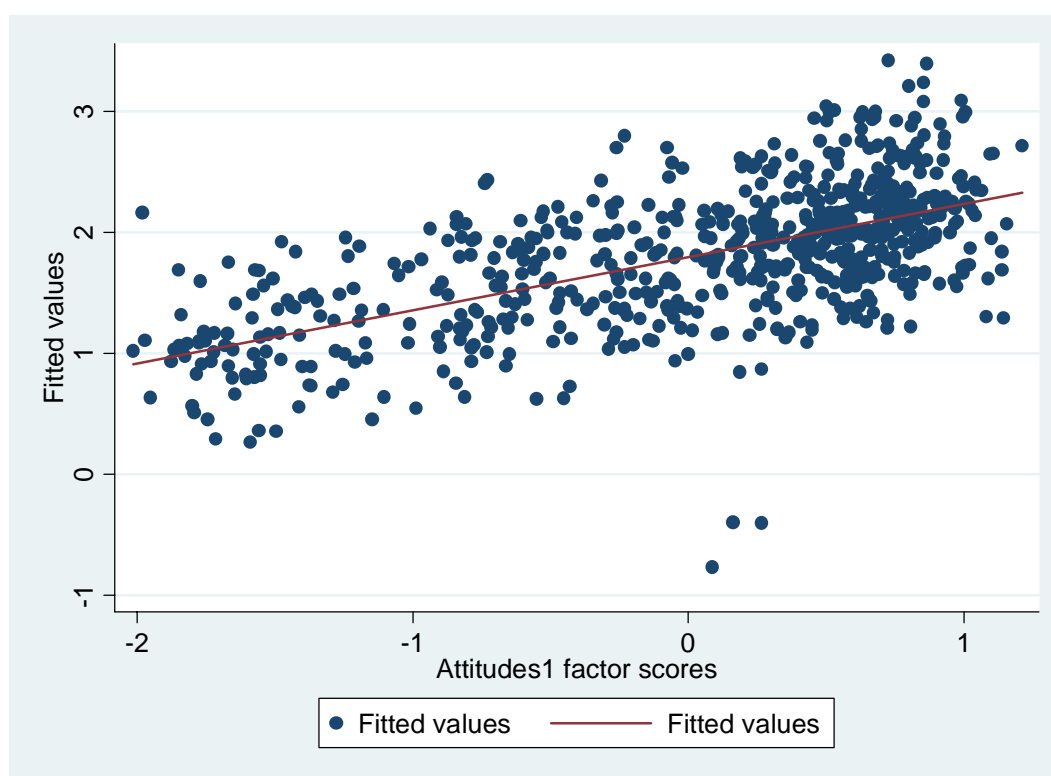
Source: IES, 2008

4.1.3   Sales per FTE (labour productivity)

The model explains 29.3 per cent of the variation in sales per FTE. Here we found that larger sized businesses generate lower sales per FTE, whilst age of business did not play a significant role. The capital/labour ratio (a measure of how much capital (plant, machinery and technology) is available, on average, to each employee) was found to be an important determinant. Only one sector (Hotels) was found to have significantly higher labour productivity at the five per cent level. The objective of shareholder value was found to be significant and associated with higher labour productivity.

Again, we did not observe an explicit IIP effect. We found that scores on our access index were related to higher levels of sales.

4.1.4 Investment per FTE

The model explains 36 per cent of the variation in investment per FTE, but we found only two variables to be statistically significant in this specification, business size and capital per employee both of which are positively related with investment. This suggests that larger businesses and those with high levels of capital currently available are continually investing for the future or replacing existing capital stock. None of our 4A indices or the IIP variable were found to be significant in this model.

4.1.5 Profit margins

Our model does not explain as much of the variability in profit margins as our other performance specifications – although still statistically significant, it explains only 7.2 per cent of the variation in margins. We found only marginal evidence that the age of the business had a positive effect on profit margins, whilst being in the Manufacturing sector had a depressing effect. Neither IIP nor any of our 4A indices were found to be significant.

4.1.6 Gearing

Again this model does not explain as much of the variance as our other performance specifications (5.0 per cent). As businesses get older, the level of gearing declines (ie they have less debt compared to equity). This suggests that older businesses are less vulnerable to credit crunches or upward shifts in interest rates as their relative debt burden is lower. But again we found no evidence that the 4As or IIP had any impact.

4.1.7 Sales growth

This model explains only 6.7 per cent of the variation in sales growth. We found that larger businesses had higher sales growth, although this effect diminishes for very large businesses. Age of business was also found to be significant, with an increase in age associated with a decline in sales growth rates. The Hotel sector was also associated with lower sales growth rates. Again we observe that our 4As and IIP variables did not appear to be associated with variations in sales growth rates across businesses.

4.1.8　New technology sales intensity

This model explains only 4.8 per cent of the variation across businesses in new technology sales intensity. Our core variables (size, age, objectives, 4As and IIP) are not significantly related. Organisations in the Hotels sector were less likely to have sales using new technology.

4.1.9　Exporting intensity

This model explains 14.2 per cent of the variation across businesses in exporting intensity. Our core variables (size, age, objectives, 4As and IIP) are not statistically significant. The Construction and Hotels sectors were both less likely to have export sales. This effect is stronger in the Construction sector.

4.2　Creating a composite index

Our initial test of the relationships between each of our 4A indices separately established only a few statistically significant links between high index scores and better performance. As our assumption is that each index acts in the same way, ie higher scores are better than lower scores, we opted to combine these indices to create a composite index reflecting items contained in all four indices and to test the relationship to performance.

This aligns with the literature which suggests that bundles of HR practices are complementary in that practices have greater impact when grouped together in an internally consistent way. Empirically, there is some evidence in support of this bundling view ie that it is not practices per se that make the difference but the degree to which they align with each other to create meaningful 'bundles' of practice (eg Huselid, Jackson and Schuler, 1997).[27] Hoque (1999)[28] found that HRM was more likely to contribute to competitive success in US Hotels, where it is introduced as an integrated and coherent bundle of practices. Others have argued for the adoption of practices which specifically align with the strategy of the firm. This external contingency perspective suggests that certain practices will only work in certain environments.

There is however, also literature which takes a universalist perspective ie the more practices the better. A universalist perspective argues that there are a number of HR practices which if adopted will always result in superior performance, whatever the context (ie some have concluded that it is the intensity with which HR practices are

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[27]　Huselid M A, Jackson S E, and Schuler R S (1997), Technical and strategic human resource management effectiveness as determinants of firm performance, *The Academy of Management Journal*.

[28]　Hoque K, (1999), Human resource management and performance in the UK hotel industry, *British Journal of Industrial Relations*, 37.

adopted that has greater effect on performance than organisational fit — Huselid and Becker 1997)[29], whereas the contingency model argues that a distinct combination will work only under specified conditions or with specific groups of staff.

There is evidence that the adoption of single practices do not deliver the same improvement of results, for example Katz, Kochan and Keefe (1987[30]), Ichniowski and Shaw (1995[31]) and Wood (1999[32]). It may be therefore, that there are only weak relationships between any individual practice and business performance and therefore what is needed is either many practices to make the difference or internally contingent bundles of practices.

As we want to test the relationship between our various measures of performance and the composite index, it is important to try and determine whether it is high performing firms that have good strategies (ie high index scores) or whether good strategies lead to high performance. Whilst ideally we would like to have panel data with performance data and changing strategies (index scores) over time (and across firms), we can address this issue of causality to some extent. What we do have is time-series data on firm performance variables and a cross-sectional survey of strategies and other firm characteristics.

As for our analysis of the impact of the four separate indices, we explore data for each firm on the various characteristics we thought likely to influence scores on the index and performance (eg age, size, sector etc) and we also include time-series performance data drawn from company accounts (e.g. gross profits). We hypothesise that performance in the current time period is a function of firm demographics, firm objectives and prior performance (plus of course the residual or uncaptured factors), and the score on the 4A model.

In interpreting the links to performance it may be helpful to understand the spread of scores on the index – Figure 4.3 below shows the distribution of scores relative to the mean score and broadly shows a normal distribution with a slight skew to higher scores.

[29] Becker B E, Huselid M A, Pickus P S, and Spratt M (1997), HR as a Source of Shareholder Value: Research and Recommendations, *Human Resource Management Journal*, 31 (1), Spring.

[30] Katz H C, Kochan T A, and Keef J H (1987), Industrial-Relations and Productivity in the United-States Automobile-Industry, *Brookings Papers on Economic Activity*(3), 685-727.

[31] Ichniowski C, Shaw K (1995), Old dogs and new tricks: determinants of the adoption of productivity-enhancing work practices, *Brookings Papers on Economic Activity*. Microeconomics.

[32] Wood S (1999), Human Resource Management and Performance, *International Journal of Management Reviews* 1 (4)

Figure 4.3: Distribution of scores across the index
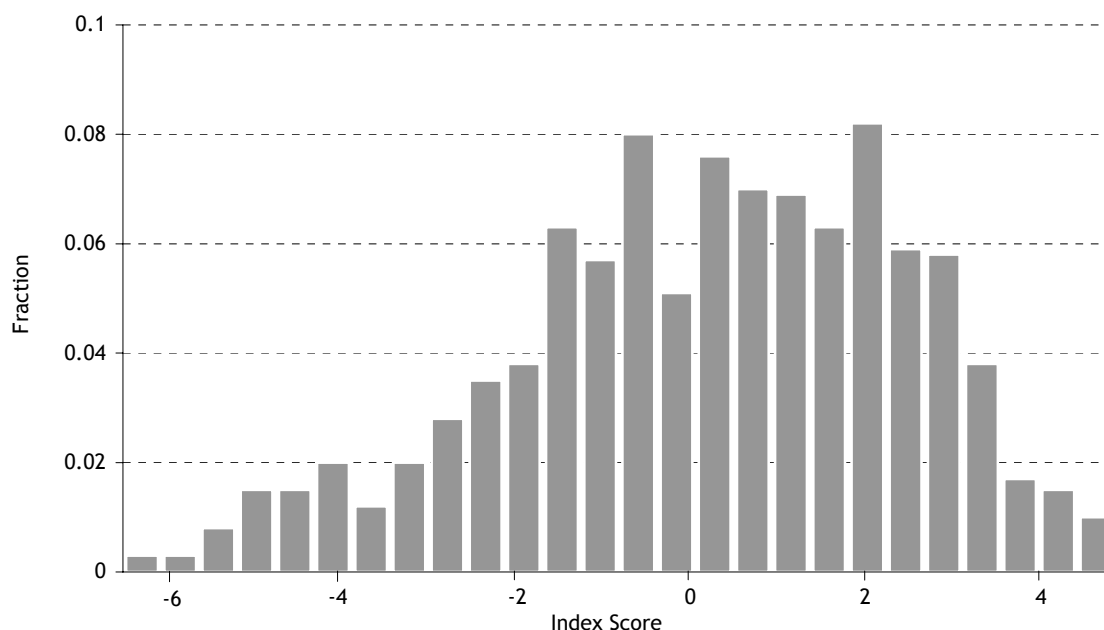
Source: IES, 2008

4.3   The link to performance

Performance can be measured in a variety of ways using the data available. We have therefore sought to find any correlation with the range of measures explored for the separate 4A indices in Section 4.1. We have tested the link to performance using two slightly different regression models which are detailed in the technical appendix. For simplicity we present the results as if from a single model but we advise those interested to explore the detail in the appendix.

The results of the regression analysis are given below.

4.3.1   Gross profits per FTE

Our model which contains our core business characteristics (size, age, objectives, sector), and explains 18.0 per cent of the variation in gross profits per FTE.

The relationship between the composite 4A index and performance was statistically significant and higher 4A index scores are associated with higher gross profits per FTE (see Figure 4.4). We also conducted some additional statistical tests to see if there was any evidence of this relationship levelling off, which would imply that at higher scores the effects are less. We found no evidence of a diminishing effect at very high index scores.

In tangible terms, these models imply that if a business increases its 4A index score by one, this would equate to an increase in gross profits per employee of between £1,083 and £1,568.

Figure 4.4: Gross profits per FTE and 4A index (model 2) (showing 'fitted values' – an econometrically derived value per firm)
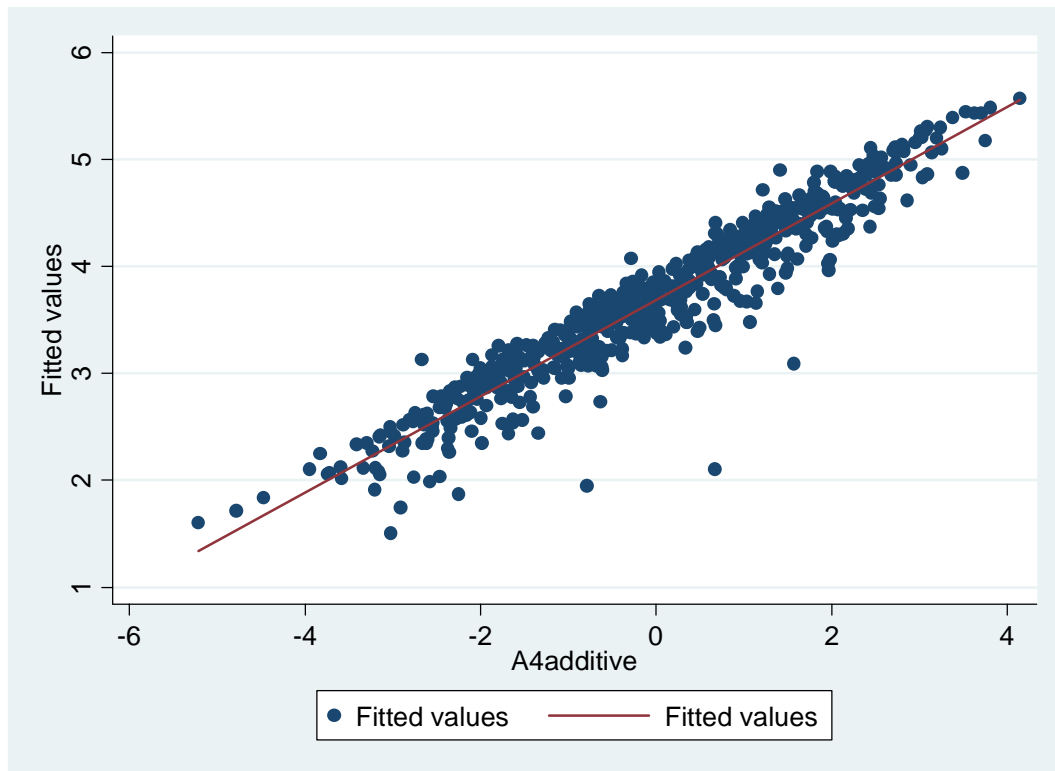
## 4.3.2   Operating profits per FTE

Using operating profits as our outcome variable, our model explains 11.0 per cent of the variation in operating profits per FTE. Once again, the impact of the composite 4A index was significant and positive, an increase in the index score of one equates to an increase in operating profit per FTE of between £1,139 and £1,284. Figure 4.5 outlines this relationship.

Figure 4.5: Operating profits per FTE and 4A index (model 2) (showing 'fitted values' – an econometrically derived value per firm)
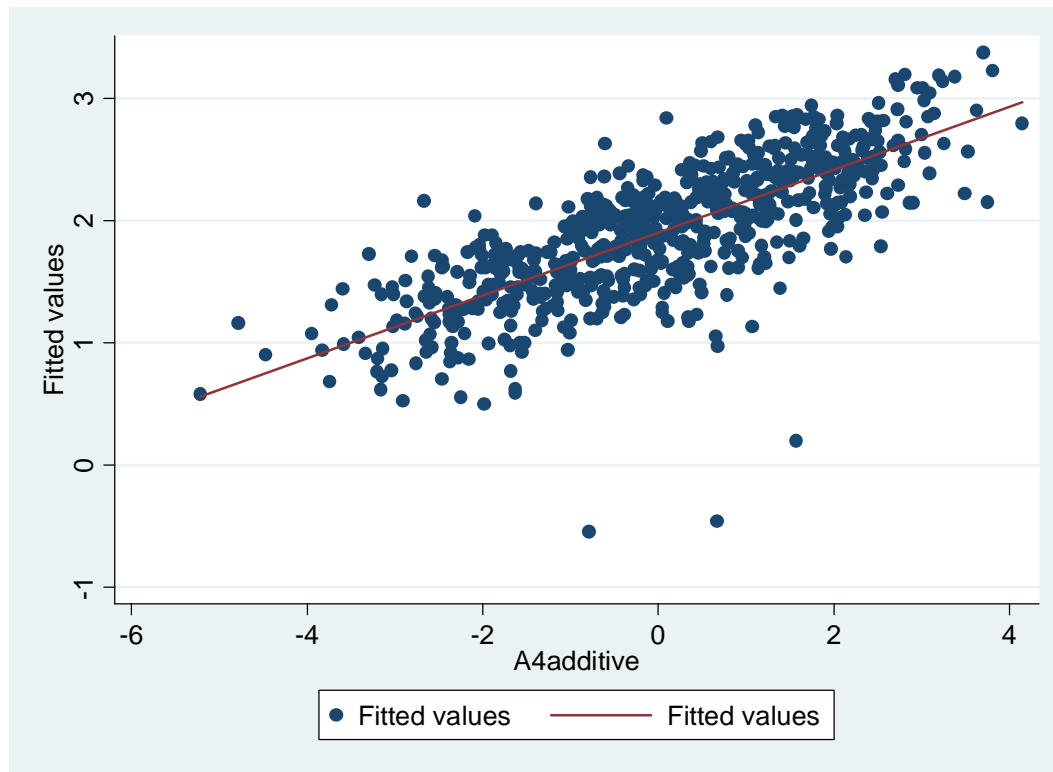
Source: IES, 2008

4.3.3   Sales per FTE (labour productivity)

The model explains 29.5 per cent of the variation in sales per FTE. Only one sector, Hotels, was found to have significantly higher labour productivity and the effect was substantial. We found that the 4A index was not significant in our original model, but further tests show a significant relationship between high scorers and productivity. This implies that only businesses at the top end of the 4A index are managing to achieve gains in labour productivity.

4.3.4   Investment per FTE

The model explains 36 per cent of the variation in investment per FTE. Our 4A index was not found to be significant in this model. Larger businesses invest more, as do those with higher capital/labour ratio. The respective increases in investment and capital/labour ratios for a one per cent change in size are 0.7 per cent and 1.39 per cent. The older a business is, the lower its investment per employee, even holding the capital/labour ratio constant. This suggests that larger firms have higher levels of investment, as do capital intensive firms. Older firms tend to invest less regardless of their relative capital intensity.

4.3.5   Profit margins

Our model explains 7 per cent of the variation in profit margins. The 4A index was found to have a significant effect on profit margins, with higher scores on the index associated with higher profit margins (see Figure 4.6). Our models imply that a one unit increase in a businesses 4A index score will roughly equate to an increase in profit margins of between 1.19 per cent and 3.66 per cent. This means that a firm with £1 million sales could achieve an additional £36,000. Profit margins increase in a linear fashion the higher a firm's 4A index score and the effects are substantial.

Figure 4.6: Profit margins and 4A index (model 2) (showing 'fitted values' – an econometrically derived value per firm)
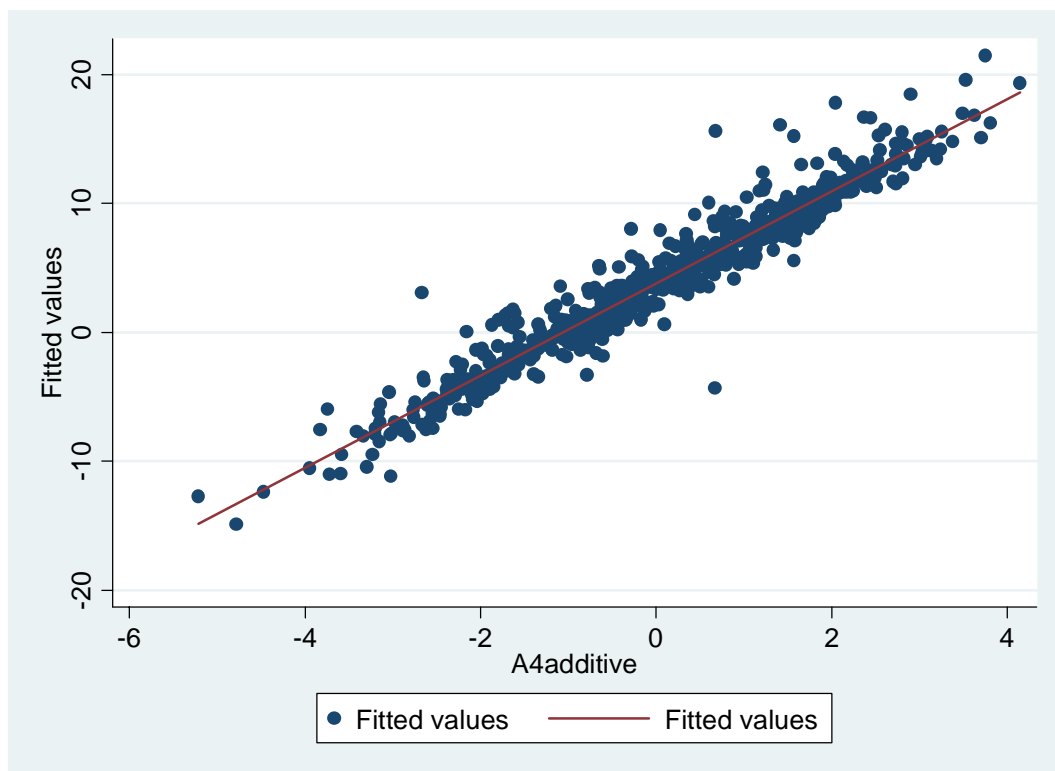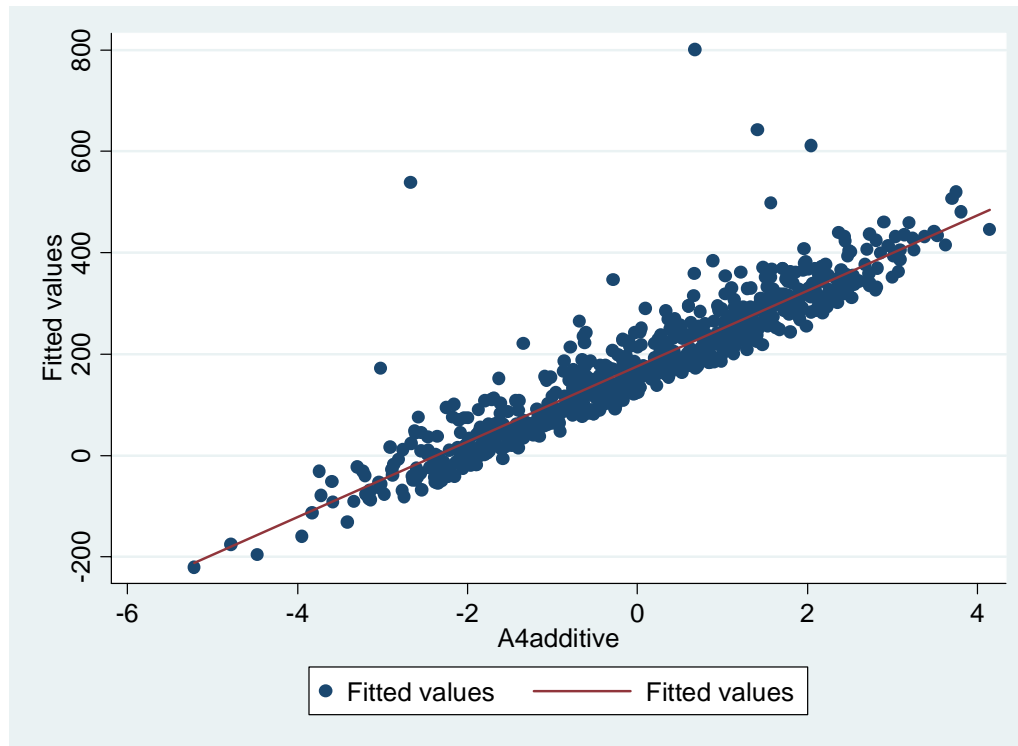

Source: IES, 2008

4.3.6   Gearing

This model explains 4.5 per cent of the variation in gearing (debt-equity ratios).

Figure 4.7: Gearing and 4A index (model 2) (showing 'fitted values' – an econometrically derived value per firm)

The 4A index is positively associated with gearing, which implies that there is additional risk (high levels of debt compared to equity) in higher index scoring businesses. However, this association is only significant at the ten per cent level.

4.3.7   Sales growth

Our model explains 7 per cent of variation in sales growth. In one of our models, we find that the 4A index is positive and significant. This is depicted in Figure 4.8. The coefficient implies that a one unit increase in the 4A index is associated with a 0.09 per cent increase in sales growth.

Figure 4.8: Sales growth (2003-2006) and 4A index (model 2) (showing 'fitted values' – an econometrically derived value per firm)
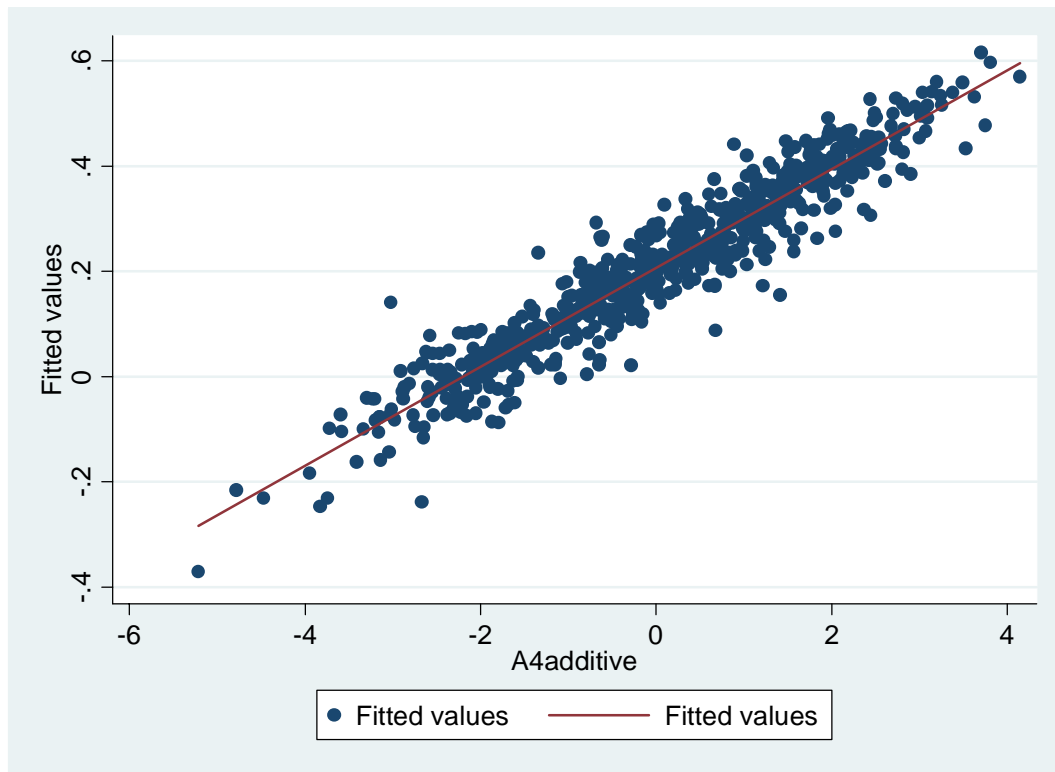
4.3.8   New technology sales intensity

This model only explains 2.7 per cent of the variation across businesses in new technology sales probability. However, two objectives did matter; having a shareholder value objective acted to reduce the probability of having new technology sales by 9.7 per cent, perhaps indicating a more short-term perspective and an unwillingness to undertake riskier investments in new technologies. In contrast, businesses with an explicit growth objective had an 8.7 per cent higher probability of having new technology sales. This is consistent with higher growth opportunities in new markets and/or new products and services. The 4A index was associated with a higher probability of having new technology sales. In this case a one unit increase in the 4A index score would equate to a 3.1 per cent increase in the probability of new technology sales.

4.3.9   Exporting intensity

Our model explains 14.2 per cent of the variation across businesses in exporting intensity. Our 4A index did not however appear to be associated with changes in exporting intensity.

4.4   Summary of performance results

Our analysis considers how the scores on the index might affect performance where all other factors are held constant, thus we are isolating the impact of having higher 4A index scores (initially within the four areas separately and then for a combined index). Table 4.1 below summarises our findings across the nine performance measures. Our results suggest that at the individual level, the separate 4A indices have relatively little effect on performance across an array of measures. However, we did find that the attitudes index was associated with higher gross and operating profits. This index was formed from variables which capture aspects of the quality of the relationship between the business and its employees, and the ways in which the organisation binds employees to the objectives of the organisation (such as performance pay systems and appraisal mechanisms). In addition, we noted that the access index (processes to ensure quality recruits and the functioning of the internal labour market) was associated with higher labour productivity.

When we created a composite index we explored the link to performance through two different statistical approaches. The detail is given in Appendix 5[33], but in general terms the first approach assumes that the HR practices adopted by businesses and measured through our 4A index are not influenced in any way by the demographics of the firm or its corporate strategy, therefore the 4A index scores are randomly determined across businesses at a point in time. The second assumes that 4A index scores are influenced by the characteristics of the firm (eg factors such as prior business performance, size and sector) and will also reflect how a business responds to its strategic objectives (eg a high commitment to innovation or growth).

The results show a degree of consistency across the two approaches, with the exceptions that in our gearing and sales growth models our 4A index is only significant in our second approach. It is noticeable that the correlations between the 4A index and performance measures also tend to be larger in our second approach.

Our results indicate that the 4A index is associated with higher profits per FTE (expressed as gross profit or operating profit) and also higher profit margins. This is clearly a very important finding and the size of the effects are substantial. We have also found that very high index scores are associated with higher labour productivity (ie for those in the top quartile). In addition, we find some evidence that higher index scores are associated with faster growing businesses and, possibly, also higher gearing. The latter can be considered a potentially negative outcome, although gearing levels are within normal parameters and the statistical significance of the relationship was marginal. We find no evidence that the 4A index is associated with higher investment rates (capital accumulation), new technology products and services (innovation), or an increased propensity to export (internationalisation).

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[33]   Appendices can be downloaded from www.employment-studies.co.uk/pubs

Table 4.1: Econometric estimates of 4As and performance

Performance measure	Access	Individual 4A indices			Composite 4A index	
		Ability	Attitudes	Application	Approach 1**	Approach 2**
Gross profits per FTE			+		+	+
Operating profits per FTE			+		+	+
Labour Productivity per FTE	+				(+)	(+)
Investment per FTE						
Profit margins					+	+
Gearing (debt/equity)						+*
Sales growth (2003-2006)						+
New technology sales *any*					+	
New technology sales *intensity*						
Exporting intensity						

Note: * higher gearing (debt/equity) is perceived as an indicator of higher risk.
   ** Approach 1 = Ordinary Least Squares; Approach 2 = Two Stage Least Squares

Source: IES, 2008

4.5 Comparing and contrasting upper and lower quartiles of the 4A index

Finally, we have deliberately contrasted those organisations that do well on the index with those who do less well. This helps us identify key differences in the characteristics, strategies adopted and performance between firms at the lower and upper ends of our 4A index. To do this we have split 4A index scores into quartiles and tested for significant differences in their characteristics (demographics) and strategies. Table 4.2 below highlights the key differences.

We find that younger firms are significantly less likely to be located in the lowest quartile of our 4A index. This might suggest a degree of inertia in HR strategy development in older firms. We also note that large firms are more likely to be in the upper quartile and medium-sized firms in the 3rd quartile. This reconfirms our initial results which showed that small firms score less well on three of our four indices. There is also some sectoral variation. Specifically, we note that Real Estate firms are significantly more likely to be located in the 3rd and 4th quartiles. We also observe that multiple establishment firms are more likely to be located in the upper quartile of the 4A index.

But the most consistent differences between our lowest quartile firms and the highest quartile firms are in terms of their innovation strategy – upper quartile firms are significantly more likely to develop their own new technologies or buy in up-to-date

technologies. This contrasts with the lowest quartile firms who are more likely to use tried and tested technologies.

Upper quartile firms are also much more strongly orientated towards creating a great working environment for their employees, addressing stakeholder concerns and being innovation led. This suggests that there are complementarities between consistent HR strategies across the indices of the 4A model and creating a workplace which inspires employees and operates at the innovation frontier.

Table 4.2: Differences in firm characteristics and strategies across 4A index quartiles

1st (lowest) Quartile	2nd Quartile	3rd Quartile	4th (highest) Quartile
Reference category	Younger	Younger	Younger
	Buys in new technology	Medium-sized	Large-sized
		Hotels/Restaurants, Transport and Communications, Financial services, Real estate	Real estate
			Develops own technology
		Develops own technology	Buys in new technology
		Buys in new technology	Creating a great place to work key objective
		Creating a great place to work key objective	Meeting needs of external stakeholder key objective
			Innovation key objective
			Multiple establishment firm

Source: IES, 2008

We have also explored the relationship between which quartile firms are in on our 4A index and basic performance levels (see Table 4.3).

Table 4.3: Differences in average performance across 4A index quartiles

	4A Quartile	
Performance measure	Lowest quartile Mean (average)	Highest quartile Mean (average)
Profit margins (%)	1.81	5.54
ROCE (%)	12.92	21.43
Gearing ratio	143.16	171.83
Gross profits (£'000s)	*3,901.83*	*17,194.48*
Export intensity (%)	29.13	34.76
New technology intensity (%)	15.74	21.78
Sales growth (%)	15.97	25.88

Source: IES, 2008

Upper quartile firms have substantially higher profits than lower quartile firms. In line with this profit margins are higher as are returns on capital employed (ROCE).

Debt/equity ratios are also higher, although well within conventional 'safety' bounds. What is interesting is that sales of new technology based products and services (out of total sales) are also higher. This suggests that there is a real return to the more positive stance regarding innovation of upper quartile firms. We also observe higher mean levels of exporting out of total sales which suggests such firms are more globally competitive. Finally, we see that mean sales growth is also higher in those firms in the upper quartile.

Overall, our detailed analysis of the relationships between the various characteristics of firms, their 4A scores and performance show significant relationships across a range of measures. These performance associations are not small and the outcomes suggest significant gains in performance are associated with better scores on the 4A model.

5 Discussion and Conclusion

In this final chapter we summarise our key findings from the research and then go on to explore the application of the model and measures more widely. We seek to answer the question: is it feasible to use the 4A model and the resultant measures to gather information on human capital investment and processes, and are there good reasons to do so? We then explore our index and consider how this might form the basis of further research, and finally present some thoughts of what further research might be useful.

5.1   Key findings

We analysed data in three ways: firstly to explore those factors which were associated with scores on the index to understand how index scores vary in relation to the characteristics of the firm and to ensure that these were accounted for in the more sophisticated statistical analysis; secondly to understand the relationship between scores on our index and business performance; and thirdly to compare the characteristics of organisations which do well on the index with organisations that do less well.

5.1.1   Factors influencing scores on the 4A indices

Our survey captured a range of demographic data on businesses – their size, sector and age for example. We also asked questions designed to explore their approach to their business environment and their general strategy. These were questions such as the importance they attached to 'creating a great place to work' or 'to meeting the needs of external stakeholders eg the community'. We found effects of size and sector on scores on the model and that three aspects of organisational strategy (innovation, creating a great working environment, and meeting the needs of external stakeholders) were important.

We have seen (Section 3.3.1) that innovation exerts the greatest effect on ability, application and then access scores, with a reduced effect on attitudes. This suggests

that being an innovative company creates demand for quality staff and is reflected in recruitment procedures and working conditions. Creating a great working environment has the greatest relationship with ability and then attitude scores, suggesting a strong association with highly skilled and well trained workforces but also an effect on staff morale and processes to align staff with organisational objectives. Concern with meeting the needs of external stakeholders shows a relationship with ability and to a lesser extent with application, which suggests that staff skills are key to deliver to others.

Interestingly we did not find any impact from two other organisational objectives which we explored; a concern for growth and for delivering shareholder value. We also checked the impact of being IIP accredited as previous research has suggested that this is related to improved business performance and we were keen to explore if it had a demonstrable relationship with investment and processes captured by our indices. IIP was found to have a positive and significant effect across all 4A indices, and in each case the scale of this effect was substantial. This suggests that IIP accredited organisations have greater investment in their workforces and more sophisticated processes and practices than non-IIP organisations.

5.1.2   Relationship with business performance

An important aspect of our research was to explore the relationship between scores on the index and company performance to provide further evidence of how investing in people can impact on business outcomes.

We initially explored each of our 4As separately ie access, ability, attitude and application.

We found (Chapter 4) that taken together, the measured characteristics were most strongly associated with gross profits, operating profits, sales per FTE, investment per FTE and exporting intensity, in that they explained a greater proportion of the variability in business performance. Other performance outcomes tend to be less well explained by our models.

Larger organisations tend to have lower levels of gross profit, operating profit and sales per FTE but higher levels of investment and sales growth per FTE. Older firms have lower levels of operating profit per FTE and sales growth but marginally greater profit margins and increased gearing (debt-equity ratio). The only strategic objective to have an effect was an emphasis on delivering value to external shareholders on sales per FTE. Higher scores on the access index were associated with greater sales per FTE and scores on the attitude index to gross profit per FTE and operating profit per FTE. We summarise these findings in Table 5.1, cells are shaded where there is no statistical effect.

Table 5.1: Regression results for disaggregated 4A index

Performance measure	% variance explained	Characteristics				Indices			
		Size	Age	Sector	Strategic objectives	Access	Ability	Attitude	Appli-cation
Gross profit per FTE	19.5	-ve		Transport -ve Retail -ve	Growth +ve Innovation +ve			+ve	
Operating profit per FTE	13.2	-ve	-ve	Finance +ve				+ve	
Sales per FTE	29.3	-ve		Hotels +ve	Shareholder value +ve	+ve			
Investment per FTE	36	+ve							
Profit margins	7.2		Marg-inal +ve	Manufac-turing -ve					
Gearing	5		+ve*						
Sales growth per FTE	6.7	+ve	-ve	Hotels -ve					
New technology sales intensity	4.8			Hotels -ve					
Exporting intensity	14.2			Construction -ve Hotels -ve					

Positive relationships imply that an increase in one variable is associated with an increase in the other, negative imply that an increase in one variable is associated with a decrease in the other

Overall, we found that at the individual level the 4A indices have very little effect on performance across an array of measures.

This lack of relationship between specific HR practices and performance is also commonly found in the literature, and generally studies have been more successful in linking a composite HR index with firm performance.

Our next step was to create a combined index on the hypothesis that consistency in terms of HR strategy across our individual 4A indices is likely to have a greater link with performance. In many ways this approach is more in keeping with the

theoretical development of the 4A model as a coherent explanation of the dimensions of human capability/capital within the workplace. The model implicitly assumes that the specific elements of the 4A model are complementary to one another, and it is this complementarity that acts to enhance performance.

As expected, our combined index has a much more powerful effect than the individual indices and is associated with a wide range of business performance measures; higher profits per employee (FTE) (expressed as gross profit or operating profit) and also higher profit margins. We have also found that top quartile index scores are associated with higher labour productivity. In addition, we find some evidence that higher index scores are associated with faster growing businesses.

These are clearly very important findings. The size of the effects are also of note and provide in tangible terms, a sense of the relationship between the index and firm level performance. The results imply that if a business increases its 4A index score by one (around 10 per cent), this would equate to:

■ an increase in gross profits per employee of between £1,083 and £1,568.

■ an increase in operating profit per FTE of between £1,139 and £1,284 .

■ an increase in profit margins per employee of between 1.19 per cent and 3.66 per cent

■ a 0.09 per cent increase in sales growth per employee.

■ a 3.1 per cent increase in the probability of new technology sales.

It is always difficult to describe simply what a shift in an index score might mean to an average firm because the index is a derived score based on the amalgamation of performance across all the items in the index, in this case across 37 items. For each item, firms' performance was translated into a scale of approximately four levels. We have used a one unit increase in index scores as our example which is approximately a ten per cent improvement in the practices etc that are measured in the index. Improvement might mean increasing the proportion of employees covered by a particular policy, such as the proportion of the workforce receiving training, or it might mean working to reduce voluntary turnover or absence. Broadly, if a firm is able to make a step change in ten practices that we have shown to be important, for example these step changes might be to move from engaging a minority of the workforce to engaging nearer to half, or to shift from engaging around half to engaging a clear majority over ten practices, then this would translate into the 10% required to increase their index score by 1 unit.

5.1.3   Comparing and contrasting upper and lower quartiles of the 4A index

Another way of highlighting the relationship between index scores, characteristics of the firm and business performance is to contrast firms at the lower and upper ends of our 4A index.

This suggests that younger firms are less likely to have low scores on the index, which in turn suggests that some older firms may not be updating their HR practices or have become complacent over their investments in their workforce. As we might expect, we also find that larger firms tend to have more sophisticated practices than medium, which in turn are more sophisticated than small.

There is also a clear relationship between investments in the workforce and a firm's innovation strategy which suggests that maximising new technology is complementary with maximising the capability of the workforce. We also see that the aspiration to create a great place to work is not mere rhetoric and is associated with tangible investments in people.

If we explore the differences in performance indicators between the top and bottom quartiles of the index we find, on a range of indicators, that there is a significant increase in performance from the bottom to the top.

Taken together the results indicate that regardless of size, sector or the strategic objectives of the firm, better scores on the index (and therefore greater investment in people) are associated with better financial performance. This suggests that there may be potential benefits to all firms of adopting a coherent range of HR practices and investments in their people, irrespective of their circumstance.

Even where firms are already investing in their workforce, there would seem to be benefits of doing more; there was no evidence that higher scores on the index show diminishing returns.

5.2   Methodological lessons

We believe that the results of the research are very encouraging and show strong linkages between a composite model and performance. What is interesting is that although our disaggregated indices showed much weaker linkages with performance measures, it was our attitude index that showed a relationship with profit measures – an area that has been relatively under-researched. This suggests to us that attitudinal measures and the relationship between firm activity and its impact on the engagement of the workforce may be worthy of further exploration.

Overall, our findings offer support to the 4A model. This does not imply that the model or the measures could not be developed further and we believe both should continue to take account of new research, but the results suggest there may be sizeable business benefits arising from a strategic investment in people. In considering the

effectiveness of the index in capturing employer behaviour we suggest there are two areas of potential application:

■ other survey work amongst employers

■ providing the basis for employer provided data.

Other surveys

■ Organisations struggle to provide hard data and the larger the organisation, the more difficult it is. The options are to limit surveys as far as possible to subjective data which is not very satisfactory, to provide warning to respondents on the data required enabling them to gather the information in advance (which may act to lower response rates), to provide a separate data sheet for completion (with low levels of return), or to interview more than one respondent to enable the right person to be found for different questions (with higher costs etc).

■ Single respondent surveys inevitably mean that certain aspects of the questionnaire are less easy to complete and therefore likely to be less accurate. The option is to allow for multiple respondents with the negative effects of greater cost and higher levels of non-completion.

■ Financial data is especially difficult to gather from a single respondent selected for their HR knowledge, but where it is provided we found high correlations with financial data gathered independently.

■ Most organisations have relatively low sophistication in their people management practices and trying to gather information on relatively new or complex policies/ practices will inevitably show low levels of adoption. For example, we found very low levels of uptake of flexible benefits and little information on regretted resignations. Researching the link between practices and performance requires reasonable amounts of data and therefore is inhibited with unusual approaches.

■ There has been a debate about the level of employee development within SMEs and comment that formal development measures may not capture the amount of informal development taking place. This survey would suggest that informal development is difficult to capture and so results may be unreliable, but the indications are that it is still less amongst SMEs compared to larger firms.

Employer provided data

■ Whilst it is difficult to test, we would hypothesise that employers will be able to gather data for their own purposes that they found difficult to provide in response to our telephone questionnaire. This may mean that hard data, which tends to get high levels of non-response, can be collected on an ongoing basis where the benefits of doing so are clear.

■ This implies clear instructions would be needed on how such data should be gathered to ensure common calculation. The simpler the request the better. For example, we found high levels of non-response and possible ambiguity regarding training spend, a potentially important measure but one that was not included in our final index. NESS has also struggled with this and has now resorted to a separate data sheet and calculation, which within the constraints of this research, we could not do.

■ There is evidence that employer provided business performance data is closely correlated with that gathered independently.

■ Our overview is that a scaled down set of measures that have been tested in terms of ease of collection and which show a good spread of performance would form a strong basis for ongoing monitoring. We have suggested a short list of 12 and a longer list of 30 plus. It needs to be borne in mind that the short list if widely adopted, may become subject to converging performance ie if more firms adopt the measures and begin to improve their performance against them, variability will diminish. If the object of collecting the data is to encourage firms to improve their investment in human capital and hopefully, therefore raise their business performance, then this outcome may be entirely desirable. If however, the objective is to provide a long term base for the collection of data determining competitiveness, a broader list of measures may be preferred which might be less subject to convergence over time.

5.3   Developing and implementing the index

We began with a very long questionnaire which covered a range of areas of potential importance. We had a large number of items designed to gather information on respondents' range and depth of investments in their workforce and relevant practices. These were derived both from the literature (where identified as correlated with performance) and our 4A model. We also had a range of demographic questions for respondents and questions designed to gather information on strategic objectives (the emphasis the organisation placed on specific strategic options eg a focus on innovation or shareholders etc.). This initial questionnaire was deliberately comprehensive as we were keen to explore a number of issues:

■ The reaction of organisations to the measures

■ The ease with which organisations can provide the information requested

■ The relationship between various measures of investment/process and performance.

A key objective was to use the initial set of items to identify a core set which show a robust relationship to performance and which organisations can feasibly collect. In Chapter 2 we have shown how a number of items were dropped from the index because they had relatively low response rates, there was relatively little variation in

responses or they did not help raise the reliability of the indices. This still left us with rather a long list of measures (37 in total) all of which are contributing to the link to performance. For relatively sophisticated organisations all of these measures add value and such organisations may wish to ensure they attend to all 37, and if they do so, may find the measures here helpful. For most organisations however, they do not have complex measuring and monitoring processes in place and it is clearly desirable to create a much smaller set for employers in terms of encouraging the collection of data which appears to make the most difference.

5.3.1   Creating a core set of indicators

To do this we can focus on those items which account for the greatest amount of variance in responses. In section 2.3.1 we reported the effect each item has on the reliability of the scale through its individual correlation with the scale and the impact that removing the item has. What we are looking for is high item-scale correlations and large reductions in the scale reliability if the item is deleted. In doing so each scale is considered separately. Our test is of the contribution of each item to the relevant quadrants of our model, not to the combined index, and it is therefore important to look within each scale rather than across scales in determining which items to retain. We have highlighted in the tables below those items that have the greatest impact for each scale.

Access

Table 5.1: Items included in the access scale, and item-scale correlation

Item	Reliability if item deleted	Item-scale correlation
Proportion of appointments that were internal	.377	.208
Proportion of new appointees tested on appointment	.354	.248
Proportion of new appointments for which there was a person specification	.363	.244
Proportion of employees covered by a succession plan	.360	.234
When filling managerial positions we promote from within wherever possible (1= strongly disagree to 5= strongly agree)	.413	.132

N = 1,812
Alpha 0.428

Ability scale

Table 5.2: Items included in the Ability scale, and item-scale correlation

Item	Reliability if item deleted	Item-scale correlation
Proportion of non-managerial employees given time off for training	.755	.374
Proportion of non-managerial employees receiving informal training	.759	.242
Proportion of workforce that have a current personal development plan	.738	.519
Proportion of the workforce that have a career development plan	.737	.550
Proportion of employees qualified to degree level	.749	.433
Proportion of managers qualified to degree level	.761	.331
Proportion of employees that are qualified to at least school leaving level	.764	.320
We evaluate development in a systematic way (1= strongly disagree to 5= strongly agree)	.734	.586
We monitor the relationship between the effectiveness of managers and business performance (1= strongly disagree to 5= strongly agree)	.753	.403
We evaluate the impact of training on customers (1= strongly disagree to 5= strongly agree)	.759	.334
We conduct formal return on investment evaluations of the cost/benefits of training (1= strongly disagree to 5= strongly agree)	.751	.417
We are primarily concerned with the long term development of managers (1= strongly disagree to 5= strongly agree)	.753	.401

N = 1,207
Alpha= 0.768

Attitudes

Table 5.3: Items included in the Attitudes scale, and item-scale correlation

Item	Reliability if item deleted	Item-scale correlation
Proportion of employees that left voluntarily over the last 12 months	.435	.170
Proportion of managers that left voluntarily over the last 12 months	.420	.228
Number of people laid off in the last 12 months (relative to size of establishment)	.443	.144
Proportion of employees that have had more than two weeks off sick over the last 12 months	.457	.096
Proportion of staff that receive a performance related bonus	.436	.171
Proportion of staff that receive profit related pay	.423	.221
Proportion of staff that receive a flexible benefits package	.454	.099
Proportion of staff that have a regular appraisal	.419	.232
Proportion of staff that have a regular one-to-one	.439	.157
Number of staff grievances over the last 12 months (relative to size of the establishment)	.434	.177
Number of employment tribunals brought against the establishment over the last 12 months (relative to size of the establishment)	.449	.117
Average number of days off sick per employee	.452	.118
How often do staff have one-to-ones?	.420	.217

N= 1,301
Alpha= 0.457

Application

Table 5.4: Items included in the Application scale, and item-scale correlation

Item	Reliability if item deleted	Item-Scale correlation
Does your workforce participate in: Team briefings	.390	.196
Does your workforce participate in: Suggestion schemes	.370	.229
Does your workforce participate in: Quality circles	.388	.184
Does your workforce participate in: Communication brief	.416	.115
Do you have regular meetings between management and staff representatives	.385	.191
Who decides on the pace of work (1 = exclusively managers to 5 = exclusively workers)	.368	.231
Who decides on task allocation (1 = exclusively managers to 5 = exclusively workers)	.358	.238

N= 2,342
Scale Alpha= 0.421

5.3.2   The core

What can firms do to leverage their investment in people? Our detailed analysis has left us with 12 measures listed below. In addition there are three items from our survey which we have not suggested as a measure as they do not test *degree* of adoption, rather they capture whether a process exists or not. As the presence or absence of the process is indicated as important in our analysis they are included (in italics) and we suggest firms ensure that these three processes/practices are in place:

Table 5.5: The key 12 measures

Area	Measures
Access	1. Proportion of new appointees tested on recruitment
	2. Proportion of new appointments for which there was a person specification
	3. Proportion of employees covered by a succession plan
Ability	4. Proportion of workforce that have a current personal development plan
	5. Proportion of the workforce that have a career development plan
	6. Proportion of employees qualified to degree level
Attitudes	7. Proportion of managers that left voluntarily over the last twelve months
	8. Proportion of staff that receive profit related pay
	9. Proportion of staff that have a regular appraisal
	10. The frequency with which staff have one-to-ones
Application	11. Who decides on the pace of work (1 = exclusively managers; 5 = exclusively workers)
	12. Who decides on task allocation (1 = exclusively managers; 5 = exclusively workers)

Source: IES, 2008

Access – we strongly suggest that employers need to attend to the quality of their recruitment processes, make sure they are putting effort into attracting good quality candidates and that they are also considering their progression through policies and practices that ensure the ongoing movement of the best people through the organisation.

Ability – employers need to put plans in place to ensure people are effectively developed once in role and that this development is focused on the needs of the individual and the business, and takes a long term approach. Our index results would also suggest that it is important that development is evaluated systematically to ensure that it is meeting needs (*'we evaluate development in a systematic way, 'we conduct formal return on investment evaluations', 'we monitor the relationship between the effectiveness of managers and business performance*) and that there is a focus on long term development, especially of managers (*'we are primarily concerned with the long term development of managers'*). We also found that the quality of the workforce is important, which we captured through asking the proportion of employees with degrees. This

may not be an applicable measure for all organisations, but this illustrates that some way of capturing workforce quality is important.

> Additional key processes /practices
>
> ■   The organisation evaluates development in a systematic way
>
> ■   The organisation focuses on the long term development of its managers

Attitudes – employers should align staff to the objectives of the organisation – this is vital in terms of capturing discretionary effort and can be achieved through a range of practices. One-to-ones, appraisals, and reward strategies that give employees a share in the organisation's performance seem to be particularly important.

Application – employers need to encourage autonomy amongst employees so that they are empowered to apply their skills and energy at work. This emerged as the most important way in which organisations can encourage the application of human capability. The measures we used could be easily adapted for use in an employee survey or used to facilitate internal discussion. Another item that emerged as important in our analysis was the presence of suggestion schemes ('*Does your workforce participate in: … suggestion schemes'*), which would suggest that ways to engage employees with how work is done and encourage their comments and ideas for improvement is a key practice.

> Additional key process/practice
>
> ■   The organisation encourages and captures the suggestions of the workforce

These 12 measures provide a core set for organisations to use to measure their own investment in people, and which could be used to provide further evidence or the base for longitudinal research.

5.4   Issues for further research

Inevitably, there are opportunities for further development of this research, highlighted by our work and our findings. We suggest below how the work could be taken further in two main ways:

■   the development of further findings using the existing data set

■   additional new work that would help build on the findings reported here.

We have kept our comments to suggestions that we feel are reasonably achievable.

5.4.1   Further investigation of our data

We have undertaken a considerable amount of analysis for this report to try and understand how all the various factors interrelate and how they relate to business performance measures. Our focus has inevitably been across the data set using all our available data to explore performance, there is therefore additional work that could be done using subsets of the data. For example, our regression has suggested that scores on our composite index are related to business performance measures irrespective of size or sector but more detailed sectoral analyses would be able to explore whether different HR measures are more important in different sectors. This may not be possible in all sectors as the number of respondents varies, but there are several with sufficient to do more with. We do not have outcome data for the public sector and if this could be provided we could similarly explore if the 4A model is related to performance here too. It is likely that primary schools would be the easiest option but if there is performance data across the criminal justice sector that could be reduced to quartiles or quintiles, this may be possible too.

It may also be possible to test other hypotheses through the data set eg differentiating the impact of high performance working and HRM practices (see for example High Performance Work Practices: Linking Strategy and Skills to Performance Outcomes (February 2005), BERR). We believe it would also be possible to explore how determinants of performance vary between IIP and non-IIP (using switching regression analysis). It would highlight how achieving the IIP standard alters how a firm operates and performs. Finally we could explore how firms adopt their strategies ie which firm adopts which strategy and what characteristics appear to relate to a particular strategy.

5.4.2   Additional work

There are other options too in terms of using this survey as the foundation of additional work. Taking on board the criticism of Wall and Wood, (2005)[34] for example, we could set up a quasi longitudinal design in two different ways. The simplest would be to gather another years worth of financial records. This would enable us to explore if HR practices at one time point, influenced business performance measures at a future time point. It would also be feasible to undertake another round of interviews with the same respondents to gather data on the reduced composite index to create repeated measures. This would more extensively meet the recommendations of Wall and Wood:

'A stronger option is what we shall call the authentic 'longitudinal' study. Research of this kind would involve measurement of both the independent and dependent variables on two

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[34]   Wall T D, Wood S J (2005), *The Romance of HRM and Business Performance, and the Case for Big Science*, Institute of Work Psychology, Sheffield.

or preferably more occasions. For example, at Time 1 one would measure both HRM practices and performance, at Time 2 the HRM practices again, and at Time 3 performance for a second time. The timing of the measurements would be determined according to an hypothesized lag for the effect of HRM on performance. Evidence consistent with a causal interpretation would require change in HRM to be associated with a subsequent change in performance. In this way one is testing whether an increase (or decrease) in the use of the relevant practice(s) is associated with a subsequent improvement (or deterioration) in performance; and stable third factors (e.g., sector, product mix) are controlled for through the repeated measures design. The design would be further improved by focusing only on those organizations in which the HRM practices have been introduced (or substantially enhanced) between the performance measurement occasions; or by intervention studies (with controls).'

The findings from this research can also be used more explicitly to inform an employer based approach to data gathering. A regular survey to focus on the identified items here could provide an ongoing test of the model and the link to performance (and could for example be combined with NESS). A panel survey element would also enable the longitudinal question to be explored on an ongoing basis (again this could use NESS as a vehicle). Alternatively engaging with employers to provide the evidence as part of existing frameworks (such as IIP) or as part of a new initiative could create a low cost evidence base, provide a useful benchmarking opportunity for employers and give them more compelling data on the link between their people investments and performance.