Review of Information on the Benefits of Training for Employers

Research by:
Francis Green  Leeds University Business School
Review of Information
On The Benefits of Training for Employers

A Research Report produced by Francis Green,
University of Leeds
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### Bibliography
The Attributed Benefits of Training for Companies

There are several reasons commonly offered by companies for their undertaking training, and correspondingly a number of benefits are claimed. In addition to the aim of raising the skills of employees in their regular jobs, training is used for multi-skilling (that is, to enable workers to perform a range of jobs), to engender commitment or enthusiasm for corporate objectives, to implement change, to meet health and safety and other external standards, to prepare employees for promotion, or to attract good recruits. New skills that training is aimed at producing are typically quoted as computing, customer care and problem solving skills, ability to work in teams, and reliability and working to deadlines.

Whatever the benefits to the employees trained, the “bottom line” question for companies operating in the private sector is whether training is profitable. There are, however, no extant formal studies of the impact of training on profitability. Instead, there are studies which focus instead on “intermediate” variables, that is, organisation-wide variables that are important in the determination of profits. The primary intermediate variable for this purpose is the productivity of the labour force, defined as output (measured in some suitable way) divided by employment. The value of these studies is that they can assess whether the claimed benefits for the workforce, as listed above, translate into real benefits for the companies. Their disadvantage is that, since they do not measure the costs of training, they cannot definitively assess the rate of return.

There is also some evidence on two other intermediate variables. The first concerns labour turnover, and the second is the degree of “organisational commitment” of a company’s workforce. In addition, the report considers two indirect kinds of evidence. First, it considers existing evidence about the relationship between the stock of skills of the workforce and productivity. Second, it briefly considers the evidence concerning the distribution of training opportunities amongst firms, and amongst employees within firms.

The Findings

The report describes in non-specialist terms the findings of each of twenty-one formal research studies from Britain and abroad. The report also provides an overview of these studies and of some other related evidence. It begins by describing some statistical and measurement problems that commonly occur in studies of the impact of training on companies. It then reviews the overall findings.

Evidence about the link between training and labour productivity is lacking in Britain. Studies from abroad in most but not all cases show that training does have a positive impact on productivity. There is little agreement, however, about the magnitude of this effect. Estimates range from very large (about an 80% increase attributed to training) to a negligible effect. One of the best studies, especially in terms of its representativeness and its standards of data collection, found no significant overall impact from training on company turnover or on productivity, using a survey that sampled American establishments with at least 20 employees. Nevertheless, it did find that certain kinds of training were effective in raising productivity, notably computer training in the non-manufacturing sector.

Because training may have an impact on labour turnover, and because the latter has a theoretical connection with organisational objectives, the report includes some

evidence on this matter. The general finding is that the impact of training on labour mobility is comparatively small, in relation to other factors determining mobility, and for the most part is in the downward direction. This finding applies equally to British and American studies. Whether the training is for youths or for adults, the effect is mostly to reduce the probability of employees quitting their jobs in any one period, and thereby to increase the tenure of jobs, but not by much. The significance of this general conclusion is two-fold. First, it provides some reassurance that the danger of poaching skilled workers is not increased by offering them training, and is probably reduced somewhat. Second, it shows that there may be a minor contribution of training via this route (in addition to its impact via other routes) to meeting organisational goals.

Organisational commitment is typically measured by combining the responses to a set of questions to employees about their attitudes to working for their particular employer. Evidence on the impact of training on organisational commitment is surprisingly scarce. Amongst the now quite large number of studies that have looked at the antecedents and effects of organisational commitment, few have treated the presence of training opportunities as a possible variable. This omission is surprising because a number of commentators have suggested that such a link exists. Only two studies, one British the other American, provide relevant evidence. Both confirm a positive correlation between training and commitment. However, neither develop a suitable multivariate analysis to examine the influence of training separately from the influence of other variables. So it is not possible to conclude robustly that training increases commitment.

Since the amount of direct formal evidence on the question of training’s impact on organisations is not all that large, it is useful to turn also to some indirect formal evidence. The main route through which training might be beneficial for companies is through raising the skills of the workforce, and hence productive efficiency. Hence, it seems relevant to check empirically whether a higher skilled workforce is substantially more productive. But this is only indirect evidence for any effect of training, for two reasons. First, it would need to be assumed that the company’s training does indeed contribute to a significant rise in workforce skills. Second, the skills that companies acquire can and frequently are obtained through recruitment, and by the same token any skilled workers obtained by the company’s training might quit. Hence, it is probably best to see any evidence about the link between skills and performance as a necessary though not sufficient condition for training to be thought of as benefiting companies through this route.

The evidence to date on this issue is that higher level skills normally lead to greater productivity. Most energetic in providing a certain kind of evidence on this issue have been the team of researchers at the National Institute of Economic and Social Research. Many of their studies have compared the productivity and skills at workplaces in Britain with those at similar workplaces in continental Europe. These studies point to traditional deficiencies in Britain's supply of intermediate-skilled workers, at the craft and technician levels. However, the impact of skills should not be overstated: there are many other sources of productivity differences, and one study reviewed is a reminder of this. The productive superiority of American establishments may, according to this evidence, be due not so much to better skills but mainly to economies of scale.

There are many groups of workers who tend to receive little or no training, and it is likely that firms have calculated that it does not benefit the company to fund such training. By the same token, presumably much of the
training actually undertaken is done because it is perceived to pay off. However, we can only use evidence about who receives training to infer something about the returns to training with great care. It may not be the case that training is always a response to economic incentives, and, vice versa, there may be situations when there is an incentive to train but firms do not respond to it. With heavy qualifications, this report includes in its review two studies on the distribution of training among companies, one British, the other from the United States. The general evidence suggests the following. Training is greater for those who have good qualifications or more education, for younger people, for new recruits to jobs, in larger establishments, in establishments that are introducing technological changes, and in establishments that have union representation. Training also varies considerably across occupational groups, with those in the less skilled groups receiving less training.

Missing Knowledge

The report indicates that there are large gaps in our knowledge about the way the training market is functioning. The potential importance of enterprise-based training for upgrading the skills of the British workforce is not in doubt. But it is disarming that there are no formal studies of companies in Britain that can be called on to provide evidence of any direct link between training and productivity. The evidence from abroad is also patchy, though for the most part it does suggest that there is some positive link.

It is recommended, therefore, that future research should be devoted to examining the benefits of training on profitability, as well as to improving our knowledge of its effects on productivity and on other intermediate variables.

Biographical Note

Francis Green is Professor of Economics at Leeds University Business School. He has published several studies in the economics of education and training, and has recently completed a book, co-authored with David Ashton, entitled Education, Training and the Global Economy, published by Edward Elgar.
EXECUTIVE SUMMARY

- It is commonly held that, in order for the British economy to remain competitive in an increasingly global market, underpinned by pervasive technological change, it is necessary to upgrade and continually renew the skills of the workforce. To achieve this lifelong learning, the role of enterprise-based training is considered vital.

- This report reviews existing formal quantitative evidence on the benefits to training for employers, in order to contribute to understanding about incentives for training in Britain.

- Training is expected to benefit organisations by improving the skills of workforce, by raising their commitment and motivation and helping to reduce labour turnover. But the ultimate aim for companies is to achieve improved profitability over the long term.

- But, because there have been no studies looking at this question, there is no formal statistical evidence to support the idea that training improves profits.

- Evidence about the link between training and labour productivity is also lacking within Britain. Studies from abroad in most but not all cases show that training does have a positive impact on productivity.

- There is little agreement, however, over the magnitude of the effect. Estimates range from very large (about an 80% increase attributed to training) to little or no effect. The main reasons are that different studies use different measures of company training, apply to different countries, and deploy inconsistent statistical methods.

- Some evidence both from Britain and abroad shows that training tends on balance to reduce labour turnover; but the effect is only small.

- There is only limited evidence that training raises the extent to which employees show commitment to the organisations they work for.

- There is evidence that the skills of an establishment's workforce do have a positive impact on productivity, this provides indirect evidence that training raises productivity as long as it raises skill levels.

- Evidence about who gets trained could only be taken as an indirect indication of what kinds of training pay, if it is assumed that training decisions are taken correctly in the face of incentives.

- Substantive extra research would be needed to understand the benefits of enterprise training for companies in Britain; such research would need to examine the financial and productivity benefits, as well as the benefits for the workforce.
1. **Background**

The purpose of this report is to review the formal evidence in existence on the benefits to training for employers, in order to contribute to the overall evaluation of the functioning of the skill formation system in Britain. By formal evidence is meant evidence derived from quantitative data drawn from large samples, using formal statistical methods of analysis. It is not intended here to add new evidence on whether training is beneficial for companies, though one outcome of this review will be that gaps in our knowledge, which might become the focus of future research, will be apparent.

In Britain, enterprise training plays a pivotal role in the skill formation system. Job-related training has been organised around the principle of a training market, in which the forces of supply and demand are allowed, as much as possible, to determine the level and quality of training that is provided. While the government provides considerable support for the training of young people, for the most part the training of adult workers is left to employers or employees to fund and arrange. The state provides encouragement to firms to train, and substantial infrastructural support through the Training and Enterprise Councils and the Local Enterprise Councils. Especially important in this approach is the Investors in People standard. But it is primarily up to employers and their workforces to determine their training needs.

Given this emphasis on enterprise training, it will be useful to understand the incentives that companies face, when determining the level, the quality, and the purpose of any training they provide.

It is, of course, well recognised that employees may expect to benefit from enterprise-based training, whether in the form of increased wages or job satisfaction or simply in terms of increased ability to gain employment in future. For these reasons there are many instances when the employee funds the training, either by paying the fees and following courses out of working hours, or perhaps by taking jobs with low pay but good training prospects. Nevertheless, what evidence there is suggests that employers pay for the majority of the training which they provide for their employees. For example, according to the Quarterly Labour Force Survey for Spring 1995, employers paid the fees for the training of employees in more than 70% of cases where fees were involved.

2. **Method**

This project followed a straightforward search procedure, aimed at uncovering all comparatively recent studies that bring direct or indirect evidence to bear. In addition to computer searches of standard social science databases, the project utilised the author's own database of training references developed over the last decade.

Studies from the more distant past are rare, but in any case their relevance to modern day corporations is questionable because of the changing conditions of industry and the training market. Hence the search was largely restricted to research evidence from the 1980s onwards. Most studies of relevance have appeared within the last decade. Unfortunately, the evidence in a British context is sparse, and so it was necessary to look for studies from elsewhere, especially among other advanced industrial nations, which can throw light on the issue. With some qualifications, it may be assumed that if training is beneficial for companies in other similar economies it is likely to be beneficial also in Britain.
The report is restricted to formal studies involving analyses of databases of large numbers of companies or individuals, and employing econometric or statistical techniques. This is not meant to imply that these studies are necessarily better than in-depth case studies of one or a small number of companies. Such case studies can often uncover much about the perceived functions and benefits of training in those companies, which could not be learned from larger surveys. Nevertheless, survey-based evidence has the advantage that it is usually safer to generalise the conclusions to apply to the wider population.

3. The Attributed Benefits of Training for Companies

There are several reasons commonly offered by companies for their undertaking training, and correspondingly a number of benefits are claimed. In addition to the aim of raising the skills of employees in their regular jobs, training is used for multi-skilling (that is, to enable workers to perform a range of jobs), to engender commitment or enthusiasm for corporate objectives, to implement change, to meet health and safety and other external standards, to prepare employees for promotion, or to attract good recruits. New skills that training is aimed at producing are typically quoted as computing, customer care and problem solving skills, ability to work in teams, and reliability and working to deadlines.

Whether in-house or external to the company, when formal training courses are evaluated, they are normally evaluated by companies themselves through their trainers. But more often than not the criteria for the evaluation are concerned with the development of the individual trainees rather than the benefits to companies.

Whatever the benefits to the employees trained, the “bottom line” question for companies operating in the private sector is whether training is profitable. On one hand, if training has the claimed benefits for the workforce, then the company should be able to produce its goods or services more efficiently than without the training, either with a higher quality that can fetch a higher price on the market, or at lower cost. On the other hand, the training itself is costly for companies: they must pay fees for training courses, or the salaries of in-house trainers, and the salaries of the employees while they are being trained and not productive at the workplace. Thus training represents an investment. It incurs probably greater risk than most investment in physical capital equipment, since in addition to the uncertainty over the future state of the market there is the uncertainty over whether employees might quit the company. To assess, therefore, the incentives facing employers when they are deciding on training, one ought ideally to have an assessment of the rate of return to training, and its likely variability, just as one can in principle for investments in plant or equipment.

However, this is an unrealisable ideal. No companies (to this author’s knowledge) are in a position to carry out such an assessment for themselves. This is because the uncertainty over the benefits from training is too large, and because it is often very difficult to account for all the elements in the true cost of training. Hence, overall decisions on training are in practice more a matter of strategy, company philosophy and judgement than of precise planning, though of course detailed training needs are usually assessed in relation to the particular characteristics of each company.

For researchers looking at industry as a whole, however, there is no reason why quantitative estimates of the impact of training on profitability should not, in principle, be obtainable. It
would be possible to carry out analyses of large numbers of companies in order to investigate
over time the links between their training activities and their profitability, after accounting for
the manifold other factors affecting profits. However, the search undertaken for this project
has uncovered no studies of this type.

Nevertheless, there are studies which focus instead on “intermediate” variables, that is,
organisation-wide variables that are important in the determination of profits. The primary
intermediate variable for this purpose is the productivity of the labour force, defined as output
(measured in some suitable way) divided by employment. Some studies also look at the impact
on output or turnover, using the level of employment as a control variable. The value of these
studies is that they can assess whether the claimed benefits for the workforce, as listed above,
translate into real benefits for the companies. Their disadvantage is that, since they do not
measure the costs of training, they cannot definitively assess the rate of return.

There is also some evidence on two other intermediate variables. The first concerns labour
turnover. Other things equal, companies generally prefer lower levels of labour turnover, in
order to avoid the costs of hiring replacement workers. Such costs include both the upfront
costs and the costs from reduced production while new workers are finding their feet. So
companies with lower levels of turnover are likely to be able to gain greater profits (again,
other things equal). It is of interest, therefore, to see whether training does result in lower
labour mobility, especially since lower mobility is sometimes stated by employers as an explicit
aim of the training.

The other additional intermediate variable, on which there is some evidence, is the degree of
“organisational commitment” of a company’s workforce. It is often held, with good reason at
least in theory, that a more “committed” workforce, operating within a supporting
organisational culture, is likely to be beneficial for companies in terms of profitability in the
long run. Organisational commitment is defined as comprising three related characteristics: a
tendency for employees to identify with organisation objectives, a desire to remain a member
of the organisation, and a propensity to commit discretionary effort on behalf of the company.
Yet this variable is much harder to lay one’s finger on and measure in any precise way, in
comparison with more objective figures on, for example, labour turnover. So if training has
any impact on organisational commitment, it is harder to demonstrate convincingly using
standard quantitative techniques. Nevertheless, sociologists have developed and widely tested
a questionnaire instrument for measuring this variable. Below, this report briefly reviews some
evidence on the link between training and organisational commitment.

In addition to looking at direct pieces of evidence about the impact of training on
organisations, the report will also consider two indirect kinds of evidence. First, it will
consider existing evidence about the relationship between the stock of skills of the workforce
and productivity. Second, it will briefly consider the evidence concerning the distribution of
training opportunities amongst firms, and amongst employees within firms. In both cases, the
aim is to examine whether the conclusions of these types of evidence can be used to throw
further light on the issue of whether training has a benefit for companies.

4. General Problems With Researching The Benefits Of Training For Companies

It might seem, at first sight, to be a relatively simple question to ask: What is the pay-off to
companies from training? But finding the answer is not an easy task. Not only does it require
careful attention to the concepts which are to be measured, the information about companies needed to attempt an answer tends to be sensitive, detailed, and expensive to collect. No doubt it is for this reason that the number of studies relevant to this report is comparatively small. There are two kinds of problems, those surrounding statistics and measurement.

4.1 A Statistical Problem

To begin with, it is useful to split the question into two. First, what is the pay-off from training for firms that train their workers? One could address this question in principle by asking what profits the firm would have received (over time) if they had not for some external reason (e.g. lack of training providers) been able to train their workers, and comparing this with the profits actually received. A second question is: what would the pay-off be from training for firms that do not train their workers? One could address this second question in principle by asking what profits the firm would have received if they had for some reason been compelled or otherwise externally induced to do the training, and compare the answer with the profits actually received.

These two questions are not the same, because companies are heterogeneous, having many different characteristics. Those that do train their workers may do so for a good reason, that they believe the policy is beneficial for them. This does not necessarily mean that training is beneficial for all companies. Those companies that do not train might just as well believe that training workers would not be worth the cost for them.

In practice, however, many studies resort to assuming away this problem. They account for differences between companies by using "control variables", that is, other observable characteristics of the companies that are expected to be related to company performance. The commonest statistical procedure used to investigate the impact of training on company performance is "multiple regression analysis", in which the separate influence of each of several variables is estimated. Taking these control variables into account, the procedure essentially compares the performance of companies that train with the performance of companies that do not; or, in the case of a continuous measure of training, it compares the performance of high trainers with that of low trainers.

However, the decision on whether and how much to train each kind of worker in the company may depend on certain characteristics of the company which are also likely to influence company performance directly (independent of the influence of training itself). Training is thus referred to in many studies as an "endogenous variable", and the problem being discussed as the problem of "endogeneity". If these characteristics are not properly accounted for in the study, it will give biased and unreliable estimates of the impact of training. Suppose, for example, that training is more likely in larger plants, and also that larger plants gave better performance. Unless the plant size is taken into account, the observed statistical relation between training and company performance might be used falsely to attribute the benefit to the training rather than to the influence of plant size. Actually, plant size is one of those factors that is relatively easy to take into account. Other factors such as managerial style are hard to observe, but might be equally important in determining both performance and the level of training. Another possibility is reverse causation, in that firms with lower profits may be less able to afford much expenditure on training if they are financially constrained.
The problem of endogeneity is also sometimes referred to as a “sample selection problem”. This arises because if we divide a sample of companies into those that train their employees a lot and those that do not, this division is not random: companies “select themselves” into training on the basis of many characteristics, some of which we can observe, others which we often cannot.

The problem that there may be unobservable characteristics, which determine both the level of training and company performance, can sometimes be dealt with where there is a “panel” of companies in a survey, that is, a cross-section of companies surveyed at two or more distinct points in time. Suppose it is assumed that those unobserved characteristics of each firm do not change over time. In that case, the method of investigation rests on comparing the changes in training and other variables and the changes in company performance that occurred between the times of observation. The data requirements for such studies are, however, considerable.

Those studies reviewed below which are not able to deal with the sample selection problem are not without value. They allow us to make limited statements concerning the link between training and company performance, after controlling for the links with a number of other variables. In order to translate this link to a statement about causality, one has to make a fairly strong assumption, namely that there are no other unobserved factors affecting both training and performance. The problem is by no means merely a technical one, that can be ignored in practice. Future studies need to consider ways of collecting sufficient data on companies over time.

Particular mention may be made of one set of control variables, which are from a theoretical point of view potentially related to both training and company performance, namely other variables characterising the nature of human resource management at each company. It has been argued recently that there are good reasons for training to be viewed as part of a broader approach to human resources in companies, and that training is therefore often linked with other policies such as employee involvement schemes, “empowerment” programmes, or the use of joint consultative committees, each of which might have their own impact on performance. Moreover, these policies are said to complement each other such that they are most effective when operating in tandem. The analysis of the bundling of human resource management policies is still in its infancy. The significance for this report is that, where training’s interaction with other human resource management policies is not explicitly accounted for in the studies reviewed, it remains possible that some of the effects attributed to training may instead be due to a bundle of human resource policies including training.

4.2 A Measurement Problem

A fundamental issue in the analysis of training effects concerns the measure of training used. Recent research has confirmed that training researchers, employers and employees all tend to take differing views as to what constitutes training (1). In particular, employers, when asked to respond to survey questions about training, tend to focus only on the training which they themselves provide. Individuals tend to focus, unless prompted, largely on formal training episodes. However, the wider interest of researchers is on any form of training which might constitute additions to the skills of the workforce, whether informal or formal.

There are potential ambiguities over the form of training. It is necessary first to distinguish between induction training of new hires and continuing training of the workforce. Second, it is
necessary to distinguish reliably between different forms of training. For example, training that takes place away from the normal workplace, but still on the premises is taken by some to mean "off-the-job" training, but others appear to regard it as "on-the-job". In many of the studies reviewed, the definition of training is less than perfectly clear, and there remains the suspicion that respondents to surveys interpret the questions that they are asked in varying and inconsistent ways. In a number of studies, researchers have concentrated on formal training, simply because this has been the most easily defined in a consistent manner. While this approach is understandable, it leaves open the worry that the impact of less formal training is correlated either positively or negatively with formal training, and therefore that the estimates of the impact of the formal training are unreliable.

There is a particular problem when it comes to estimating company expenditure on training. Studies which attempt to measure training spending often find that many recipients decline to answer the question. Presumably this is because the information is hard to obtain. But even when it is given, the information is not given on a consistent basis. Hence, there are no reliable studies relating training expenditures to outcomes.

A further issue concerns the quantity of the training provided by companies. For example, there is considerable variation between companies in the quantity of training provided, and much variation within companies in the amount of training provided for different groups of employees. Hence, studies which only measure whether companies participate in training, and not the extent of the training provided, are missing a lot of the essential information needed for estimating the impact on company performance.

5. The Findings

5.1 Direct Evidence

As stated above, unfortunately there are no studies to review which relate the extent of training to the bottom line of profitability of companies. Hence, the following overview concerns the impact on intermediate variables, and some indirect evidence.

The Impact of Training on Productivity or Turnover

The most straightforward theoretical expectation is that training improves the skills of the workforce, and hence enables employees to be more productive, for any given inputs of the other productive factors such as plant and equipment. There are no studies based on British data, but nine studies on data from other countries, the majority from the United States, are relevant.

In all but one of these studies, it is found that training has some positive impact on productivity. However, the size of this impact, where it can be gleaned from the published papers, is very variable, ranging from 83% for Indonesia (2) down to small estimates of only two to three percent for Spain (3). This variation is no doubt partly due to variations across studies in the measure of training, but it is likely also to be due to variations in the extent to which the various statistical problems have been overcome, and to cross-country variations.

The one exception (4) is, however, one of the best studies, especially in terms of its representativeness and its standards of data collection, and must be taken seriously. This study
found no significant overall impact from training on company turnover or on productivity, using a survey that sampled American establishments with at least 20 employees.

Since the studies giving very high productivity effects are either based on surveys with very low response rates (Bartel (5) reports a 40% impact from training participation, but has only a 6% response rate), or refer to developing countries whose relevance for Britain is less clear, it seems safer to conclude that, from the few reliable studies available, training does not appear to have a very large impact on productivity.

Another conclusion is that the type of training matters a lot. According to the Lynch and Black study, (4), non-manufacturing companies that concentrate their training in computer skills can raise productivity above those that do not, while manufacturing companies that concentrate their training on formal training outside working hours do well. The Tan and Batra study (2) shows that external training is more beneficial than internal training. It also indicates that the training is beneficial when given to skilled workers, but not when given to unskilled workers.

The variability of the type of training, both according to its supposed function and relatedly according to who receives it, is thus an important consideration for future research. That there will be some variation is not surprising. We know from surveys that companies use training for a range of perceived purposes. Not all of these are directly to do with widening or deepening the skills of employees from the point of view of production. For example, training in health and safety measures is likely to be important in reducing accident rates, and should be valued as such, but accident rates may well not show up in any measures of productivity. In Britain, health and safety is often quoted as one of the reasons for firms undertaking training (6). In addition training may differ according to whether newly-created skills are being certified at the end of the training. Knowledge of whether certified training has notably different effects on organisations from uncertified training would add to our understanding of the functioning of the British system of qualifications.

The evidence that training ought to be considered together with other human resource management policies is, to date, only suggestive, but the idea has a compelling logic. Training which is not reinforced by other company policies may be ineffective once employees return to the workplace from a spell in the classroom. Moreover, companies which do not make an effort to retain the employees that they are training increase their risk of losing their investment. The two studies (7;8) which attempted to investigate an interaction between training and other human resource management policies did find evidence for this, in the context of the United States. Some other studies, for example (34), subsume training as part of a large package of human resource policies, but do not specifically investigate whether training has an impact either directly, or by complementing other policies, on performance. Such studies are therefore not described here. Overall, empirical studies of policy bundling are far from definitive, especially since there is only a limited common ground concerning which other human resource policies should be included along with training (9).

Finally, the study by Bishop (10) is included because of its rather unusual evidence. This study considers not whether employers can benefit from the training they provide, but whether employers can benefit from, amongst other things, the training that previous employers have provided. It demonstrates that, indeed, employers do gain substantially by hiring employees from other companies, benefiting both from their previous experience and from their previous employer-provided training. The extra productivity such workers have, compared to those
with no such previous experience and to those with no such previous training, exceeds any extra wages that they are paid. Thus it shows formally what is often advanced as a reason for not training, namely that other companies may get the benefit of the investment and that it can be better to acquire the necessary skills through hiring. This finding is, of course, most relevant to the particular American labour market which was the focus of the study. Its relevance for Britain is two-fold: that fears of poaching of trained workers, sometimes expressed by British employers, may well not be unfounded, and it would be of value to investigate more closely the circumstances in which this occurs in Britain.

**The Impact of Training on Labour Turnover**

Excess labour turnover is commonly felt to be a serious problem for companies, and, as explained above, this is related to low productivity and high costs of production. In using the term “excess” one is recognising that there is always a certain level of labour turnover in companies, as employees retire, as companies expand and contract with economic conditions, and as some employees turn out to be not well matched to companies after hiring, either from the employee’s or from the company’s point of view. But beyond that it is normally thought to be advantageous to reduce labour turnover where possible, and to keep a stable workforce.

Training may have a partial role here. Training may be part of the package of human resource policies designed to keep a well-motivated and loyal workforce. The very fact that the company is providing training might be seen as a benefit for workers, and an indication that the company is committed to the workers. Training may also be used as a way of finding out more about how well the newly hired worker is likely to fit in with the company. If this is the case, that is, if training is used as a means of matching workers to companies, there would be an ambiguous relationship between training and turnover. Those workers who did well in the training may be kept on, while those who did not might quit or be made redundant. Finally, the effect of training on labour turnover is also likely to depend on the type of skills which it creates, and how wages are changed as a result. If the skills are transferable to other companies and if wages are not increased to reach the going rate for trained workers, the employees may be induced to quit by offers of improved wages. But if the skills are specific to the firm, and if there is at least some rise in wages after the training, there could be a downward impact on quitting.

Because training may have an impact on labour turnover, and because the latter has a theoretical connection with organisational objectives, this report includes some evidence on this matter. The evidence is limited to six studies, three of them based on British data, three from the United States. The studies are mainly based on data about individuals, rather than about companies, but two of them combine data for companies with data about some of their employees.

The general finding is that the impact of training on labour mobility is comparatively small, in relation to other factors determining mobility, and for the most part is in the downward direction. This finding applies equally to the British and the American studies. Whether the training is for youths, such as the completed apprenticeships studies by Booth and Satchell (11), or for adults generally (12; 13), the effect is mostly to reduce the probability of employees quitting their jobs in any one period, and thereby to increase the tenure of jobs, but not by much.
The significance of this general conclusion is two-fold. First, it provides some re-assurance
that the danger of poaching skilled workers is not raised by offering them training, and is
probably reduced somewhat. Second, it shows that there may be a minor contribution via this
route (in addition to its impact via other routes) to meeting organisational goals. Nevertheless,
the impact in both cases is small. The poaching issue is not resolved by this result, since firms
may still fear that their investment may be lost, as long as quitting remains above zero. The
reduction in turnover itself is not likely to have an enormous impact on profits.

**The Impact of Training on Organisational Commitment**

Organisational commitment is typically measured by combining the responses to a set of
questions to employees about their attitudes to working for their particular employer. The set
of questions has been derived on the basis of social psychology theories, and are drawn from
commonly used banks of such questions used in a range of studies. The combined responses
are used to produce a scale of organisational commitment.

Evidence on the impact of training on organisational commitment is surprisingly scarce.
Amongst the now quite large number of studies that have looked at the antecedents, and
effects of organisational commitment, few have treated the presence of training opportunities
as a possible variable. This omission is surprising because a number of commentators have
suggested that such a link exists.

Only two studies, one British the other American, provide relevant evidence (14; 15). Both
confirm a positive correlation between training and commitment. However, neither develop a
suitable multivariate analysis to examine the influence of training separately from the influence
of other variables. So it is not possible to conclude robustly that training increases
commitment.

### 5.2 Indirect Evidence

Since the amount of direct formal evidence on the question of training's impact on
organisations is not all that large, it is useful to turn also to some indirect formal evidence.
There are three possible candidates. There is evidence concerning the impact on employees'
wages. Next, there is evidence concerning the stock of skills in organisations and its
relationship to company objectives. Finally, there is evidence concerning the distribution of
training opportunities among and within companies.

There is some reasonably robust evidence that company training in Britain leads to increases in
wages (e.g. 16; 17; 35). However, it is unclear how strongly this can be taken as evidence that
the training is beneficial for the companies. Suppose that one assumed that training did raise
productivity, and that this rise was partially or completely reflected in a wage rise. In that case,
the evidence of the increased wage might be taken as an empirical proof of raised productivity.
However, the impact on profits would depend on the magnitude of the impact of the training
on wages relative to its impact on productivity. This, in turn, would depend on labour market
conditions and on institutional factors affecting wage determination. For this report, therefore,
the evidence on wage effects is not considered. Instead, we concentrate on the two other types
of indirect evidence.

**The Impact of Workforce Skills on Productivity**
The main route through which training might be beneficial for companies is through raising the skills of the workforce, and hence productive efficiency. Hence, it seems relevant to check empirically whether a higher skilled workforce is substantially more productive. But this is only indirect evidence for any effect of training, for two reasons. First, it would need to be assumed that the company's training does indeed contribute to a significant rise in workforce skills. Second, the skills that companies acquire can and frequently are obtained through recruitment, and by the same token any skilled workers obtained by the company's training might quit. Hence, it is probably best to see any evidence about the link between skills and performance as a necessary though not sufficient condition for training to be thought of as benefiting companies through this route.

The evidence to date on this issue is that higher level skills normally lead to greater productivity. Most energetic in providing a certain kind of evidence on this issue have been the team of researchers at the National Institute of Economic and Social Research. The Appendices include a brief description of two of their studies. Many of their studies have compared the productivity and skills at workplaces in Britain with those at similar workplaces in continental Europe. These studies point to traditional deficiencies in Britain's supply of intermediate-skilled workers, at the craft and technician levels. One example concerns a comparison of engineering plants in Britain and the Netherlands (18). The British plants displayed lower average productivity levels, and much of this was due to the lower inputs of craft and technician level skills. The impact was both direct, in that improved skills enabled procedures such as machine setting to be done more quickly, and indirect in that greater skills made it easier to innovate with new production lines and improvements in technology. Yet it is not only at the intermediate level that skill appears to count. The study by Lynch and Black (4) was able to report a robust positive impact of education level upon company productivity: an extra year's schooling was found to result in between 5% and 13% higher productivity.

However, the impact of skills should not be overstated: there are many other sources of productivity differences, and the second study reviewed (19) is a reminder of this. The productive superiority of American establishments may, according to this evidence, be due not so much to better skills but mainly to economies of scale.

The studies described in the Appendices under this section are intended to be indicative, rather than comprehensive, reviews of the literature on this topic. Examples of other recent studies in this tradition are: Mason (20), Mason, van Ark and Wagner (21), and Prais, Jarvis and Wagner (22).

The Factors Determining Who Gets Trained.

It is often said that training strategies reflect an organisation's culture. Nevertheless, underpinning business strategy is the objective of profit maximising or at least of achieving a certain minimum level of profits, and so one would expect that training decisions are up to a point likely to be influenced by firms' perceptions of the incentives involved. This realisation provides one good reason to expect that it might not directly benefit companies to train all their workers. There are many groups of workers who tend to receive little or no training, and it is likely that firms have calculated that it does not benefit the company to fund such training. By the same token, presumably much of the training actually undertaken is done because it is
perceived to pay off. Does this mean that we could use evidence about who receives training to infer something about the returns to training?

The answer is: only with great care. It may not be the case that training is always a response to economic incentives, and, vice versa, there may be situations when there is an incentive to train but firms do not respond to it. There is a danger of tautology if we model the way firms behave as “rational”, in the sense of responding appropriately to incentives, and then always assume that what takes place is a response to incentives. The evidence on the distribution of training must therefore be heavily qualified. Suppose one observes that a group of workers, say “group X”, receiving no training, while “group Y” receives some training. Then all we can deduce is the statement: “If it is assumed that firms are rationally responding to incentives, this empirical finding is evidence of a zero or negative pay-off to training group X, and a positive pay-off to training group Y”.

In that spirit, this report includes in its review two studies on the distribution of training among companies, one British, the other from the United States. These two are selected because they use large nationally representative surveys. But other surveys of companies generally provide similar results. Also, surveys of individuals have provided a considerable body of evidence about access to training for employees (e.g. see Green (23)). The general evidence suggests the following. Training is greater for those who have good qualifications or more education, for younger people, for new recruits to jobs, in larger establishments, in establishments that are introducing technological changes, and in establishments that have union representation. Training also varies considerably across occupational groups, with those in the less skilled groups receiving less training.

Three points are worth noting from this body of evidence, in regard to our knowledge about the pay-off to training. First, consider the fact that more education leads to more training. The finding is pervasive and important. It shows that, rather than there being diminishing returns to the acquisition of knowledge, there are increasing returns. A process of cumulative causation can result in more skilled persons getting even more skilled, while the less skilled do not have the opportunity to catch up. The conclusion most commonly drawn is that it is more cost-effective to train more educated workers because they have a greater ability to learn more. However, part of the explanation must lie on the demand side: for many low-skilled jobs, there is not a great deal of scope for increasing performance, except through the time-honoured means of automation, or of intensifying the pace of work.

Second, smaller establishments train less (see e.g. Green et al (32)), and the reason is likely to be that they are responding to incentives. Small establishments have less economies of scale to call on, so that the costs of the training are greater, not only because they cannot cheaply arrange in-house courses and have to go to external suppliers, it is also typically more costly to spare personnel from the production line when there are not many substitutes around. The benefits may also be smaller, because trained workers can more easily be bid away by the higher wages on offer in larger firms.

Third, unionised establishments train more (see Green et al, (24)). It is likely that one of the main reasons for this is, not that unions in Britain bargain or are consulted on a wide scale about training, but that the presence of unions influences the climate of employee relations. In particular, unions are associated with lower labour turnover in companies. If for no other reason, therefore, the presence of unions may make it more profitable to train.
6. Missing Knowledge

The findings in this report indicate that there are large gaps in our knowledge about the way the training market is functioning. The potential importance of enterprise-based training for upgrading the skills of the British workforce is not in doubt. But it is disarming that there are no formal studies of companies in Britain that can be called on to provide evidence of any direct link between training and productivity. The evidence from abroad is also patchy, though for the most part it does suggest that there is some positive link.

It may be recommended, therefore, that future research should be devoted to examining the benefits of training in terms of the “bottom line”, as well as to improving our knowledge of its effects on productivity and improving our knowledge of training’s effect on other intermediate variables. There seems to be no reason in principle why such studies cannot be carried out. However, it is recognised that there are sometimes problems in obtaining reliable financial information for research purposes, particularly in the case of unlisted companies (into which category many smaller firms fall). Such studies are likely to have to devote considerable care to data collection and are not necessarily cheap. It may be suggested that some use of the forthcoming next wave of the Workplace Industrial Relations Survey may provide an opportunity to support such research.

Such a study, as well as future studies of the impact on productivity, also needs to pay great attention to the statistical problem of endogeneity mentioned earlier in this review. This will mean collecting detailed information about the determinants of training, not only at the time of the survey but also in previous years. The best way to do this would be through a panel of companies which could be surveyed on one occasion, and then re-visited some time later.

The third lesson to be drawn from this review is that it is likely that the type of training makes a substantial difference in terms of the impact on productivity, and hence also on profitability. Some existing studies have already found this. Hence, it will be vital to collect information on the type and the intensity of training activities for identifiable groups of workers. One piece of information which would be easy enough to establish through detailed questions would be whether the training of employees is aimed at the achievement of qualifications. Further discussion about appropriate questionnaire design for training studies of companies can be obtained from Felstead, Green and Mayhew (25).

Finally, recent work on the bundling of human resource policies in companies has the implication for analysis of training, that unless information is also collected on other human resource policies, it may be that the impact of training will be confused with the impact of other policies such as employee involvement schemes, “empowerment” programmes and so on. If surveys collect information about the range of human resource policies, it becomes possible to investigate both their separate and several influences and the ways that the policies might interact with each other to produce better company performance.
APPENDICES

Appendix 1. Descriptions Of Studies Of The Impact Of Training On Productivity Or Turnover


Description:

- This study comes from a survey of a large number of Spanish companies with normally more than 200 workers, which is carried out annually for the Spanish government. It is based on the 1988 survey, and results were obtained for a sample of 593 companies.

- The measures of training come from two questions: “How many workers in entry-level jobs have attended training courses in 1988?” and “How many senior workers have attended training courses in 1988?” The study looks at both the determinants and impacts of training. It measures the impact on productivity in two ways: by the impacts on sales per employee and on value added per employee.

Relevant Findings

- Initial results showed that the proportion of workers in entry-level jobs receiving training had no significant effect on productivity, but that the proportion of “senior” workers getting such training had a notable and significant impact: a ten percent increase in the proportion receiving training was associated with something like an eight percent increase in productivity.

- Further results reduced the magnitude of this impact, however: after allowing for the impact of several other variables on productivity, the positive impact of training was somewhere between a two and a three percent increase. The control variables included capital stock, hours of work, the size and occupational composition of the workforce, company ownership (whether foreign, whether public) and technological change.

Comments

- The study utilises good measures of productivity. Its response rate of over 30% was also reasonable, given that many surveys often achieve less. But, as the author states, it is not able to examine the picture in Spain's considerable small firm sector.

- The study notes the problem that training is endogenous, (see general discussion), but reports that it was not possible to find an acceptable way of accounting for this problem with this data. In other words, there remains the serious possibility that the association of higher training with higher productivity in the companies surveyed may be due to the role of unobservable factors that are linked both with training and company performance. For
example, well-managed Spanish companies with good performance might also, according to this argument, be disposed to providing good training.

Description

- The study utilises survey data on 155 manufacturing companies in the United States, to examine the impact on labour productivity of the introduction of formal training plans, between 1983 and 1986. Allowance is made, not only for certain characteristics of the firms, but also for the presence of other human resource management policies. Productivity was measured by net value added per worker; however, this was less than perfectly measured because the materials cost element of value added had to be imputed from 4-digit industry averages.

- Training is measured simply by the presence, or absence, of a formal training plan. The study infers whether or not training changed between 1983 and 1986 by asking when the formal training plan was implemented.

Relevant Findings

- The presence of a formal training plan in 1986 had no significant impact on firms’ productivity in 1986.

- The introduction, however, of a new training plan between 1983 and 1986 had a significant and large productivity enhancing effect, of around 40%. This effect was found even when the introduction of new systems of job design, or a new performance appraisal system, or a new employee involvement scheme, were allowed for. Moreover, none of these other human resource policies were found to have any effect on productivity.

- Those firms that had below average productivity in 1983 were more likely to implement a new formal training plan in the ensuing three years than those with average or above average productivity.

Comments

- There are two major plusses for this study. Because it is a “panel” study, it is able to overcome some of the worries associated with the fact that training is endogenous. And it also includes three good measures of human resource policies, giving a measure of the impact of training separate from these. To that extent this study is suggestive that training does have its own effect. Nevertheless, no attempt was reported to investigate whether the training and the other human resource policies had an interactive impact in addition to their separate impacts on productivity.

- One weakness of the study consists in the limited nature of the training variable. It takes no account of non-formal training, nor of the extent of training in each company.

- Another weakness is that the survey had a low response rate (6.5%), which must cast doubt on the extent to which the results could be generalised to the wider population.
It is also possible that formal training is linked to management style, which, though not observed in the data, has its influence on productivity. The estimated impact of training on productivity is quite large, and some observers would be reluctant to attribute all of that impact simply to the training.

**Description**

- A survey of US establishments in 1982 asked employers detailed questions concerning two of their recently hired employees. Data were obtained about these employees' starting and subsequent wages, and about their previous experiences of education, training and work for other employers. Also, employers were asked to rate the relative productivity of the two employees both at the time of hiring and at the time of the survey, on a scale from 0 to 100, where 100 was seen as the maximum productivity obtainable for the position to which the employee was hired. Data on initial productivity was obtained for 1,121 firms.

- The survey had many objectives, one of which was to examine the impact of prior training and education on the wages and productivity of newly-hired employees.

**Relevant Findings**

- Formal training on the job with a previous employer significantly raised the productivity of newly hired workers by approximately 10%, and significantly reduced the time taken up in initial training for the current job by about 17%. But it had no impact on productivity by the time of the survey, that is, after some time in the new job.

- Formal off-the-job training from a previous employer had no immediate impact on the productivity of new hires, but significantly raised productivity at the time of the survey by about 16%.

- Since neither the starting wage, nor the wage at the time of the survey, were reported to be affected by any training with the previous employer, it was found to be "profitable" for the employer to hire such employees if it could, rather than workers with no such training.

- A similar conclusion held in respect of previous work experience: this was found to have a substantial effect on productivity, but a lower impact on wages.

**Comments**

- This study is relevant because it directly addresses the issue of poaching of trained workers. It shows that it can pay employers to pursue this route to obtaining skilled labour, and hence that fears of poaching, which are commonly expressed as a reason for not training, may not be unfounded. Training can, indeed, provide net benefits for other employers. This externality is often quoted as a reason for the government to intervene in the training market.

- The measure of productivity is not ideal, since it is subjective and applies just to particular employees rather than the firm as a whole. The study applies to the United States some
fifteen years ago, and therefore its results could not be generalised without qualification to other countries in the present.

- Another drawback is that the survey did not allow any attempt to account for the fact that the previous training of individuals may be related to their unobserved abilities or aptitudes.

Description

- The authors compiled comparable data on the productivity of 36 steel finishing lines in the United States, for every month over a period of several years (a maximum of 2190 months, mainly covering the 1980s). They also collected through personal interview a range of data about the Human Resource Management practices at each site, and other establishment characteristics.

- Training was measured by whether none, some or all operators on the line had received off-the-job training.

- The aim was to investigate whether various HRM policies had a greater impact on company performance when used together than when used in isolation.

- The main variable to cause output variation, which could be influenced by management, was the amount of time that the line was down.

- Other HRM variables were: use of incentive pay, extensive use of screening in recruitment, teamwork, degree of employment security, job rotation, and labour-management communication.

Relevant Findings

- Bundles of HRM practices have a substantial positive impact on line productivity. For example, lines with the most intensive use of HRM practices, including off-the-job training for all workers, registered between 5% and 8% greater productivity than lines which deployed no HRM practices. This finding is robust, in that it holds using different statistical methods of investigation.

- When applied separately, HRM practices only have minimal effects on performance. The policies have a greater impact when used together than when used separately. For example, when lines switch to a new bundle of HRM practices, productivity increases significantly; but when just training is introduced, there is no significant impact on productivity.

- HRM policies including training also together have a positive impact on measures of the quality of outputs.

- The authors' estimates of the continuing cost the bundles of HRM practices are less than their estimates of the value of the higher productivity.

Comments
• This is one of the more convincing studies of the connection between human resource practices and company performance. The productivity effects are substantial but not unbelievably high. The good data gathering and the use of “panel” estimation produce some impressive findings.

• Although the training variables are not detailed -- there is no measure as to how much off-the-job training each worker has had, nor any measure of on-the-job training -- it is striking that little effect is found unless it is combined with other human resource practices.

• The estimates of whether the human resource bundles are profitable are the least convincing, since they are based on authors’ own estimates of the costs rather than those of the companies themselves. The authors surmise that those companies which failed to introduce new HRM practices were probably inhibited by once-off high costs of change.

**Description**

- This paper summarises results of an analysis of a survey of 2,000 companies in the Netherlands in 1988. Training is defined to include formal training either within or external to the company.

**Relevant Findings**

- A doubling of the training effort significantly raised productivity by about 10 per cent. This positive effect derived mainly from external training courses. Internal training courses were found to have a positive effect, but the relationship was not statistically significant.

**Comments**

- The paper presents too little detail for other researchers to evaluate its methods and findings. It is not possible, for example, to tell whether any attempt has been made to allow for the endogeneity of training; nor is productivity defined for the purposes of the study. Hence these findings must be accepted only with great caution.

Description

- Analysis is based on some data derived from the "Educational Quality of the Workforce National Employers Survey" which is unique in the United States. The survey, carried out in 1994, achieved a high response rate, and was representative of establishments with at least 20 employees, in both manufacturing and non-manufacturing. The sample comprised 2,945 establishments which provided complete information. The report concerns both the determinants and the outcomes of training and education of the workforce. The outcomes are measured in terms of the effects on the dollar value of annual turnover, or of productivity.

- Training input is measured by the numbers of workers trained in each of two years, 1990 and 1993, by the focus of that training (computing, teamworking etc.) and by the proportion of training that is formal and outside working hours.

- There is a rich set of control variables, including capital stock, some other human resource measures, and output market measures.

Relevant Findings

- The numbers of workers trained had no significant effect on establishment turnover or on establishment productivity.

- However, the type of training did make a difference: the proportion of training off the job and out of work hours raised productivity in the manufacturing sector; computer skills training raised productivity in the non-manufacturing sector.

- The average education level of the establishment workforce was important. One extra year of education raised manufacturing productivity by between 4.9% and 8.5%, and non-manufacturing productivity by between 5.9% and 12.7%.

Comments

- This is an important paper, if only because it is based on a recent, large and representative survey of US establishments. Its standards of data collection are relatively good.

- The finding that the education level of the workforce affects productivity is unsurprising, but few studies have demonstrated this with substantial data sets at the establishment level.

- Thus the finding that the quantity of training made no difference is striking. It suggests that the quality of training is important in determining a positive outcome.
The report is based on a once-off cross-sectional survey, and is unable to account for the endogeneity of training. This is the chief drawback of the study. If those establishments that were training a lot of workers did so because, for whatever reason, productivity was low, this process of self-selectivity could account for the failure to observe any impact of training.

**Description**

- This study uses data derived from a 1989/90 survey of 62 assembly plants in the auto industry, located in sixteen countries (including Britain). This unusual survey was sponsored by the International Motor Vehicle Program at Massachusetts Institute of Technology. With the exception of Japan, findings specific to individual countries are not reported. The focus was on how the organisation of the production system affected the productivity of the plants, measured in either of two ways: the number of hours required to build a vehicle (where the hours were adjusted to allow comparability across plants producing different vehicles), and the reported number of quality defects per 100 vehicles.

- The organisation of the production system was measured by three sets of variables. The first set of variables described the technical way that production was planned (such as the extent of use of stocks of intermediate product and input inventories); the second set described how the work was organised (such as the % in formal work teams); the third set measured the usage of Human Resource Management (HRM) policies, including training.

- Two measures of training were included: the total amount of training provided to each new recruit, and the level of ongoing training (in days per year) given to experienced production workers, supervisors and engineers. Both variables were measured in approximate bands.

**Relevant Findings**

- The use of HRM policies had a statistically significant downward impact on both the number of hours required to produce a vehicle, and the measure of quality defects. The effect was quite substantial. For example, when HRM policies are examined in isolation from the other measures of the organisation of the production system, the estimated impact on productivity as measured by hours per vehicle, when contrasting a typical “mass production” plant with a “flexible production” plant with three times the level of usage of HRM, is approximately 24%.

- Reported findings focus, however, on how the different features of the system interact. The impact of HRM policies on performance was greatest when it was accompanied by production systems relying on the use of buffers, and by work systems based on little specialisation and high usage of team working, job rotation and employee involvement.

**Comments**

- This is an important study, owing both to the care in data collection and its international base of data.
It makes no attempt to measure the impact of training on performance, separately from the influence of other HRM policies. This was no doubt justifiable, both by the theoretical starting point, which stressed how various management policies interact; and by the fact that the sample size is not all that large, so that it would be statistically hard or impossible to estimate satisfactorily the impact of large numbers of variables entered separately. Moreover, the author qualifies his findings by stating that the data cannot distinguish the route by which HRM raises performance, whether by “working smarter” (i.e. raising skill levels) or by “working harder” (i.e. raising the pace of work).
Description

- The World Bank has carried out a study on "Enterprise Training Strategies and Productivity". As part of this study it collected data on manufacturing firms in five developing countries: Colombia, Indonesia, Malaysia, Mexico and Taiwan, China. Comparable questions on training were asked, and training was distinguished by the extent to which it was in-house or external, and whether it was formal or informal.

- This report compares training in the different countries, and considers both the determinants and the effects of training in each country.

- Although the title of the study refers to the effects of training on productivity, it actually measures the effect on the log of value added, and includes the labour input as one of the independent variables.

Relevant Findings

- In Indonesia, Mexico and Taiwan, firms which invest in any formal training achieved higher productivity. In the Colombia and Malaysia, the effect was positive but not statistically significant. The estimated impacts on productivity were mostly large.

- When a simple correction for self-selection into training is made a positive and significant impact for training is found in all five countries.

- However, an effect is found for different groups of workers. Firms with greater proportions of skilled workers receiving training achieved statistically significant higher levels of productivity, but there was no such impact in respect of their unskilled workers. The effect on training a greater proportion of the unskilled workers, whether in-house or externally, was found to be sometimes positive, sometimes negative, and mostly insignificant.

Comments

- The study applies to developing countries, so the workforces in the companies surveyed are likely to receive somewhat different training and to have lower education levels than those in most advanced industrial countries.

- But the findings are nevertheless of interest. The most notable finding is that training has little or no impact on the productivity of unskilled workers. If further verified, this goes some way towards verifying the proposition that unskilled workers tend to receive less training than skilled workers, because there is insufficient pay-off for companies.
- The estimated magnitude of some of the effects are rather high, and not believable as distinct impacts of training. For example, it is estimated that training raises productivity in Indonesian firms by 83%. This is likely to be because firms that do train are also likely to practice other efficiency-enhancing policies.

- The statistical method used to control for the possibility that some companies may choose training because of their management style (or some other variable) which is related to productivity is questionable. For example, their method leads the authors to make the questionable assumption that unions affect training but not productivity. Hence these results must be interpreted cautiously.
Description

- Data on the performance of 62 retail stores belonging to the same firm were obtained, from a combination of the stores’ archives and employee attitude surveys. An objective measure of performance was sales volume per employee. Training was measured objectively by the percentage of employees who received basic training in sales procedures and subjectively by the emphasis given to training as reported in the employee surveys. On average about one in three employees received basic training.

Relevant Findings

- The percentage trained was positively correlated with sales per employee. The impact of percentage trained was also evident after controlling for the effect of various measures of supervisory and merchandising support given in the stores.

However, there was no correlation between the subjective measure of training emphasis and sales per employee.

Comments

- The company policy was that basic training was provided according to each store manager’s decision. On the assumption that this decision was not related to store performance, the results suggest that the firm would have been better insisting that store managers providing basic training for all employees.

- The findings need to be qualified, in that there are few control variables available in the data set. Nevertheless, the fact that the stores all belonged to the same firm suggests that many factors affecting productivity are held constant, thus giving weight to the study.
Appendix 2. Studies Of The Link Between Training And Mobility.


Description

- This study uses data from the British National Child Development Study, which periodically surveys all those born between March 3rd and 9th, 1958. They were interviewed in 1981, and this research looks only at the 2,105 people who completed full-time education at age 16 and obtained employment within one year. It aims to examine the factors underlying who undertook apprenticeships, and the impact of those apprenticeships on subsequent job mobility.

Relevant Findings

- Those who had completed apprenticeships were significantly less likely to end their employment, whether voluntarily or involuntarily, than those who had not been apprentices.

- However, those who had undertaken apprenticeships but not completed them experienced greater job mobility than those who had not been apprentices.

Comments

- These are robust findings on an increasingly valued data set.

- The authors do not discuss possible explanations for these findings. The most obvious explanation is that the apprenticeship helps to match employees to employers. Where the match is a good one, the apprenticeship is completed and the employee stays on with the employer. Where the match is not working well, the apprenticeship is terminated, but those individuals may still find it relatively difficult to find a good subsequent job match.

Description

- This study uses data from the United States "Employment Opportunity Pilot Project" survey of firms in 1980. This survey asked detailed questions about the personal questions of the most recently hired worker, as well as questions about the characteristics of the firm.

- The main aim of the study was to study the impact of turnover costs and unemployment on wages, but a subsidiary part of this project involved examining the factors determining the length of the employment spell of the most recently hired worker.

- For this purpose, one important factor was training, measured as the length of time devoted to training the new recruit.

Relevant Findings

- Training significantly lowers the quit rate of workers; this result holds after controlling for a wide range of other variables, including age, experience, education, and firm and industry characteristics.

Comments

- This is a robust finding coming from a good data set: there are relatively few opportunities to combine individual and detailed establishment data.

- The result is interpreted by the author as showing that firms with high costs of labour turnover (of which training is a major component) will actively try to discourage quits, both by paying higher wages (for which evidence is also presented) and through other unspecified methods.

- However, perhaps because the link between training and labour turnover was not the prime focus of this research, there is no discussion of the possible endogeneity of training, nor especially of the possibility that more training is given to newly-hired employees whom the employer judges will stay longer.
This study uses information from the Social Change and Economic Life Initiative, involving surveys of both employers and employees in six local labour markets in Britain: Aberdeen, Coventry, Kirkcaldy, Northampton, Rochdale and Swindon.

The aim of the study was to examine what factors lay behind job mobility, defined as employer to employer moves, or moves out of employment.

**Relevant Findings**

- Employer-provided formal or organised training significantly reduced job mobility of females. It reduced the probability that a female will leave her job in the course of a year, by about 8 percentage points.
- The impact on male job mobility was also negative, but it was not statistically significant.

**Comments**

- Based on an interesting and rich data set, the study adds further evidence that where training is provided, firm’s turnover will be lower because each employer is less likely to quit; but the evidence for males is weak.
- The study is able to control for the impacts of age, job tenure, and other job characteristics. Nevertheless, it does not investigate the difference between two possible explanations for the results. One explanation is that the training caused lower mobility, the other that training was provided for those employees who were considered least likely to quit.
- The author theorises that employer-provided training is likely to be firm-specific, and that this is a reason for the relationship found, but there is no independent evidence for this assumption.

Description

- The study uses data from the United States' "National Longitudinal Survey Youth" cohort. This cohort comprises 12,686 people who were 14 to 21 years of age at the end of 1978. The research examines whether their experiences of training make them more likely or less likely to quit their jobs, in the years following 1979.

Relevant Findings

- Company training on the job leads employees to stay longer in their jobs; this effect is only statistically significant, however, for females.

- Having finished apprenticeship training has no statistically significant effect on job mobility.

- Having undertaken formal training off the job in a for-profit proprietary institution significantly raises the likelihood of job quitting for females, but has no impact for males.

Comments

- The results are soundly based, on a good data set. They are consistent with other studies showing that training if anything reduces job mobility, with the exception of off-the-job formal training for women. It is likely that some of the latter is sponsored by the individuals themselves, rather than the firms, and this may account for the fact that such training is linked with higher turnover.

- While the author concludes that the on-the-job training is firm-specific, it is equally possible to conclude that firms investing in training accompany their training with other human resource policies designed to lower quitting and thereby protect their investment.

Description

- This study examines two UK surveys, the Quarterly Labour Force Survey, and the National Child Development Study. The aim was to examine the two-way links between training and labour turnover.

- The QLFS is regular survey of some 60,000 households, usually involving around 65,000 people in employment. It regularly asks respondents about their participation in work-related education or training in the four weeks prior to interview. Since respondents remain part of the survey for five quarters, their job mobility can be traced over this period.

- The NCDS is a cohort study of all individuals in the UK born in one week in 1958. This study utilised the 4th and 5th sweeps. The 5th sweep collected information about training courses undertaken between 1981 and 1991. It also collected detailed work histories, so that mobility over the period could be measured in a range of manners. These included the length of duration of jobs, and the number of jobs held over the period.

Relevant Findings

- For men, receiving training in one quarter decreased the probability of moving jobs over the following year by, on average, one percentage point. The effect was greater where the training involved fees which the employer paid for.

- For women, the overall effect of training on mobility was negligible, but where the training involved fees which the employer paid for the effect was to lower mobility, but otherwise, and especially where the training led to qualifications, the training led to higher mobility.

- The NCDS produced similar findings, in that those who had received training as part of the job they held in 1981 had less subsequent mobility than those who had not. But in this case the result held for both men and women.

- In both surveys the impact of training on mobility was small, especially when compared with the impacts estimated for other variables such as employer size, age, or unionisation.

Comments

- The results derive from the most thorough investigation of the issue to date in the British context, using two good data sets, and apply to the economy in recent years.

The QLFS is a household-based survey of individuals. A potential problem of using the QLFS for this sort of analysis is that if people move jobs and at the same time move house they will not be surveyed in subsequent quarters. So the results rest on assuming that there is no strong connection between training and moving house.

Description

- This study uses data on employees taken from 140 large employers in the Indianapolis area. A questionnaire was administered to samples of employees from each company, so arriving at an unusually rich data set comprising both personal and company information. The aim of the study was to examine the impact of training and other variables on the length of time employees stay with the firm ("firm tenure"), the length of time in each job within the firm ("job tenure"), and "mobility" (meaning the number of jobs held within the firm).

Relevant Findings

- Formal training with the company significantly raised the firm tenure of supervisors, managers and male workers; but it had no significant effect on female workers.

- Informal training had no significant effect for workers of either sex or for supervisors, but did raise the firm tenure of managers.

Comments

- This is a rich data set, and in particular it is able to control for a number of firm characteristics. It is interesting that the downward impact of training on firm tenure found in other studies is replicated here, even after controlling for other human resource management policies.

- One drawback is that no attempt is made to examine whether there is a reverse causation, in that firms select for training those employees whom they expect to keep the longest.
Appendix 3. Selected Studies On The Link Between Training And Organisational Commitment.


Description

- The study is based on a survey of 3,855 employed people aged between 20 and 60 in Britain in 1992. The survey covered a range of features of work life, including experience of training, perceived skills, commitment to work and to organisations and job satisfaction.

- Respondents were asked about their participation in any work-related education or training during the previous three years, about their perception of training provision in their current job compared to five years previously, and about their expectation of getting training in the future from their present employer.

- "Organisational commitment" was measured on a scale based on five questions taken from a standard instrument developed for this purpose by social psychologists. The questions concern attitudes to work and the organisation.

Relevant Findings

- Organisational commitment was substantially correlated with perceptions of an increase in training provision: those who perceived an increase registered nearly double the score on the organisational commitment scale.

- Organisational commitment was also positively correlated with expectations of future training.

- There was no reported correlation with recent work-related education or training. However, it should be noted that such training was not necessarily employer provided.

Comment

- These findings are based on bivariate analyses, with no allowances for other controls that may affect organisational commitment. In particular, since (as the report shows) organisational characteristics such as "good employee relations" are also shown to result in high organisational commitment, it is possible that a training increase does not have an independent influence. The published study is billed, however, as "First Findings" from the survey, and subsequent analyses may reveal more.

**Description**

- The book's self-explanatory sub-title is: "A study of work organization and work attitudes in the United States and Japan". Its analysis is based on a survey of 52 US and 46 Japanese manufacturing plants, and samples of their employees, totalling 8,302 persons.

- The workers' attitudes were used to construct a scale of "organisational commitment", using a standard instrument developed for this purpose by social psychologists. Part of the study aimed to analyse the characteristics of organizations, their human resource policies and structures that determine commitment.

- The study included measures of whether external or whether in-house training neither were provided for workers. These are regarded as items in an array of "welfare services" provided for workers. Other services included: sports programmes, ceremonies, company journals, orientation programmes, employee handbooks, information/pep sessions and calisthenics programmes.

**Relevant Findings**

- Training, whether external or in-house, is significant positively correlated with organizational commitment in both US and Japan samples.

- After controlling for other factors, the greater the number of welfare services, the greater is the level of organizational commitment, in both the US and Japan.

- Companies investing in one welfare service are more likely than not to be investing in the others.

**Comment**

- This is an interesting data set, with many firm findings, but the finding of a link between training and commitment is no more than suggestive. The authors did not investigate whether there was a separate link after controlling for the influence of other welfare factors.
Appendix 4. Selected Studies On The Link Between Skills And Productivity.


Description

- This paper presents a comparison of productivity in matched samples of engineering plants in the Netherlands and in Britain. It then compares productivity differences with differences in both the skills and the physical capital inputs to the production process, and relates the skill differences to the vocational education systems in the two countries. The survey covered 12 plants in Britain and 9 in the Netherlands.

Relevant Findings

- The Netherlands plants achieved on average something like a 30% productivity advantage over those in Britain. Key ingredients of this advantage were differences in machine set-up times and running speeds, in the rates of breakdown, maintenance and repair, and in the ability to introduce new technology quickly.

- Differences in the qualifications of the workforces were substantial. On the shopfloor, some 41% of the British plants deployed workers with craft-level skills, and the rest were below this level. Meanwhile, the Netherlands plants used 66% craft workers and a further 12% were qualified at the higher level of technician.

- These differences were found to account for a considerable portion of the productivity differences.

Comment

- This study is typical of a number of well-conducted National Institute studies.

- They are formal studies, but do not involve such large numbers as would be amenable to statistical analyses. Hence, the conclusion about causation are derived from a combination of the in-depth interviews with managers at the plants, and the judgements of the researchers.

**Description**

- This study compares matched plants in the precision engineering sector in the United States, the Netherlands and Britain, in 1993/4. It deploys a similar methodology to other National Institute Studies, taking a range of similar though not identical plants, comparing the labour productivity in each for similar product lines, and assessing through in-depth interviews with managers and analysis of the local skill supply system the role of skills and other factors in determining productivity differences. The survey covered 18 plants in the United States, 13 in Britain and 9 in the Netherlands.

**Relevant Findings**

- Where comparisons of similar operations were possible, the UK plants had a productivity some 58% of that in the US plants, while the Dutch plants' productivity was around the 80% of that in the US plants.

- The US leadership was found to depend heavily on the greater economies of scale reaped in the United States. Where comparisons were possible, US batch sizes were around four times larger than those in the UK and the Dutch plants. Larger batch sizes implied less machine change-overs per shift. The reduced the need for workers to move flexibly between different machines and product lines.

- In addition, the US plants benefited from a large supply of engineering graduates who could stand in for relatively rare technician and supervisory skills. This large supply of graduates derived from the highly developed higher education system.

- Workers, in addition, displayed a great propensity to invest their own time in acquiring higher education qualifications through part-time study.

**Comment**

- This study is of substantial interest, because it qualifies the view, sometimes expressed, that superior skills are the major key to competitiveness. Few would argue that the United States has a successful enterprise-based training system, in comparison to those in Europe: In the cases studies here, the continued comparative efficiency of the US in production is not due primarily to a superiority in skills, but derives from the size of the US market.
Appendix 5. Selected Studies Of The Determinants Of Training In Companies


Description

- This study is based on analysis of the Employers Manpower and Skills Practices Survey (EMSPS). The survey covered a nationally representative sample of 1693 establishments in Britain with at least 25 workers. It covered a wide range of topics concerning training, recruitment and skills shortages. It also had the advantage of being linked to the Workplace Industrial Relations Survey (WIRS), which contained a very rich set of questions about relations at the workplace roughly nine months previously. The respondents to the EMSPS were taken from those who had responded to the WIRS.

- The survey distinguished between initial training and continuing training, and obtained the establishments' own estimates as to the extent of the training provided over a year to each of several occupational groups. Thus, for each group, it was known whether that company trained anyone in that group, what proportion of that group received training; and how long for.

Relevant Findings

- The training provided to each occupational group was greater in larger establishments, was greater where the size of that group was large in relation to total employment in the establishment, and in establishments where a union was recognised.

- For some occupational groups, training was lower if female and part-time employment was high, but training was greater for some groups where the proportion in ethnic minorities was high.

- There was also some evidence that training was greater in establishments that were foreign-owned and for establishments in the private sector.

Comments

- The finding that smaller establishments train less is unsurprising, and common to most such studies. Smaller firms with smaller establishments train less, and at least part of the reason is simply that it may not pay off so well as in large firms.

Description

- This is the same study referred to above, in the section reviewing direct studies of training and productivity.

Relevant Findings

- Substantially more training is provided in larger establishments
- More training is provided, the greater the education level of employees
- More training is provided where the proportion of female employees is high
- More training is provided where employers use benchmarking, or have introduced Total Quality Management

Comments

- The link with education repeats at the company level what has been widely found in studies of individuals, that training is complementary with education. The inference that is commonly drawn from this is that more educated people are better learners, and hence that the costs of acquiring new work-based skills through training are lower.
Bibliography


It is commonly held that, in order for the British economy to remain competitive in an increasingly global market, underpinned by pervasive technological change, it is necessary to upgrade and continually renew the skills of the workforce. To achieve this lifelong learning, the role of enterprise-based training is considered vital.

This report reviews existing formal quantitative evidence on the benefits to training for employers, in order to contribute to understanding about incentives for training in Britain.