The Materiality of Human Capital to Corporate Financial Performance

by Aaron Bernstein
and Larry Beeferman

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For more information, please contact:

Jon Lukomnik
Executive Director, Investor Responsibility Research Center Institute
40 Wall Street, 28th Floor | New York, New York, 10005
(+1) 646.512.5807
info@irrcinstitute.org | www.irrcinstitute.org | @IRRCResearch

Larry Beeferman and Aaron Bernstein
Labor and Worklife Program, Harvard Law School
125 Mt. Auburn Street, 3rd Floor | Cambridge, MA 02138
(+1) 617.495.9265 | lwb@law.harvard.edu; abernstein@law.harvard.edu | http://www.law.harvard.edu/programs/lwp/

About the Authors

Larry Beeferman, report co-author, has served as director of the Pensions and Capital Stewardship Project since its inception in 2004 at the Labor and Worklife Program (LWP) at Harvard Law School. The Project, through conferences, trustee training, and research and publications educates and informs workers, scholars, researchers, and practitioners on issues of retirement security, including employment-based retirement plans, and of pension fund governance, management, investment and related matters. As director, Beeferman has written or co-authored papers on infrastructure investment, labor and human rights and investor decision-making, private equity and labor, labor-friendly pension fund investments, capital stewardship and labor voice, the fiduciary duty of pension fund trustees, the Dodd-Frank financial reform legislation, automatic enrollment in U.S. defined contribution plans and recent changes to Brazilian public sector pension plans. He has given many presentations and taught classes on these and related topics. His career prior to coming to the LWP, included service as head of the Asset Development Institute at the Heller School for Social Policy and Management at Brandeis University, Professor of Law at the Massachusetts School of Law, and Associate Counsel to the Special Commission Concerning State and Country Buildings. He was awarded a J.D. from Harvard Law School and a Ph.D. in Applied Physics from Harvard University. He has written books, papers, and articles on law, social policy, and other matters.

Aaron Bernstein, senior research fellow with the Labor and Worklife Program at Harvard Law School co-authored this study. He co-founded the Pensions and Capital Stewardship Project's Investor Initiative in 2008 to help pension funds and other investors analyze the long-term investment risks of social factors such as labor and human rights and human capital. He has written several studies available on the Project's publications page, and he speaks on the subject at conferences, seminars and workshops. He is also the editor of Global Proxy Watch, a corporate governance newsletter for institutional investors. Bernstein left BusinessWeek magazine in 2006 after a 23-year career as an editor and senior writer covering workplace and social issues. He received numerous journalism awards, including the Overseas Press Club, the Gerald Loeb, the George Polk, the New York Press Club, and the Sidney Hillman. Before joining BusinessWeek, he worked at Forbes and for United Press in London. He received a BA in Politics and Economics from the University of California at Santa Cruz and did graduate work in Political and Legal Theory for two years at Oxford University. He is the author of a book entitled "Grounded: Frank Lorenzo and the Destruction of Eastern Airlines," and the co-author of "In the Company of Owners: The Truth About Stock Options." Bernstein was a Wertheim fellow for the LWP during 2007-2008.

Human Capital Materiality

Institutional investors have become increasingly interested in analyzing long-term investment risks and rewards posed by environmental, social and governance (ESG) factors. A growing body of data and analytical tools has been developed to assist in the task, but the focus has largely been on environmental and governance matters. This paper helps fill in the gap on social factors, specifically those involving how companies manage workplace relationships, a topic often referred to broadly as human capital or human resource (HR) management.[1] We examine both a wide range of HR policies and separately those that relate directly to employee training.[2]

Our survey of the literature on human capital found 92 empirical studies that examined the relationship between HR polices and financial outcomes such as return on equity, return on investment and profit margins. We conclude that there is sufficient evidence of human capital materiality to financial performance to warrant inclusion in standard investment analysis. However, we also find that doing so remains a challenge for a number of reasons. These range from the fact that companies do not provide investors with comparable data to a lack of consensus over which combinations of policies have the most impact on financial outcomes.

This paper is organized as follows. The introduction discusses why investors seek data on social factors and examines the conceptual and methodological problems with which researchers have wrestled in analyzing training and human resource management systems more generally. Section One reviews the literature on training and explains why this subject has been treated as a distinct topic separate from those concerned with other HR policies. Section Two reviews research on the latter. Section Three considers some of the challenges investors face in attempting to apply human capital metrics to investment analysis and offers suggestions about the kind of quantitative data and other information investors might want to seek from companies. The Conclusion summarizes our findings that corporate training and other HR policies, if implemented correctly, can enhance financial performance. Investors who seek to maximize the impact of their integration of ESG factors into corporate analysis ought to consider these financially relevant factors.

Introduction

Why HR Policies are Important to Investors

Human capital management has become widely accepted as a key component of corporate strategy. Executives, management consultants and governments have embraced the importance of corporate HR policies, including employee training. The topic has been the focus of extensive research as well. Hundreds of academic and practitioner studies undertaken in dozens of countries have examined the operational and financial benefits to companies that adopt various kinds of HR policies.

But this perspective has not carried over to the investment community in any systematic fashion. It does not engage in critical evaluation of HR management as a standard element of investment analysis. Nor have investors pressed companies to report publicly on workplace-related policies and outcomes as they have on other ESG topics such as the environment and corporate governance.

There are multiple reasons why this is the case. HR management is a complex issue that can vary by company, industry and country. There remains considerable debate about which HR strategies are the most effective in particular contexts. There is a paucity of publicly available data that would allow meaningful analysis of companies or comparisons among them. The data that does exist is typically not audited or otherwise subject to external assurance.

Underlying these concerns is the possibility that most institutional investors are largely unaware of the extensive evidence that already exists about the materiality of human capital factors. This is understandable given that most of the studies in the field have not been framed from the perspective of investment analysis. Some researchers have included privately held companies in their analysis along with publicly traded ones, which precludes or makes difficult analysis of standard investment outcomes. The challenge is compounded by the way companies often roll out HR policies in only some work sites or units, or only for certain classes of employees, leading many studies to focus on divisions of companies and even individual offices or factories.

Human capital research has been undertaken in hundreds of studies encompassing a multitude of disciplines: Numerous studies have been done in the fields of economics, labor studies, human resource management, psychology and sociology, but investment outcomes have been a concern only in a minority of them. For example, a 2010 literature review of 66 papers on training done between 1991 and 2007 identified outcomes that included productivity, sales growth, employee commitment, value added per worker,

firm present value, turnover, market share, export sales growth, customer satisfaction, sales per employee, employee satisfaction, client satisfaction, owner/shareholder satisfaction, absenteeism, product and services quality, work performance, cooperation, discipline, new product development and equipment downtime.[3] A 2013 review of research on the relationship between HR policy and these kinds of firm operational performance found 248 articles assessing an equally wide range of outcomes.[4] These counts exclude the related but largely separate field of employee job satisfaction, which a 2009 paper estimated had been the subject of 10,000 studies and articles.[5]

Our review sorted through this field to highlight research that included traditional corporate financial performance indicators widely used by institutional investors. We identified 92 studies that assess one or more of these investment outcomes, 36 specifically on training and 56 on HR systems more generally. The financial metrics include total shareholder return, return on assets, return on earnings, return on investment, return on capital employed, profitability and Tobin's Q. We have excluded productivity, even though it was the most common result assessed in this body of research. Many economists consider output per worker to be the most rigorous and reliable way to assess corporate performance across firm samples. Indeed, numerous studies treat productivity and financial performance as synonymous. We nonetheless chose to omit productivity outcomes because it is not a standard variable used in commercial investment analysis. Even so, the 92 papers that did focus on standard investment metrics still offer a good sense of the strengths and weaknesses of the findings in this field.

We restricted our review to studies that used conventional investment indicators to emphasize the conclusion that human capital is material under definitions acceptable to the U.S. Securities and Exchange Commission and U.S. securities law.[6] Investor interest in non-financial risks and rewards has precipitated a proliferation of efforts to develop the field. These considerations are often characterized as environmental, social and governance (ESG) factors, and human capital typically is seen as falling into the social category. The scope of ESG factors and the rationales for taking account of them remain under development. Some investors employ the term to describe factors partly or even largely in normative terms while others define it as focused strictly on elements that are material to corporate financial outcomes.

The majority of these 92 studies found positive correlations between training and HR policies with investment outcomes (Table 1). We discovered just one with only negative findings. Seven others found no correlations and another seventeen uncovered a mix of positive outcomes and either no correlations or negative ones.

Table 1: Human Capital Studies

Topic	Financial Effect			
	Positive	Mixed	None	Negative
Training (36 Studies)	22	8	5	1
HR Policy (56 Studies)	45	9	2	0
Total Number of Studies	67	17	7	1

The simple count of studies presented here does not take into consideration the quality of the studies' research methodology or the robustness of their findings. Many studies also present multiple findings; when possible we focus on those the authors present as their primary ones.

Although the research varies in depth and quality, in aggregate the literature offers considerable empirical evidence that human capital policies can be material to corporate performance. The total number of positive findings is given added weight by the diversity of industries and countries to which they apply.[7] The results suggest to investors who may not have been persuaded by or aware of long-standing assertions about human capital materiality that they ought to reexamine the data.

One of the most forceful statements of this conclusion came in a 2003 report by a Task Force on Human Capital Management (HCM) established by the British Secretary of State for Trade and Industry, which included several high-level executives of prominent British companies. It concluded:

> "HCM should not be regarded solely as an internal matter for management. For most organisations the link between HCM policies and practices and performance is sufficiently central to be a material factor whose disclosure might reasonably be expected to influence assessments of their value and effective stewardship by management. In such cases disclosure increases the value of financial reports and will be important for the effective operation of capital markets."[8]

The Global Reporting Initiative (GRI), the largest and most widely used ESG reporting entity, has encompassed both the "value" (financial impact) and "values" (normative behavior) perspectives, reflecting its status as a multi-stakeholder association of advocacy groups, nonprofits, investors and others. In 2013 the GRI released a fourth-generation version of its guidelines that put more emphasis on investment materiality while retaining the normative principles which have guided the group since its founding by two US nonprofits in 1997.[9]

Even entities whose goal is to establish ESG materiality standards do not always eschew normative considerations. The Sustainability Accounting Standards Board (SASB) was founded in 2011 with just such a mission.[10] However it has not relied primarily on conventional academic research to achieve this goal. Instead SASB has combined keyword evidence searches with a crowd-sourcing effort that draws on input from a wide variety of expert volunteers, including socially responsible investment funds, activist groups and labor unions whose perspective often includes normative concerns, as well as investors and corporate participants who might be assumed to have more concern with financial impacts.[11] The overlap of normative and financial perspectives is also evident in groups such as the United Nations-sponsored Principles for Responsible Investment initiative, which states that ESG issues can not only ”affect the performance of investment portfolios” but also “may better align investors with broader objectives of society.”[12]

Materiality

Our decision to focus only on traditional investment outcomes is intended to address a common misunderstanding that the materiality of ESG factors in general, and human capital ones in particular, is not yet backed up by research pertinent to mainstream investors. Although there is sparse evidence of such materiality for numerous social factors, the papers reviewed here offer substantiation of the correlation to financial outcomes for training and HR policies more generally.

A wider appreciation of this literature can help the investment industry assess priorities for corporate ESG reporting. ESG data providers offer investors information about corporate workforce policies, but the choice of variables often appears to be a function not of materiality but of what companies decide to make available or are required to report by regulators. One prominent example is an annual report first issued in 2012 by Corporate Knights Capital, an investment advisory and research firm based in Toronto. Its third report published in 2014, *Measuring Sustainability Disclosure: Ranking the World's Stock Exchanges*, used Bloomberg data to assess information provided by 4,609 large companies listed on 46 exchanges. The document focused on seven so-called “first-generation” sustainability indicators, which it selected “because they are objective measures of corporate sustainability performance that are broadly relevant for companies in all industries.”[13] Three of the indicators concern workforce issues: employee turnover, injury rates and corporate payroll.[14] The report, which was backed by Aviva, a large British insurer that has been actively involved in promoting better ESG reporting, as well as by Standard and Poor's and the Association of Chartered Certified Accountants, urged stock exchanges and “policy-makers of all description”

to "encourage or mandate listed companies (and large listed companies in particular) to measure and publicly disclose their performance on the seven first-generation sustainability indicators."[15]

Yet Corporate Knights offers no argument that these seven indicators are material to investors or even how precisely they were selected in the first place. The report pointed to no research on the materiality of any indicators – despite the decades of research we discuss below demonstrating the importance of training and other HR management policies to financial outcomes.

The question of how to define and prioritize material social factor indicators is of growing importance in light of regulatory efforts to mandate corporate ESG reporting. In 2014 the European Union passed legislation requiring companies with 500 or more employees to disclose ESG information or explain why they do not. It instructs the European Commission to develop guidance on which indicators companies should use and consult stakeholders during the process, which must be completed before the rules take effect in 2017.[16] Investors now have an immediate interest in advising the Commission on which indicators should be used. It would seem logical, at a minimum, to consider asking companies to report on indicators found to be material based on extensive research, or explain why they do not.

The same may hold true with a broader effort involving a petition asking stock exchanges around the world to adopt ESG disclosure listing requirements. It was developed by the Investor Network on Climate Risk and submitted for comment in 2014 to the World Federation of Exchanges, an association of 64 exchanges.[17] The WFE set up a Sustainability Working Group that year in part to consider the proposal.[18] One potential outcome of the petition is a recommendation to exchanges by the International Organization of Securities Commissions, an association of 120 regulators around the world that sets standards for the securities industry.[19]

Links to Performance

Investigations of links between corporate performance and training and HR management date to at least the late 1930s, when researchers looked mostly at outcomes of company policies such as employee job satisfaction but failed to find much.[20] Interest picked up again in the early 1960s after Nobel Laureate economist Theodore Schultz began using the term human capital to describe the investments and systems companies used to train and manage employees.[21] Then in 1964 another Laureate economist, Gary Becker, wrote a seminal book entitled *Human Capital*.[22] Many of the papers that followed his

work looked at productivity. Researchers began to examine the investment outcomes covered in this review in the 1980s.

Most of the initial research sought to find correlations between measures of performance and a wide spectrum of discrete HR policies regarding employee training, team systems, profit-sharing, employee ownership or hiring, retention and promotion. While many discovered positive effects, some did not. By the 1990s there was a gathering consensus that adopting just one type of policy often might not deliver value, or might not produce maximum value. Instead, the emerging view was that companies derived the most benefit from bundling groups of policies together in a synergistic approach. Many researchers adopted the term "high performance work system" to characterize certain bundles that typically include elements such as teams, worker participation and some kind of profit- or gain-sharing.

In 1995 a study by Rutgers University academic Mark Huselid launched a subgenre of research focused on the links between high performance work systems and financial performance.[23] Examining 968 publicly traded U.S. firms with 100 or more employees, he found positive correlations to both Tobin's Q and return on capital employed. Since then hundreds of studies have looked at such links, although many included productivity in their definition of firm performance.[24]

Some researchers continue to use the phrase high performance work systems while others define bundles of policies more broadly and may or may not include those labeled as high performance. Either way, the idea that HR policies are the most effective when used together has since evolved into the standard perspective adopted by most recent research. The review of the field in this paper includes both studies that examine the materiality of discrete HR policies as well as those that assess bundles of policies.

We have broken out training as a separate category because much of the research has done the same. Dozens of studies have focused on training as a stand-alone policy unconnected to a company's other HR practices. While many bundle analyses include training as one of the elements, the evidence is substantial that even considered in isolation, training is frequently associated with higher profits for firms. As a result, the first section of this paper deals with that body of research while the second addresses other HR policies considered individually and collectively. Studies that include training as part of a bundle are covered in the second section.

There are several other workforce-related topics that have been extensively examined for links to corporate performance. In addition to health and safety this includes

diversity of both employees and of boards of directors. We have excluded them to keep the project to a manageable scope.

We have included studies from dozens of countries, on both training and broader HR approaches. More than half of those we selected were done on companies in the US and the UK, where research on these subjects has been more extensive. (This also may be at least in part a function of the fact that we restricted our search to papers written in English.)

A few general notes of caution apply to most of the literature reviewed. There has been limited effort to link the vast body of work on employee views and job satisfaction to investment performance, despite recent suggestions that this is an important complement to surveys of corporate management views on HR policies.[25] In addition, authors often have had far more to say about the correlation of HR policies and financial performance and rather less about the size of the effect. And while many such correlations have been found, the question of causality remains a topic of debate, with some researchers suggesting that better training and HR policies may follow from superior financial performance rather than be caused by it. Another is whether such policies improve financial performance directly, or only if they are adopted in conjunction with other steps such as a superior business or corporate responsibility strategy. There also has been limited attention to whether there might be diminishing returns to increasing the scale of particular HR policies.[26] There are as well a variety of questions about the quality of the data and of the methodologies employed. We cite the concerns that are appropriate to each of the studies as we review them.

Section One: Training

Gary Becker's 1964 book, *Human Capital*, was among the first attempts to argue that company-paid training is not just an expense but is also an investment akin to other capital costs.[27] Economists and other experts have been trying ever since to sort out exactly how that works. Before his book the prevailing view was that formal or informal on-the-job training was analogous to any other form of education such as high school or college. The contention was that employees reaped most of the benefit from this education, since they could always leave for a higher-paying position at another company after the training enhanced their skills. So even if employers actually provided the training, they offset the cost by paying lower wages until the training was complete. Becker altered this perspective by arguing that companies and employees both benefit from training, even if the employee enjoys subsequent wage gains as a result.[28]

Our review of the research on training is focused on the benefits it can bring to companies, specifically as they affect financial performance. We have identified 36 studies that analyzed links between training and investment outcomes. Five found no correlations and eight described a mix of positive associations, negative ones, and no correlations. One reported only negative correlations. The remaining 22 concluded that training is associated only with superior investment outcomes. These findings have come in multiple countries and industries and in studies stretching back more than three decades.

Although the evidence is strongly suggestive of a payoff to companies, researchers continue to debate exactly how it occurs. The predominant theory holds that training enhances employee knowledge, skills, and abilities, which improves outcomes such as productivity, product and service quality, and customer satisfaction.[29] These in turn can lead to higher sales, profitability and ultimately stock valuations. Most of the studies employ regression analysis to associate training with these outcomes. Regressions may explore not only the direct relationship between training and other measures of financial performance but also that relationship contingent on other factors such as the characteristics of the firms and the presence or absence of other HR policies. It has proven more difficult to weigh the benefits against the many costs of training, such as materials, trainers, lost work time and added managerial expense. Moreover, as reflected in Tables 2 and 3, researchers have used several different measures to define what is meant by training.

The challenge has been compounded by the general nature of much training, which enhances employees knowledge and skills that can be employed in many contexts as

opposed to firm-specific training, which teaches them how to carry out particular tasks at an individual employer. Numerous studies have found a majority of training to be general in nature, perhaps as much as 60% to 70%.[30] Companies typically bear the cost, even though employees remain free to employ their newfound skills at other companies. More specific skills training is, of course, less transferable to new employment.

These complex relationships have made it difficult to undertake cost-benefit analyses of training. Part of the problem stems from corporate accounting, which treats training as an expense rather than an investment. Companies are not required to report training expenditures as a discrete item, so it often is lumped in with other overhead. This is an understandable approach since the payoff to training is difficult for an individual company to quantify. If companies could treat any and all training expenditures as an asset, it could lead to overstated book value, overstated earnings and excessive dividends and management bonuses.[31] Nonetheless, the accounting treatment has hampered efforts to assess the economic returns to companies. As one study concluded: "In summary, economists view investment expenditures as any outlay made by managers in the expectation of future benefits, whereas GAAP (Generally Accepted Accounting Principles) rules determine an investment by reference to an internal rule set, giving rise to a potential disconnect between what firms do and what GAAP reports."[32]

The lack of consistent reporting has led to challenges in linking training to corporate financial performance. "Unlike all other major categories of investments that firms make to enhance their future productivity and profitability (e.g., physical plant and equipment, research and development), investments in developing human capital are neither separately accounted for, nor are they publicly reported," one study observed. "These investments are thus essentially invisible to most investors (with the important exception of the fact that they raise costs in some indeterminate way)."[33]

How Training is Measured

Although companies are not typically required to publicly disclose their training expenditures (let alone training-related policies or how those actually are implemented), many are willing to do so when asked (sometimes subject to confidentiality requirements). The majority of the studies reviewed in this paper obtained training data from surveys and questionnaires sent to companies. Typically, the respondents were corporate HR managers, although sometimes other managers or executives responded. While the response rates varied, thousands of public and private companies in dozens of countries have answered the requests over several decades.

The surveys have allowed researchers to observe links between training and financial performance that can be obscure at an individual company. The typical approach has been to use standard regression analysis to compare training among groups of companies. Most of the 36 studies we selected for review measured training expenditures, either per employee, per firm, or as a percent of each company's total payroll. Some used the existence of a training policy, the fraction of the workforce trained, or time devoted to training. There also was variation among types of training. Some research focused on formal skill instruction while other papers looked at general on-the-job training. Training recipients differed as well, from entry-level employees to specific groups such as bank tellers or production workers. Although some of the studies found no relation to financial outcomes, there is no indication that a correlation or lack thereof was a result of the training variables employed.[34]

Another complication is that many studies do not measure financial performance using the audited public data. One reason is that many include private corporations that do not release such information. Another is that some researchers have studied divisions of companies and even individual factories and offices. Because detailed financial results are usually unavailable for such entities, analysts have had to rely on survey questions answered by company officials. As a result, most of the studies use perceived measures of profitability as reported by company executives in the survey. Often the questions are asked in different ways, such as profits over the past year or in relation to competitors.

Although perceptual surveys are less desirable than reported financial reports for investment analysis, it is not clear how much they undermine the findings that training is material to companies' financial performance. On the one hand, some experts have found that estimates for the link to performance are higher from surveys, suggesting that managers may overestimate the link to policies such as training.[35] On the other hand, however, other researchers have conducted separate studies comparing self-reported financial results with publicly reported ones and found them to be largely consistent, according to a 2008 paper.[36] The authors went on to argue that publicly reported results themselves can distort comparisons among firms, particularly in cross-national studies involving countries with different reporting and accounting requirements. Although the issue is not completely settled, surveys are widely used in academic research as a way to assess many aspects of corporate performance, not just training and human capital.

The measures of financial performance on which researchers have focused have varied. Only a handful of training studies have used stock performance. Four of the seven we identified were co-authored by Laurie Bassi; mostly using data from annual surveys by the American Society for Training and Development (ASTD), where she was Director

of Research in the late 1990s.[37] For example, a 2004 study she co-authored called *The Impact of U.S. Firms' Investments in Human Capital on Stock Prices* examined ASTD data on training by 388 companies between 1996 and 1998. It found that those in the top quartile of formal employee education and training expenditures averaged annual stock price returns between 1996 and 1998 of 31% while those in the bottom quartile averaged 15%.[38]

Table 2: Training Studies

Study	Sample	Training Indicator	Financial Indicator	Results	Country
American Bankers. 2004.	Survey of 17 banks	Training expenditure per FTE	Profitability, TSR, ROA, ROI	Banks in top 50% of training expenditure per FTE performed better on all indicators	US
Aragon-Sanchez. 2003.	Survey of 457 companies with 10 to 250 employees	Training policy	Profitability	Positive	Finland, Netherlands, Portugal, Spain and UK
Aragon. 2013.	Survey of 316 large firms	Training policy	ROA	Mixed	Spain
Bartel. 1995.	Analyses of personnel records of 19,000 employees at a large US manufacturing firm	Training expenditure per employee	ROI*	Positive	US
Bartel. 2000.	Corporate records of a New Jersey manufacturing firm and a New Jersey service firm and of the Garrett Engine unit of Allied Signal	Training expenditure per employee	ROI*	Positive	US
Bassi. 2001.	Survey of 575 publicly traded firms	Training expenditure per employee	Stock price	A $100 increase in training expenditure per employee increased the annual stock price by 0.8 percentage points	US
Bassi. 2002.	Survey of 575 public companies	Training expenditure per employee	TSR	Firms in the top half of training expenditure per employee in one year had a mean TSR the following year of 37%, vs. 20% for those in the bottom half	US

Study	Sample	Training Indicator	Financial Indicator	Results	Country
Bassi. 2004.	Survey of 388 companies	Training expenditure per employee	Stock price, ROA	Firms in the top quartile of training expenditures per employee had annual stock price returns between 1996 and 1998 of 31% while those in the bottom quartile had 15%. Return on assets averaged 5.3% for the top quartile and 4.2% for the bottom.	US
Bassi. 2009.	Surveys of 30 banks	Training expenditure per employee	Stock price	Training expenditure per employee in one year correlates to 21% of the variation in stock price performance in the following year relative to competitors	US
Bernthal. 2006.	Survey of 127 firms	Training policy	ROA, ROE, profitability	Firms with high-quality leadership training programs and management succession program performed better on all indicators	US, Canada
Blandy. 2001.	Survey of 41 firms	Training quantity and quality	Profitability	Positive	Australia
Bosworth. 2002.	Longitudinal surveys of 3,569 business units with less than 200 employees between 1994 and 1998	Training expenditure	Profitability	Positive	Australia
Bourne. 2008.	Survey of 196 firms	Training policy	Profitability, ROA	No Correlation	UK
Chen. 2008.	Data on 802 public accounting firms from 1992 to 1995	Training hours per employee	Profitability	Positive	Taiwan
Chochard. 2011.	Interviews with supervisors and participants of leadership training programs at ten Swiss firms	Training expenditure per employee	ROI	Positive	Switzerland
Cosh. 2003.	Survey of 2,500 firms	Training expenditure per firm and per employee	Profitability	Mixed	UK

Study	Sample	Training Indicator	Financial Indicator	Results	Country
d'Archimoles. 1997.	Survey of 42 firms	Training expenditure as a percent of total wage costs	ROCE	Positive	France
Danvila del Valle. 2009.	Survey of 40 private security firms	Training expenditure per employee, number of different training courses given, training hours per year per employee	Profitability	Positive	Spain
Doucouliagos. 2000.	Case studies of five large and two small employers collectively employing 70,000 people	Training expenditure per firm	ROI	Positive	Australia
Faems. 2005.	Survey of 416 firms with 10 to 100 employees	Training policy	ROE	No Correlation	Belgium
Hansson. 2007.	Survey of 5,824 firms with 200 or more employees	Training expenditure as a percent of wage bill and as percent of workforce trained	Profitability	Mixed	26 countries
Jones. 2011.	Data from 233 banks	Training expenditure per employee; training days per employee	Profitability	No Correlation	Finland
Kim. 2013.	Survey of 359 firms with more than 100 employees	Training policy	Profitability	Mixed	South Korea
Leitner. 2001.	Survey of 100 firms employing 20 to 500 people	Training policy	Profitability	Positive	Austria
Meschi. 1998	Survey of 102 firms with 250 or more employees	Training expenditure as a percent of wage bill; training policy	ROI	No Correlation	France
Mohrenweiser. 2009.	Government data for 1,879 private-sector firms with 20 or more employees	Apprentices as a share of semi- and un-skilled workforce	Profitability	Mixed	Germany

Study	Sample	Training Indicator	Financial Indicator	Results	Country
Morrow. 1997.	Evaluations of 18 managerial, sales and technical employee training programs conducted over four years by a Fortune 500 firm	Training expenditure per employee	ROI	Positive	US
Newkirk-Moore. 1998.	Survey of 152 community banks with less than US$500 million in assets	Training policy	ROA, ROE	Mixed	US
Park. 2011.	Survey of 454 firms with more than 100 employees in 2005 and 2007	Training expenditure	Profitability, ROA	Positive	South Korea
Percival. 2013.	Annual surveys of 3,528 firms from 1999 to 2005	Training expenditure	ROI*	Mixed	Canada
Storey. 2002.	Survey of 314 firms with sales between £6 million and £500 million	Training policy	ROCE	Positive	UK
Sung. 2014.	Surveys of managers and employees at 207 manufacturers	Training policy	ROA	Mixed	South Korea
Úbeda-Garcia. 2013.	Survey of 112 hotels	Training policy	Profitability	Positive	Spain
Vanhala. 2006	Surveys of 91 firms in the metal industry and retail trade between 1997 and 2000	Training policy	Profitability	Positive	Finland
Wright. 1999.	Survey of 38 refineries	Training policy	Profitability, sales growth	Negative	US
Zwick. 2007.	Government survey data from 1997 to 2004 covering up to 6,000 firms	Apprentices as a share of workforce	Profitability	No Correlation	Germany

ROA=return on assets
ROI=return on investment
ROCE=return on capital employed
FTE=full-time employee
*ROI here refers to the company's returns on its training expenditures

The studies reviewed used a variety of measures of profitability, including return on assets, return on investment, return on equity and profit margins. The majority found positive correlations to training. One of the most comprehensive was a study of Australian companies that examined training expenditure per firm and profitability at 3,569 firms with fewer than 200 employees. It had a large sample size as well as access to data between 1994 and 1998, allowing it to track unit performance across time instead of just taking a one-time snapshot as most studies do (i.e., it was a longitudinal study instead of a cross-sectional one). It found that firms which had increased training in one year reported significantly higher profitability the following year.[39]

The study with the largest sample size also found positive links between training and profits, although the robustness of its sample was offset by its cross-sectional nature. It used data from the Cranet survey, which was established in 1989 by the UK, Germany, France, Sweden and Spain and coordinated by the Centre for European Human Resource Management at the Cranfield School of Management in Cranfield, England. Although the survey has been conducted multiple times, each one is based on a random sample of companies and therefore does not allow for longitudinal analysis. The 2007 study we reviewed used 1999 data on 5,824 private-sector companies with 200 or more employees in 26 countries, most of them European with a few others, including Australia, Israel, Japan and Tunisia (but not the United States). It found positive correlations between the percent of total wages spent on training and whether firms described themselves as in the top 10% of their industry in profits. The study also looked at a variety of other factors that might correlate to self-described profit performance. It concluded: "Apart from the firm's past profitability, the amount invested in training is the most important factor in explaining the probability of belonging to the top 10 per cent in profitability in an industry. This result also contributes to the existing literature by confirming previous country-based findings on the profitability of training investments that, from a global sample of firms, suggest that training investments generate considerable gains."[40]

Another large-sample cross-sectional study found positive correlations between training expenditure per firm and profit margins over the prior three years, although it uncovered none of statistical significance for expenditures per employee.[41] This research also was significant because it assessed training in Britain, which has one of the most comprehensive national training efforts. The government began a program in 1990 called Investors in People (IIP) that was intended to create "a national framework to link the process of setting business objectives with staff development to improve business performance."[42] IIP has changed over the years but essentially bestows public recognition through accreditation on firms that engage in training and other employee development efforts.[43] By 1999, the time of the survey used in the study, 29% of the 2,500 firms

sampled already participated in IIP. The study found that IIP participation was closely associated with effective training programs, and that firms spending more on training had higher profit margins. A more recent survey in 2010 of studies of IIP largely confirmed the positive correlations between training expenditures and financial performance, including three that found links to publicly reported profits.[44]

Five studies found no correlations, although most looked at training as part of an examination of other HR policies which did turn out to have positive associations with investment outcomes. This was the case with one of the largest, a 2007 study that used German government survey data from 1997 to 2003 ranging from 9,000 business establishments in 1997 to 16,000 in 2004. It found no correlation between profits and full-time apprentices as a share of firm's workforce.[45] The paper did find positive associations with the existence of works councils.[46]

Eight papers showed a mix of outcomes. The largest involved 2009 research that used the same German government data set, this time looking at 1,879 firms with 20 or more employees. It measured training by looking at companies' use of apprentices as a share of employment of semi- and un-skilled workers. This ratio turned up positive associations with gross profits per capita in trade, commercial and construction occupations, but negative correlations for manufacturing occupations.[47]

We found one study that came up with negative correlations between training and investment outcomes. It examined a group of seven training policies, such as hours of training and amount of money spent on training, and found that they were associated with lower profit margins in 1993 as well as lower five-year profit growth ending in that year. However, this research, which involved a survey of 38 US refineries, also found positive results for other HR policies unconnected to training such as pay for performance, appraisals and employee participation systems. The authors were surprised by the training results and speculated that they may have stemmed from the capital-intensive nature of refining. "In many cases the technology used is aimed at decreasing the skill requirements and discretion of operators," they said.[48]

Corporate Strategy

Despite the accumulation of positive findings over many markets and years, treating training as a factor in investment decisions still presents a variety of challenges. Because the majority of research on the topic is written from the perspective of corporate managers, much of it is concerned with performance metrics that are not easily quantified or publicly reportable in a standardized fashion. (There are other issues as to whether

such managers are the appropriate persons to be asked about policies and the accuracy of their answers.[49]) Although most of the studies we reviewed found superior investment outcomes among firms that train more or have well-developed training policies, such factors are only starting points. While expenditures offer a robust signal investors can use to rate corporate behavior, other factors come into play as well. Among them: how a company fits training into its competitive strategy, whether it can make effective use of the employees it trains and whether they factor in the national training and education policies of the countries in which they operate.

Several researchers have made this point, arguing, for example, that companies should train only as part of a corporate strategy based on higher skills. "The implication is that the company must first develop a business strategy in which the skills of its employees are seen as providing a source of competitive advantage," suggested a 2006 paper on training and strategy.

> "Our model therefore suggests that it is not always useful to exhort all employers to train more. For some employers (with their specific competitive strategy), training beyond the operational level is pointless and counter-productive. Resources devoted to such an 'undifferentiated' skills policy are likely to be wasteful. Perhaps a first step here is to determine how these competitive strategies and their component technical and interpersonal relations differ between sectors. If, as some evidence suggests, business strategies vary significantly across sectors, then there will be little point in spending resources on convincing employers of the need for training if their business strategies are centred around standardised technical relations and task focussed interpersonal relations."[50]

Others have expanded on this point, by, for instance, suggesting that companies can reap the most benefit if they develop formal plans to align training with their strategic needs.[51]

Others suggest that companies should tailor training to different markets in which they operate. Another study using the 1999 Cranet data described above found no correlation between training and self-reported profitability relative to other firms. This one, done in 2008, focused on a sample of 5,189 businesses in 14 European countries. It looked at training policy rather than expenditures and used a different definition of profitability than the first Cranet study, but found no connection. Instead, the authors determined that national policies affected training results – even at a very broad level such as the share of GDP spent on education. Their findings: "in countries that spend more on education, employee training has a negative effect on firm performance, while in countries that spend less on education, employee training has a positive effect on firm performance." Companies therefore may

waste resources training employees in countries with good education systems but profit from doing so in markets with significant skills gaps. "So, if firms want to increase their performance, they need to take into account the national levels of expenditure on education and align them with organizational-level training," they wrote.[52]

The type of training can also make a difference in terms of its impact, and it is not always easy for investors or others outside the company to understand the nature of the training. A counter-intuitive argument made by some analysts holds that companies gain more if they provide general rather than firm-specific training. Although we found no comparisons of the two kinds of training relative to investment outcomes, a 1999 paper on surveys of 215 nationally representative Irish companies found positive effects of general training on productivity growth but no effects from specific training. The conclusion they draw is that employees put less effort into specific training because it does not benefit them as much.

> "As we argued above, employees are not mechanical black-boxes into whom training is injected. Rather they are rational players who must choose the amount of energy they will devote to turning the training they receive into additions to their human capital. Training which increases an individual's wage with both the existing employer and potential employers provides greater incentives for effort than training which only increases wages with the existing employer. This view of the training process is true whether the employees pay for the training themselves, as predicted by Becker, or the employer pays."[53]

Their argument may help to explain why so much of employer-provided training is general in nature and thus of benefit to future employers as well as the current employer, and perhaps as well as to the economy as a whole.[54]

The general nature of much training raises another question researchers have grappled with for years, namely how much of what employees learn in training is actually applied in practice. The issue has spurred decades of research into what is often referred to as "the transfer of training," meaning how employees transfer the training they receive to the job they perform. As early as the 1980s academics found evidence that significant amounts of training were wasted because companies paid too little attention to the transfer challenge. This was explained in a 2014 study that brought the problem into focus from the perspective of firm performance (although it did not use investment outcomes as the yardstick). It surveyed 150 professionals who belonged to a national training association in Canada and found that those who described higher degrees of transfer also reported that their firms performed better than rivals over the prior three years on outcomes such as quality of products and services and customer satisfaction.[55]

The transfer issue poses a challenge for investors, who are likely to find it difficult to obtain reliable information on how companies deal with it. Information on training expenditures and even policy is self-reported and unaudited for the most part, but it involves hard numbers and written documents. Reporting on transfer success requires firms to make many more judgment calls that seem likely to inhibit vigorous reporting.

Cost-Benefit Analysis

Even if companies successfully transfer training and reap financial gain from it, there remains a question about its cost. In theory this should be answered by the accumulation of studies finding higher profits at firms that train more. The regression analyses most employ are designed to eliminate other potential factors that might lift returns at such companies, which implies that the better returns are net of costs. But this is not assessed directly.

Over the years, several studies addressed the cost/benefit issue by attempting to assess all the costs companies incur when they train and to capture the benefits that can result. One of the earliest studies to focus on a specific company was done with the personnel records of 19,000 employees at a large U.S. manufacturing firm.[56] The author used the documents

> "to calculate the per-participant direct costs of a day of training, which includes the salaries of the trainers and the costs of materials, room, and board. The indirect costs of training were calculated from data on the salaries of the trainees. Direct and indirect costs were then summed to determine the per-participant training cost. On average, during the 1986-90 time period, it cost the company $1,440 to provide 1 day of training to an employee."

The author then determined the wage gains attributed to the training, which she argued gave a conservative estimate of the productivity improvements the firm saw from the training. She calculated different estimates of the company's net return using a variety of assumptions about how quickly the skills employees acquired depreciated over time. For example, a depreciation rate of 10% a year implied that the company earned "34.6% on employee development training and 36.6% on technical training." The writer came up with similar results in a subsequent study that analyzed corporate records of a New Jersey manufacturing firm, a New Jersey service firm and the Garrett Engine unit of Allied Signal.[57]

Three other studies came to similar positive conclusions about the net returns to corporate training expenditures. One looked at leadership training programs at ten Swiss firms.[58] Another analyzed seven Australian firms that collectively employed

70,000 people.[59] A third evaluated eighteen managerial, sales and technical employee training programs conducted over four years by a Fortune 500 firm.[60]

Although these findings bolster those who found higher profits at companies that trained more, they only analyze a handful of firms. This leaves open the possibility that some or even a significant portion of companies might lose more than they gain from training programs. Some research has found that to be the case. A 1996 study attempted to quantify training costs and benefits through a survey of 50 Canadian organizations, 42 of them mostly small- and mid-sized companies (the other 8 were government entities). The survey asked companies to quantify benefits such as fewer injuries and absentees, lower scrap and waste rates, fewer delays, less turnover, less overtime, and increased productivity, which was quantified by assigning work hours saved. Costs included direct training and equipment cost as well as staff time to develop a training program. A benefit-to-cost formula standardized results, which showed that 30% of the organizations enjoyed extraordinary returns ranging from $10 for every $1 spent to $46.3. Another 52% saw returns of $1.1 to $9.9 per $1 spent. However, the remaining 18% were breakeven or even lost more than they gained.[61]

Findings such as these raise some uncertainty for outside observers such as investors, who have few avenues for determining whether corporate training programs are effective.

Still, the overall conclusion from the studies we review strongly suggests that there is a significant payoff to training. A number of researchers have argued that many companies still underinvest in their workforce skills. Bassi has maintained that at least part of the reason lies with the lack of public reporting and the resulting lack of appreciation of the importance of training by investors, as well as the time lag between when training occurs and when any benefits translate to the bottom line.

> "Why would firms ignore the obvious and under-invest in this particular factor? Consider two organizations that are identical in all but one respect: Company A makes substantial investments in skills, while Company B does not. What will be evident to any investor comparing the companies' income statements is that Company A has higher overhead (SG&A) and correspondingly lower reported earnings than Company B. What will not be evident, however, is that some of what were classified as `expenses' for Company A is actually an investment in future productivity. Consequently, Company A's stock prices would be expected to be lower – at least in the short-run – than Company B's. The decision of Company A to invest in learning and development thus occurs despite pressures from financial markets. All firms – even those that have made significant human capital investments in the past – continually face this structural pressure to cut those investments in the short run to generate temporary increases in earnings."[62]

Section Two: Work Systems

The links between investment performance and how companies manage human capital overall are even more complex than the ties to employee training. The general theory is analogous: firms are more competitive if their work systems are designed well and function effectively to make the most of employee talent and skills by stimulating worker engagement and commitment on the job. But training is a relatively distinct activity, even if it can be general or firm-specific in nature. By contrast, human resource management systems consist of multiple policies and practices, sometimes dozens, which have been found to be more effective when implemented in coordination with each other as part of an HR strategy which, in turn, fits with a company's overall competitive strategy in its industry. All this makes it more difficult to determine exactly which HR policies spur performance and in what combination. It is all the more demanding to tell whether companies with the best policies actually implement them well in practice.

The broader scope of corporate work systems has spurred many more studies than have been done on training. As mentioned in the introduction, training often is seen as just one of numerous HR policies companies should adopt. As with training, these studies have looked at many aspects of corporate performance. Forty-five of the 56 identified that focused specifically on investment outcomes uncovered positive correlations. Another nine found a mix of positive, negative or no correlations and two found no correlations. The complexity of human resource systems has introduced more uncertainty than is found in most training research. Training has typically been perceived as having the potential to more directly affect corporate profitability, while HR policies are more likely to do so through intermediate effects such as increased employee motivation, which in turn can improve productivity, customer satisfaction or the quality of goods and services a company produces. Still, the accumulated findings offer substantial empirical evidence for the materiality of HR policies. As is the case with the training literature, these findings stretch over several decades and dozens of countries, lending them added weight.

Table 3: HR Policy Studies

Study	Sample	HR Indicator	Financial Indicator	Results	Country
Akhtar, 2008.	Survey of a 465 manufacturing and service firms	HR policy	Profitability, ROI	Positive	China
Bae. 2003.	Survey of 680 firms	HR policy	Profitability	Positive	Taiwan, Thailand, Korea and Singapore
Bassi. 1998.	Survey of 500 firms with more than 50 employees	HPWS	Profitability	88% of firms with HPWS reported higher profitability than peers vs. 60% of those without	US
Bassi. 2007.	Survey of 11 financial services firms	HR policy	TSR	Positive	US
Bauer. 2009.	2,265 bonds issued by 568 firms between 1995 and 2006	HR policy	Stock volatility, credit risk	Firms with better HR management had lower stock volatility and credit risk	US
Becker. 1998.	Surveys of 4,000 firms with more than 100 employees in 1992, 1994 and 1996*	HPWS	ROA	Positive	US
Bjorkman. 2002.	Survey of 62 multinational manufacturing firms	HPWS	Profitability	Positive	China
Bourne. 2008.	Survey of 196 firms	HPWS	Profitability, ROA	Positive	UK
Bourne. 2010.	Survey of 403 firms	HPWS	Profitability, ROA	Positive	UK
Chang. 2013.	Survey of 74 manufactur-ing firms with at least 100 employees and $50 million in annual sales	HPWS	ROA	Positive	US
Collins. 2006.	Survey of 323 small firms	HR policy	Profitability	Firms with better HR management posted 23% higher profit growth over one year	US
Cowling. 2008.	Survey of 2,500 firms	HR policy	Profitability	Firms without better HR management would earn higher gross profits per employee if they adopted them	UK
Delery. 1996.	Survey of 216 banks	HPWS	ROA, ROE	Positive	US

Study	Sample	HR Indicator	Financial Indicator	Results	Country
Deloitte. 2002.	Data on 200 firms, 80% publicly traded	HR policy	TSR	Firms in top quartile of HR management averaged 15% TSR over five years; those in second and third quartiles averaged 4.98%; those in the bottom quartile averaged -10%	US, Canada
Derwall. 2007.	Surveys of 633 firms in the Dow Jones Global Index	HR policy	TSR, Tobin's Q, ROA	Mixed	31 countries
Dolan. 2005.	Survey of 180 large firms	HR policy	ROCE	Positive	Spain
Ellinger. 2002.	Survey of 208 manufacturing firms	HR policy	ROA, ROE, Tobin's Q	Positive	US
Faems. 2005.	Survey of 416 firms with 10 to 100 employees	HR policy	ROE	Mixed	Belgium
Gooderham. 2008.	Survey of 3,821 establishments	HR policy	Profitability	Mixed	16 European countries
Guest. 2001.	Survey of 82 firms that were members of the Involvement and Participa-tion Association	HR policy	Profitability	Positive	UK
Guest. 2003.	Survey of 366 firms with 50 or more employees	HR policy	Profitability	Mixed	UK
Harter. 2003.	Employee surveys at 44 firms	Employee engagement	Profitability	Positive	Australia, Canada, Hong Kong, South Korea, UK, US
Horgan. 2005.	Survey of 81 Irish firms and 311 Dutch firms	HPWS	Profitability	Mixed	Ireland, Netherlands
Huselid. 1995A.	Surveys of 968 large firms with more than 100 employee in 1992 and 740 in 1994	HPWS	Tobin's Q	A one standard deviation increase in HPWS correlates to increased market value of $38,000 to $73,000	US
Huselid. 1995B.	Survey of 968 firms in 1992 with more than 100 employees	HPWS	Profitability, Tobin's Q	A one standard deviation increase in HPWS correlates to increased profit per employee of $3,814	US
Huselid. 1996.	Surveys of 218 firms	HPWS	ROA, Tobin's Q	Positive	US

Study	Sample	HR Indicator	Financial Indicator	Results	Country
Huselid. 1997A.	Survey of 293 firms	HR policy	ROA, Tobin's Q	Positive	US
Huselid. 1997B.	Survey of 702 publicly held firms with more than 100 employees and $5 million in sales	HPWS	Tobin's Q	Positive	US
Ichniowski. 1990.	Survey of 65 manufacturers	HR policy	Tobin's Q	Positive	US
Khatri. 2000.	Survey of 915 large companies	HR policy	Profitability	Positive	Singapore
Kruse. 2012.	Surveys of 780 firms that applied for the 100 Best Companies to Work For in America list between 2005 and 2007	HPWS	ROE	Positive	US
Lam. 1998.	Survey of 235 large firms in 14 industries	HR policy	ROA, market value	Positive	US
Lee. 1996.	Survey of 48 firms listed on the Korea Stock Exchange	HR policy	ROA, ROE	No correlation	South Korea
Lee. 1999.	Survey of 129 manufacturers in automotive parts, electronics, machinery and textiles	HR policy	ROA	Positive	South Korea
Liouville. 1998.	Survey of 271 small and mid-sized industrial firms in Eastern France, 75% of which considered themselves as family firms	HR policy	Profitability	Positive	France
Mitchell. 1989.	Survey of 495 business units	HR policy	ROA, ROI	Mixed	US
Molina. 2002.	Survey of 405 firms	HR policy	TSR, Tobin's Q	Positive	US, Canada
Ngo. 1998.	Survey of 253 multinationals with more than 50 employees in Hong Kong	Training policy	Profitability	Mixed	Hong Kong
Ngo. 2008.	Survey of 600 firms	HR policy	ROA, ROI	Positive	China

Study	Sample	HR Indicator	Financial Indicator	Results	Country
Patterson. 1998.	Survey of 67 manufacturers with 60 to 1,000 employees	HR policy	Profitability	Positive	UK
Patterson. 2004.	Survey of 80 manufacturing firms with 60 to 1,150 employees	HR policy	Profitability	Positive	UK
Paul. 2003.	Survey of 35 software firms based in Bangalore or Chennai and started before 1997	HR policy	Profitability, ROI	Positive	India
Richard. 2001.	Survey of 73 banks in California and Kentucky	HR policy	ROE	Positive	US
Rodríguez. 2003.	Survey of 120 manufactur-ing firms with 100 or more employees	HR policy	ROA	Positive	Spain
Snell. 1995.	Survey of 102 single business unit firms with revenue and assets great than $10 million and at least 250 employees	HR policy	ROA	Positive	US
Stirpe. 2009	Survey of 96 firms with 11 to 99 employees	HPWS	Profitability	Positive	UK
Tamkin. 2008.	Survey of 2,500 firms with 25 or more employees	HPWS	Profitability	A 10% increase in HPWS correlates to an increase in gross profits per employee of be-tween £1,083 and £1,568	UK
Thang. 2005.	Survey of 137 companies in Ho Chi Minh city with at least 100 employees	HR policy	Profitability	Positive	Vietnam
Vandenberg. 1999.	Survey of 3,570 employees at 49 life insurance firms	HPWS	ROE	Mixed	US, Canada
Vanhala. 2006.	Surveys of 91 firms in the metal industry and retail trade between 1997 and 2000	HR policy	Profitability	No correlation	Finland

Study	Sample	HR Indicator	Financial Indicator	Results	Country
Watson Wyatt. 2002.	Surveys of 750 firms with at least 1,000 employees and $100 million or more in revenue or market value	HR policy	TSR, Tobin's Q	Firms with low scores on an HR policy index averaged 21% TSR over five years; medium scorers averaged 39%; high scorers averaged 64% years.	US, Canada, 16 European countries
Wright. 1999.	Surveys of 38 refineries	HR policy	Profitability	Positive	US
Wright. 2003.	Survey of 5,635 employees at 50 largely autonomous business units of a large food service firm	HPWS	Profitability	Positive	US, Canada
Wright. 2005.	Surveys of 13,005 employees at 45 business units of a large food service firm	HR policy	Profitability	Mixed	US
Yanadori. 2014.	Survey of 17,697 non-managerial employees at 4,000 workplaces	HPWS	Profitability	Positive	Canada
Vermeeren. 2014.	A survey of 162 Dutch nursing and home care firms	HR policy	Profitability	Positive	Netherlands

FTE=full-time employee
HPWS=high performance work systems
HR policy=human resource policy
ROA=return on assets
ROE=return on equity
ROI=return on income
ROCE=return on capital employed
TSR=total shareholder return
*The authors did not specify the number of firms surveyed in each year

Studies of work systems proliferated in the 1980s after U.S. manufacturers realized that Japanese firms sometimes bested them on price and quality in large part due to their HR policies. As research expanded on U.S. firms, the initial focus was on discrete policies such as teamwork production methods, employee involvement in decision-making, job rotation and pay for performance. It quickly became apparent that these policies frequently worked in tandem with each other and needed to be considered as elements of a whole. Some researchers lumped together those that deal with a specific facet of HR management, such as employee compensation. One of the first studies to consider investment outcomes found positive correlations to return on assets and return on investment among 495 business units drawn from a sample of private-sector U.S. employers and a suite of alternative pay systems, including profit-sharing, gain sharing, employee stock options, employee stock ownership plans and production incentive or bonus plans.[63]

As the field evolved, experts pointed out the need to examine policies across all aspects of HR management. One spur was an influential 1996 study which found that five papers had used a total of 27 different variables, with a relatively low degree of overlap among them.[64] An analysis published the following year warned that it could be "a recipe for disaster" if companies adopted policies that make sense in isolation but not when applied with other policies.

> "Simple examples can be found in firms that invest in sophisticated performance management systems only to adopt compensation policies that provide for little meaningful economic distinction between high and low performing employees; or firms that encourage employees to work together in teams, but then provide raises based on individual contributions."[65]

HR Policy Bundles

Since then many researchers have attempted to identify the most effective sets of policies, which often are referred to as "bundles." As a 2005 paper said: "it is not practices per se that make the difference but the degree to which they align with each other to create meaningful 'bundles' of practice. Various studies have found that adoption of single practices does not deliver the same improvement of results."[66]

The 2003 British Task Force on Human Capital Management mentioned above commissioned surveys to identify the use of bundles both in the UK and in 13 other countries:

> "We concluded that there is no single set of HCM practices widely accepted as 'best practice' applicable to all organisations, nor agreement on a set of universally relevant indicators. However, there is a reasonable consensus on the range of practices that might be relevant dependent on the particular circumstances of the organisation and the business strategy it is following."[67]

There has been less agreement on what to call such bundles and what each might encompass. Some experts have used generic terms such as HR management while others attempt to identify what have been termed "high-performance work systems." A 2013 paper summarized the latter school of thought:

> "A number of different labels have been used to describe research on the relationship between work and employment practices and performance, including high performance work systems, high commitment work systems, high involvement work systems and high performance human resource management. The common finding emerging from these studies is that achieving and sustaining high levels of performance requires a combination of workplace innovations to leverage employees' knowledge and ability to create value and coordinate their efforts to work together. That, in turn, produces and sustains a positive workplace culture and practices. While the specific practices need to be tailored to fit different industries and occupations, they generally include selection, training, mentoring, incentives, knowledge-sharing, engaging front-line workers in operational decisions, and partnership based labor-management relations and other shared decision making mechanisms to address broader issues. These practices were found to be most effective when implemented together and in concert with new capital or technological investments."[68]

Our survey of the field encompasses all the approaches. For the sake of simplicity we have chosen to use the term human resource (HR) to characterize the literature. A sample of the dozens of HR policies assessed by researchers can be seen in Table 4.

Table 4: Types of HR Policies

Compensation and Benefits
Pay for Performance
Formal Appraisal for Pay
External Pay Equity/Competitiveness
Incentive Compensation
Comprehensive Benefits
Profit or Gain Sharing
Group-Based Pay
Pay for Skills/Knowledge
Employee Stock Ownership
Bonuses or Cash for Performance
Equitable Pay Processes
Public Recognition/Nonfinancial Rewards
Job and Work Design
Decentralized Participative Decisions
Project or Other Temporary Work Teams
Job Analysis
Job Rotation/Cross Functional Utilization
Self-Managed Work Teams (Quality Circles)
Greater Discretion and Autonomy
Job Enlargement and Enrichment
Broad Task Responsibilities
Flexible Work Schedule
Training and Development
Training Extensiveness
Use of Training to Improve Performance
Training for Job or Firm Specific Skill
Training for Career Development
Evaluation of Training
Cross-Functional or Multiskill Training
New Employee Training and Orientation
Recruiting and Selection
Hiring Selectivity or Low Selection Ratio
Specific and Explicit Hiring Criteria
Multiple Tools Used to Screen Applicants
Employment Tests or Structured Interviews

Planning Selection Processes and Staffing
Matching Candidates to Firm Strategy
Innovative Recruiting Practices
Employee Relations
Job Security/Emphasis on Permanent Jobs
Low Status Differentials
Complaint or Grievance Procedure
Measurement of Employee Relations Outcomes
Employee Opinion and Attitude Surveys
Labor Union Collaboration
Social and Family Events and Policies
Diversity and Equal Employment Opportunity
Communication
Formal Information Sharing Program
Employees Receive Market, Firm Performance, or Strategic Information
Employee Input and Suggestion Processes
Frequent/Regular Meetings with Employees
Performance Management and Appraisal
Appraisals Based on Objective Results/Behaviors
Appraisals for Development/Potential
Frequent Performance Appraisal Meetings
Employees Involved in Setting Appraisal Objectives
Written Performance Plan With Defined Objectives
Multisource Feedback and Peer Appraisal
Appraisal Based on Strategic or Team Goals
Promotions
Promotions From Within
Promotions Objectively Based on Merit
Career Planning
Promotion Opportunities (e.g., frequency)
Career Paths and Job Ladders
Succession Planning
Turnover, Retention, and Exit Management
Taken from: Posthuma. 2013. The authors found that these 61 policies appeared a total of 2,042 times in 181 peer-reviewed academic and practitioner studies of high performance work systems published between 1992 and 2011. These included studies that examined correlations to investment outcomes as well as those that looked at other variables.

Some of the early efforts to correlate HR policy bundles to investment outcomes were undertaken in a series of papers in the 1990s by two US academics, Mark Huselid, then at Rutgers University, and Brian Becker of the State University of New York at Buffalo. They largely followed the template Huselid drew up in an initial 1995 study of 13 HR factors using a survey of 968 publicly traded U.S. firms with more than 100 employees. He found positive correlations between an index of these factors and both Tobin's Q and gross returns on capital. While much of the research in the field stops with such regression analysis, Huselid went on to estimate that a one-standard deviation increase in the index was associated with an $18,641 gain in market value per employee and a $3,814 increase in profits per employee.[69] These were intended as an approximation rather than a hard-dollar estimate given the underlying assumptions. For example, Huselid held other variables at their means and "arbitrarily" assumed that the returns accrued over a five-year period at an eight percent discount rate. This kind of analysis also provides only implicit estimates of the cost companies incur in adopting such HR policies. Still, his point was to offer some estimate of the practical effects of increasing use of these practices. He and Becker came to similar conclusions in five more studies using various surveys of U.S. companies over the subsequent several years.[70]

Many others have created similar indices of HR factors as a way to measure links between bundles of policies and performance. One of the most sophisticated efforts came in a four-year British project called People and the Bottom Line. Researchers created a model with 40 human capital measures that were the basis for a survey of 2,905 British employers with 25 or more employees, including 2,500 private-sector ones. Responses were organized into four indices including training; employee involvement in decisions; HR strategy; and recruitment. Regression analysis was used to look for correlations to gross profits per employee, operating profit per employee and profit margins per employee. The authors found only weak correlations to each separate policy bundle, but strong ones for the four indices taken as a whole.[71] They then used the private-sector firms' reported financial data to estimate the gains to companies with higher overall index scores. The authors described their findings as follows:

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

- an increase in gross profits per employee of between £1,083 and £1,568.
- an increase in operating profit per employee of between £1,139 and £1,284.
- an increase in profit margins per employee of between 1.19 per cent and 3.66 per cent (i.e. the ratio of profit over sales)."[72]

Still, as with Huselid and others who translate correlations into actual profit numbers, the assumptions involved in such estimates make them less robust than the specificity of the figures might suggest.

Indices of HR policy have been used extensively in practitioner literature, which often was designed to support company decision making and therefore did not always present underlying details on data and methodology as is common among academic studies. For example, a 2002 study by Watson Wyatt (now part of Towers Watson) started with 1999 surveys of HR policies at 400 publicly traded U.S. and Canadian companies. It then conducted regression analyses to search for correlations to market value, three- and five-year total shareholder returns and Tobin's Q. It concluded that a bundle of 30 practices correlated to an average 30 percent increase in market value. The firm conducted a similar survey the following year of 250 firms in 16 European countries and came to a comparable conclusion, identifying 19 HR policies associated with a 26 percent increase in market value. Finally in 2001 it repeated the North American survey with 500 companies, 51 of which had participated in the 1999 survey. The two data sets were merged into one with more than 750 companies in the United States, Canada and Europe with at least three years of shareholder returns, 1,000 or more employees and a minimum of $100 million in revenues or market value. The study then created what it called a Human Capital Index (HCI) based on the HR factors identified. It stated that "[t]he higher a company's HCI score, the higher its shareholder value. In other words, the better an organization is doing in managing its human capital, the better its returns for shareholders. We broke the companies into three groups based on their summary HCI scores. Those in the low group averaged a 21 percent five-year return. The medium group averaged 39 percent. Those with high HCI scores returned 64 percent over five years."[73]

A 2009 paper used an index to evaluate the relationship of HR to credit risk. What the authors termed as an Employee Relations Index drew on HR factors identified by Huselid and others. They employed it to analyze 2,265 bonds issued by 568 U.S. firms between 1995 and 2006 and found that companies with higher scores had lower cost of debt, lower credit risk, higher credit ratings and lower stock volatility. For example, a one-point increase of the index score was associated with a decrease in the annual yield spread of two to four basis points.[74]

Over the years, a handful of the 56 studies have found mixed correlations between HR policies and financial performance, and two found none at all. One of the latter, published in 1996, surveyed 48 manufacturing firms listed on the Korea Stock Exchange, asking senior managers or executives about ten HR policies relating to employee participation

as well as questions about the company's HR strategy. The paper used statistical analyses to assign firms to four groups according to the way firms employed various HR policies. Regressions turned up no associations to prior three-year return on assets or three-year return on equity.[75]

Nine other papers from a variety of countries uncovered positive correlations for some outcomes and none for others. The largest was based on two years of survey data submitted by 633 firms that were among those included in the Dow Jones Sustainability Index.[76] The author drew up four different indices drawing on HR bundles studied in other papers. Only one index, comprised of policies on training and skills gap measurements, showed positive associations to two financial outcomes, return on assets and Tobin's Q. However, it did not correlate to prior three-year total shareholder returns. The other three indices did not correlate to any of the financial outcomes.[77] The author's conclusion: "Taken as a whole, the important message that emerges from the analyses so far is that some, but not all, elements of human capital management display a relation with firm valuation.[78]

The "Black Box" Question

Although these and the other studies in Table 3 establish links between HR policies and financial performance, researchers are still working to document and measure the complex intervening organizational processes between the two. This is frequently referred to as the "black box" problem. One difficulty lies with the multitude of potentially mediating factors and intermediary outcomes that have been positively associated with HR policies. Productivity has been the most studied outcome, but so have many other plausible candidates for boosting financial performance such as employee satisfaction, customer satisfaction and quality improvements. For example, employee involvement in decision-making may improve job satisfaction, which in turn can lead to higher productivity and therefore higher profits.

Some papers have acknowledged the black-box concern without attempting to address it.[79] Other authors have made assumptions about the chain of causal factors that come into play. For example, the bond study asserted that firms with higher scores – i.e., better HR practices –

> "preempt or mitigate the harmful behavior of dissatisfied employees. In contrast, poor employee relations can limit firms' access to human capital, lead to the exit of valuable employees, increase both litigation and reputation risks, and raise transaction costs. The costs associated with such employment-based risks range from unexpected drains on a

firm's cash balance to a potentially permanent impairment of its financial outlook."

However, none of these factors were analyzed in the paper's regressions, so they really amount to a guess as to what was in the black box.

A 2005 paper analyzed how 104 studies described the black-box linking mechanisms between HR policies and firm performance. They identified only 20 that explicitly included such links in their statistical models.[80] Another study sharply critical of the literature identified the dilemma facing all research that correlates bundles of HR factors to firm-wide financial performance: "In other words, the 'scientific approach' states that a statistical relation exists; but it does not explain how and why such a relation exists."[81] To put that another way, many of the studies lacked a causal theory about how HR policies drive performance or advanced theories without attempting to test them empirically.

Nonetheless, over the years a rough consensus view has emerged on the typology of mediating factors that explain why better HR practices are associated with superior corporate performance. Several recent studies have summarized them as falling into three broad categories: Those such as training that expand employee skills; those that offer opportunities to use those skills, such as team systems and better work designs; and those that improve the motivation and commitment to apply them, such as employee involvement in decision making and incentive systems such as profit-sharing and employee stock ownership.[82]

The black-box dilemma poses challenges for investors who want to identify the most effective set of policies. The research we reviewed suggested that such clusters vary by country, by industry and by the competitive strategy adopted by the company. The 2003 UK Task Force on Human Capital Management (HCM) offered one approach, suggesting that companies report publicly on their HCM policies starting with a summary by the board of directors.[83]

The report said:

> "We take as our starting point the need to communicate clearly, fairly and unambiguously the Board's current understanding of the links between the organisation's approach to HCM, its business strategy and its performance. The sort of information that will be most relevant from this perspective includes:
>
> - the organisation's people strategy;
> - how this relates to its business strategy;
> - how it is delivered (policies and practices);
> - assessment of its impact.

We do not wish to be over-prescriptive on the content of such reports, which will need to strike a balance between historic review and focus on the future, but it is possible to identify some areas that are likely to be relevant in the overwhelming majority of cases.

These include:

- the size and composition of the workforce;
- retention and motivation of employees;
- the skills and competencies necessary for business success, and training to achieve these;
- remuneration and fair employment practices;
- leadership and succession planning."[84]

Cause and Effect

A variety of other challenges face investors who want to assess corporate human capital performance as a differentiating factor affecting corporate financial performance. Some involve limitations of the data researchers have been able to gather as well as variations in the quality of the surveys they have undertaken. But the issue that has most preoccupied researchers is how to ascertain cause and effect. The question is whether superior HR policies lead to better corporate financial outcomes, or whether companies that perform better in financial terms adopt such policies, perhaps because they can better afford them.[85] So, at minimum, analyses must take into account – control for – that possibility. Only if companies are more profitable because they adopt better HR policies (or HR policies in conjunction with other actions) would investors look for those that have the best programs and urge firms that do not to consider improvements.

Researchers have devoted significant attention to this question of causality.[86] The bulk of research on both HR policy and training takes a sample or cross section of companies in a market or industry and employs regression analyses to search for statistically significant correlations between those variables and investment outcomes. Many of the samples are snapshots of a particular time, such as performance in the same or perhaps the prior year.[87] But cross-sectional regressions cannot help determine whether a positive finding between say, a bundle of high performance work systems and profits, means that policies produced the better profits or if more profitable firms have more resources to devote to potentially costly policies.

Many researchers have wrestled with the causality question and concluded that it runs from HR policies and training to corporate performance rather than the other

way around. A 2011 review of 62 studies on training and firm performance found that about half used various statistical methods to test for causality.[88] Those findings have been buttressed by a handful of reports that were able to address causality by gathering longitudinal data, which unlike cross-sectional statistics tracks HR policies and corporate performance over several years.[89] Unlike cross-sectional studies, longitudinal studies can look at temporal relationships and therefore suggest, though perhaps not prove, causality.

One longitudinal study was undertaken in a Towers Watson paper that used 1999 and 2001 surveys to directly examine the causal link question.[90] It said that the first one "confirmed that there was a positive relationship between the quality of a company's HR practices and its economic results. But it did not offer resolution to the debate that has raged for years: Do effective HR practices drive positive financial results or do positive financial results lead to better HR practices?"

The paper then analyzed 51 large North American companies that participated in both surveys and concluded: "The cross-lag panel analysis demonstrates HR practices are not only associated with business outcomes, but also create them. Moreover, a careful inspection of all the data shows that for every available correlation calculated over time, the relationship between past HR practices and future financial performance is stronger than the relationship between past financial outcomes and future HR practices."

However, other longitudinal investigations have come to mixed conclusions. A 2013 paper used Canadian surveys that interviewed the same 3,528 firms annually from 1999 to 2005. It found that the companies' return on their training investments were positive across the years in only four of the fourteen industries studied.[91] The study did find positive correlations to firm productivity, leading the authors to hypothesize that companies invest in training to maintain output per employee as technology changed.

Even time series studies like these have not completely settled the issue. A paper on causality several years after the Towers Watson study argued that its findings were not conclusive. "The study demonstrates that HR practices are strongly related to future performance but that they are also strongly related to past performance, suggesting caution among both academics and practitioners in making any causal inferences."[92] Similarly, a 2005 review of 25 papers published in what were termed "reputable refereed journals" concluded that their design relating to causality was "disappointing."[93] The 2011 review of 62 studies found that while correcting for causality still produced positive correlations to financial outcomes, doing so diminished the magnitude of the effect training had on firm performance.[94] Others have questioned the extent of size effect as well.[95] In sum the debate over causality remains a contested one.[96]

Section Three: Employing Human Capital Metrics in Investment Decisions

On balance, the studies we review suggest that HR factors are relevant and material to investors. However, investors face several challenges in attempting to incorporate human capital factors into investment analysis. One of the largest is obtaining sufficient data on relevant corporate policies, which for the most part is not required by regulators or the listing standards of stock exchanges. That the data is unreported does not mean it does not exist. Many companies do keep internal records on training and other HR policies, as evidenced by the voluntary responses to the many hundreds of surveys used in the studies we have reviewed. The 2003 British Task Force on Human Capital Management concluded that companies in the UK and the 13 other countries it studied commonly conduct internal reporting on some of these factors, including employee engagement, training, leadership and career development and remuneration policies.[97] However, it also found that their

> "external reporting is much more limited. Within the UK, those companies that responded to our survey report externally on only a quarter of the HC (human capital) indicators they routinely assess. The usual vehicle for such reporting is rarely the annual report and accounts: more often the information will appear on the company's website or in its CSR report; or the data will be passed to other organisations, assessors or consultants for their own use or analysis."

The Task Force report went on to explain why this is the case.

"UK companies attribute their reluctance to report HCM data more extensively, among other factors, to:

- the commercial confidentiality or sensitivity of the information
- a lack of time and resources
- seeing no value in such reporting
- the absence of clear guidance and universal practice."

Similar conclusions were drawn in a more recent British collaboration among HR management, accounting, and other professional groups called Valuing your Talent, sponsored by the UK Commission for Employment and Skills.[98] The group issued a 2015 report concluding that companies still lag on reporting about human capital management and investors still show a lack of interest in such metrics.[99]

What Companies Should Report?

While commercial confidentiality may pose a problem for investors, the remaining three issues raised by the Task Force could be overcome by widespread demand for this kind of information. Such requests could be made as part of the European Union's rules to be issued in 2017 on mandatory ESG reporting and as part of the debate on the topic at the World Federation of Exchanges.

However, that still leaves the problem as to exactly what data would be most useful to investors. Consider training: Much of the research we reviewed is based on quantifiable metrics such as how much a company spends overall or per employee. But the literature we canvas here makes clear that investors need more information to provide context. Thus, they can consider asking companies for the following:

1. A description of the company's training policy.
2. How that policy relates to the firm's overall HR and business strategies.[100]
3. The kinds of employees trained, such as managerial, technical, production, etc.
4. Whether the training is formal or informal; whether it is provided in or outside the company.
5. Whether and how the company measures the direct and indirect costs of the training and what they are.
6. Outcomes that characterize successful implementation of the policy and how they are measured, such as through key performance indicators. These might be immediate in terms of increased worker knowledge and skills for greater productivity in the case of manufacturing, greater customer satisfaction for higher sales in the case of retail stores, etc. Or they might be aimed at lower turnover with associated cost savings.
7. Any impact the implementation has had on company profits and other measures of financial or other kinds of performance.

Clearly, even if the answers were forthcoming, comparability across companies would be difficult. Other HR policies present other challenges, including complexity, non-comparability, definitional fuzziness, etc. Investors require information analogous to the questions above about training. But more is needed as well. Our review suggests that investors need an accounting of the bundle of policies each company employs, which may vary by country (reflecting legal and socio-cultural assumptions and practices), by industry, by an individual firm's competitive strategy, by product or service, and sometimes even by business unit. (Clearly, for multinational companies with operating units in different countries, the need to report on these variations is particularly important, and difficult.)

One way to start thinking about desired reporting metrics is to draw on policies found to be linked to financial performance, as described in Table 3. Just as with training, investors need an overview of a firm's HR strategy that explains which bundle of policies it employs and why (for each policy and in relation to one another), and how they fit into the overall HR and business strategy. A relevant challenge is that the academic literature has yet to shed much light on how companies should go about choosing particular bundles. Over the years researchers have defined different policy bundles without arriving at a consensus as to which ones are superior. Several literature reviews have counted the different policies used and studied the degree of overlap without finding a conclusive answer.[101] As one noted, "This is a major problem. After all, how can we ever make progress in this field if we do not agree on what constitutes one of the main independent variables, namely HR practices?"[102]

Ideally, companies would publish key performance indicators (KPIs) of their HR policies. Some already do so, mostly for internal management, rather than for public reporting. The Boston Consulting Group has conducted surveys of corporate HR policies since 2007. The most recent, in 2014, received responses from 3,500-plus companies in 101 countries.[103] It found that firms with higher operating margins or sales growth were more likely to use HR KPIs, although it also concluded that those which do only occasionally use them to track workforce productivity or personnel costs. Similar findings emerged from a 2013 *Harvard Business Review* survey of 498 senior executives and board directors from around the world, most of them at large companies. Those who said their firms used sophisticated workforce analytics were also far more likely to say their organization was effective at leveraging their workforce and had engaged employees. Two thirds of them also said their company profitability was "extremely strong" relative to competitors, compared to 27% of those not using workforce analytics. Still, overall some 61% of those surveyed described their use of such data as "tactical, ad hoc, and disconnected from other key systems and processes," and more than a quarter said their firms made little or no use of it at all.[104] The lack of widespread internal use of HR KPIs makes it all the more difficult for investors to ask that companies report such information publicly or to decide on the KPIs and the optimal periodicity of such reports.

How Companies Should Report

Even after grappling with which bundle of policies to use, there remains the question of how exactly to measure them. One issue is who at the company does the actual reporting. The production of corporate financial reports is typically undertaken by a

dedicated staff using well-established protocols and operates within an established control system. Nothing like that exists for social factor reporting. Many of the surveys used in the research we reviewed sought responses from a single manager, executive or HR specialist.[105] A 2013 paper that explored the measurement questions such surveys pose argued that this raises concerns about "low reliability and consistency." It said that "while HR managers may be most knowledgeable about the general existence of certain HR practices within their organization (HR policy), they may be less able to provide accurate information concerning their actual implementation or use (actual HR practice)."[106] They also pointed out that HR managers may have "potential vested interest in HR practices" or may not have a sufficient appreciation "for their staff's skills and abilities" with regard to implementation. The paper suggested that line managers are in principle better positioned to report on how HR policies actually are implemented on the job, since they manage employees day to day. But the authors also noted that efforts by researchers to secure data from line managers have been modest.

Another recent paper offered similar advice, cautioning that HR managers may "have an incentive to overstate the quality of employment practices on the ground and/or underreport incidents of failure to comply with stated company policies or legally required employment standards. This suggests that investors seeking to identify firms that follow socially sustainable practices will need to look carefully at a range of available data sources and develop industry specific knowledge of what it takes to truly achieve high levels of performance and good employment outcomes in a given industry."[107]

One 2004 study of U.K. manufacturers dealt with this issue by conducting what amounted to something like an external audit to identify each firm's HR policies.

> "The larger part of the data was collected through on-site, semi-structured interviews with senior managers and directors. The interviews were conducted with those primarily responsible for each of the practices in question (e.g., the quality manager for TQM, the HRM manager for skills enhancement) and involved checking and rechecking assessments of the use of each and every practice. On average, three different managers or directors were interviewed per company, and the total time spent interviewing was a minimum of three hours.
>
> "Two further types of evidence supported the interviews. One was the collection and examination of relevant company documents. Thus if an interviewee indicated that they had systematic training schedules to enhance shop floor employee skills, then supporting documentation was requested and examined. The other type came from

a tour of the production facility and discussion with shop floor personnel, where it was possible to see and hear about (or fail to observe) evidence of the practices reported (e.g., the amount of computer-controlled equipment, examples of statistical process control charts, or lack of awareness by operators of claimed initiatives)."[108]

Other researchers have gone further to argue that a full understanding of how a company's HR policies work requires interviews with employees. As one author put it, every HR system "works through its impact on the skills and knowledge of individual employees, their willingness to exert effort, and their opportunities to express their talents in their work."[109] Another paper argued along similar lines that "when employees perceive that the intended goals of HR practices are cost-driven, control focused and unlikely to enhance employee well-being, lower levels of satisfaction and commitment result."[110]

A study that canvassed managers and employees at South Korean manufacturers found positive correlations between the total cost of training and return on assets, but only when the training also improved employee commitment.[111] The authors concluded: "This result suggests that organizations will not accomplish the intended benefits of HRD (human resource development) unless they achieve employee buy-in of the HRD programs on the basis of employee perceptions of benefits or genuine care of the management."

Such findings suggest that investors might want to ask companies which individuals were the primary sources for the information. They might consider going further to inquire how the information was provided, for example, whether it was part of a regular report, an occasional survey. One review of the field suggested that instead of sending surveys to HR managers, more reliable data could be gathered from sources such as employee evaluation reports and company assessment centers.[112]

Conclusion

Despite decades of research pointing to the materiality of human capital policies to investment performance, information about such policies has not become a staple of corporate reporting. This has led to some puzzlement among academics, leading one to ask: "Why do we not see more reporting of human capital information in public annual reports?" Researchers have offered several possible reasons. They suggest that companies may be reluctant to assign values to intangibles that would be inconsistent with GAAP. They cite evidence pointing to less transparent disclosure at firms with over-paid managers and with more non-independent board directors. They also contend that uncertainty about the payoff from training budgets may prompt companies to avoid disclosures that may lead to lawsuits or reputation loss.[113]

It also may be the case that companies have not heard consistent requests from investors for such information. This may be somewhat circular: if investors do not see how the effects of human capital policies are reflected in stock prices, they have little reason to ask for data about such policies. Other contributing factors may include investors' lack of awareness of the materiality evidence or companies' unwillingness to invest too heavily in policies that the market seems not to value.

This topic was the subject of a 2007 paper examining the related topic of how employees react to their treatment by companies. The paper, "Does the Stock Market Fully Value Intangibles? Employee Satisfaction and Equity Prices," measured the stock market impact of the release of Fortune magazine's list of the "100 Best Companies to Work For."[114] The author found scant evidence that its publication had an impact on the short-term stock prices of the companies on the list, as would be expected if it filled an information gap in the market. But he did find that companies on the list outperformed peers over the longer term. He concluded that this result

> "suggests that the non-incorporation of intangibles found by prior research does not stem purely from lack of information, but other factors. Even if investors were aware of firms' levels of satisfaction, they may have been unaware of its benefits, since theory provides ambiguous predictions.
>
> "The results also support managerial myopia theories (e.g. Stein, 1988; Edmans, 2009), in which managers underinvest in intangible assets because they are invisible to outsiders and thus do not improve the stock price. Even if managers are able to provide information on the value of their intangibles (e.g. by hiring independent firms to audit their value), the market may not capitalize them."

The 2015 report by Valuing your Talent came to a similar conclusion. It argued that

investors do not ask companies for human capital metrics because many

> "are effectively 'blind' to such data. Even when companies do provide credible, clear and unambiguous HCM data that has the capacity to enable investors to better understand strategy, performance and valuation, such data is frequently ignored because many investors don't recognise this information as powerful and pertinent."[115]

The document's call for investors and companies to embrace the need for more such data was endorsed by a variety of British business and political leaders. One was the Secretary of State for Business, Innovation and Skills, who cast the issue as one element of his effort to combat short-termism in capital markets and promote long-term sustainability.[116]

Our analysis of the literature offers strong support for this call to action. The evidence for human capital materiality is sufficiently compelling to warrant investor requests for companies to report systematically on their training and other HR policies with clarity and depth, which would enable investors to assess their alignment with company's business strategy. Of course, as we have seen, the bundle of approaches that might best suit particular firms may vary by factors such as industry, geographic region and the competitive strategy a company adopts. One avenue for further research would be to explore how investors might determine the specific corporate reporting that can help shed light on these questions. Still, the abundant research suggests that a wide variety of these policies, suitably implemented, can enhance financial performance.

Endnotes

1 Human capital is a phrase widely used to describe the skills, knowledge and abilities employees bring to their jobs. Over the decades a variety of other terms have been used to characterize some or all of these topics, such as human resources, human relations, and high-performance work systems. We use human resource (HR) policy throughout the paper to encompass all these terms.

2 The literature sometimes refers to "policies" but also at other times to "practices". For simplicity we use the former term throughout.

3 Thang, Nguyen; Truong Quang; Dirk Buyens. 2010. The Relationship Between Training and Firm Performance: A Literature Review. *Research and Practice in Human Resource Management*, 18(1), 28-45. http://rphrm.curtin.edu.au/2010/issue1/training.html.

4 Alagaraja, Meera. 2013. HRD and HRM Perspective on Organizational Performance: A Review of Literature. Human Resource Development Review. http://hrd.sagepub.com/content/12/2/117.

5 Harter, James, et. al. 2012. Q12 Meta-Analysis: The Relationship Between Engagement at Work and Organizational Outcomes. Gallup Inc., p. 3.

6 For an explanation of materiality as understood by the SEC see for example: http://www.sasb.org/materiality/important/.

7 Although several formal metastudies have been done in the field, we opted not to conduct one here due to criticisms that studies of training and HR systems have too much diversity of variables, sample sizes and response rates. A metastudy uses statistical techniques to combine results from diverse studies while correcting for disparities such as sampling differences and measurement error. See for example: Wall, Toby; Stephen Wood. 2005. The romance of human resource management and business performance, and the case for big science. Human Relations, 58(4), 429-462. London: The Tavistock Institute.

8 Task Force on Human Capital Management. 2003. Accounting for People Report. UK Department for Trade and Industry. http://webarchive.nationalarchives.gov.uk/20090609003228/http://www.berr.gov.uk/files/file38839.pdf.

9 See https://www.globalreporting.org/reporting/g4/Pages/default.aspx.

10 See http://www.sasb.org/ and http://www.sasb.org/sasb/vision-mission/.

11 See http://www.sasb.org/materiality/determining-materiality/ and http://www.sasb.org/wp-content/uploads/2014/04/Tech-Comms-Due-Process-Review-Report-3.pdf.

12 See http://www.unpri.org/about-pri/the-six-principles/.

13 *Measuring Sustainability Disclosure: Ranking the World's Stock Exchange*s, Corporate Knights Capital, October, 2014. http://www.corporateknightscapital.com/wp-content/uploads/2014/10/CKC_-Sustainability-Disclosure_2014.pdf.

14 The report uses the definition of payroll as defined by the International Financial Reporting Standards.

15 http://www.corporateknightscapital.com/wp-content/uploads/2014/10/CKC_-Sustainability-Disclosure_2014.pdf.

16 The legislation is available at: http://register.consilium.europa.eu/doc/srv?l=EN&f=PE%2047%202014%20INIT.

17 See http://www.ceres.org/investor-network/incr/sustainable-stock-exchanges.

18 See http://www.world-exchanges.org/node/4893.

19 See http://www.iosco.org.

20 Harter, James, et. al. 2010. Causal Impact of Employee Work Perceptions on the Bottom Line of Organizations. Perspectives on Psychological Science 2010 5: 378.

21 Foong, Kee; Richard Yorston. 2003. Human Capital Measurement and Reporting: A British Perspective. London Business School.

22 See http://www.press.uchicago.edu/ucp/books/book/chicago/H/bo3684031.html.

23 Huselid, Mark. 1995B. The impact of human resource management practices on turnover, productivity, and corporate financial performance. Academy of Management Journal, 38, 635-672.

24 For an account of the subsequent impact Huselid's study had see: Kaufman, Bruce. 2010. SHRM Theory in the Post-Huselid Era: Why It Is Fundamentally Misspecified. Industrial Relations, Vol. 49, No. 2.

25 Paaue, Jaap, et. al. 2013. 'HRM and Performance: What Do We Know and Where Should We Go?" Chapter 1 in *Human resource management and performance: Achievements and Challenges*, Edited by Jaap Paauwe, Patrick Wright, and David Guest, Wiley, April 2013, 1-13, 10.

26 Chi, Nai-Wen; Carol Yeh-Yun Lin. 2011.. Beyond the High-Performance Paradigm: Exploring the Curvilinear Relationship between High-Performance Work Systems and Organizational Performance in Taiwanese Manufacturing Firms. *British Journal of Industrial Relations* 49:3, 486-514. More particularly, the authors report that "the relationship between HPWS and organizational performance is an inverted-U pattern for high-technology firms," supporting the "proposition that a moderate level of HPWS adoption outperforms a high level of HPWS implementation owing to cost-benefit trade-offs." By contrast the authors found no statistically significant relationship between HPWS or HPWS squared and organizational performance for "traditional manufacturing firms." Id. at 497.

27 Becker, Gary. 1993. Human capital: a theoretical and empirical analysis with special references to education (3rd ed.). University of Chicago Press. http://www.press.uchicago.edu/ucp/books/book/chicago/H/bo3684031.html.

28 Hansson, Bo; Ulf Johanson; Karl-Heinz Leitner. 2004. The impact of human capital and human capital investments on company performance. Evidence from literature and European survey results. Third report on vocational training research in Europe: background report. Luxembourg: Office for Official Publications of the European Communities, 2004 (Cedefop Reference series, 54). http://www.cedefop.europa.eu/EN/Files/BgR3_Hansson.pdf.

29 More broadly the primary theoretical framework is cast in terms of ability, motivation, and opportunity (AMO). That is, in addition to enhanced worker skills, competencies, abilities strengthening a firm's "human capital base", policies can spur the motivation

and commitment of employees to benefiting the firm and the job can be designed and workers afford means for participation which can "provide opportunities [for them]... to positively affect organizational outcomes." "HRM and Performance: What Do We Know and Where Should We Go" by Jaap Paauwe, Patrick Wright, and David Guest, Chapter 1 in HRM and Performance, Achievements and Challenges, edited by Jaap Paauwe, Patrick Wright, and David Guest, Wiley, 2013, pp. 5-6

30 Hansson, Bo; Ulf Johanson; Karl-Heinz Leitner. 2004. The impact of human capital and human capital investments on company performance. Evidence from literature and European survey results. Third report on vocational training research in Europe: background report. Luxembourg: Office for Official Publications of the European Communities, 2004 (Cedefop Reference series, 54). http://www.cedefop.europa.eu/EN/Files/BgR3_Hansson.pdf.)

31 Wyatt, Anne; Hermann Frick. 2010. Accounting for Investments in Human Capital: A Review. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1674413.

32 Wyatt, Anne; Hermann Frick. 2010. Accounting for Investments in Human Capital: A Review. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1674413.

33 Hansson, Bo. 2009. Employers' Perspectives on the Roles of Human Capital Development and Management in Creating Value. OECD. Education Working Paper No. 18. http://files.eric.ed.gov/fulltext/ED530787.pdf

34 Although some of the studies found no relation to financial outcomes, there is no indication that a correlation or lack thereof was a result of the training variables employed. This was confirmed in a 2011 review of 62 training studies involving 26 countries, which found no significant differences from the definitions of training used. (However, only 14 of the studies it examined used an investment outcome such as profitability and the review did not specifically analyze that subset.) The review is CEDEFOP. 2011. The impact of vocational education and training on company performance. European Centre for the Development of Vocational Training (Cedefop). Luxembourg: Publications Office of the European Union.

35 Tharenou, Phyllis, et. al. 2007. A review and critique of research on training and organizational-level outcomes. Human Resource Management Review 17, 251–273. www.elsevier.com/locate/humres.

36 Nikandro, Irene, et. al. 2008. Training and firm performance in Europe: the impact of national and organizational characteristics. The International Journal of Human resource Management, Vol. 19, No. 11, November, 2057–2078.

37 See https://www.linkedin.com/in/lauriebassi. The Society changed its name in 2014 to the Association for Talent Development. But it is cited as the ASTD in the papers examined in this study so we refer to it that way as well.

38 Bassi, Laurie, et. al. 2004. The Impact of U.S. Firms' Investments in Human Capital on Stock Prices. http://mcbassi.com/publications/mcbassi-papers/. The author found similar patterns for Tobin's Q, sales per employee, income per employee, gross profit

margins, return on assets and market capitalization per employee. She also found a median annual excess return of 2 percent for firms that increased training expenditures, compared to a median of -6.90 percent for those that decreased their spending on training.

39 Bosworth, Derek; Joanne Loundes. 2002. The Dynamic Performance of Australian Enterprises. Melbourne Institute Working Paper No. 3/02, Melbourne Institute of Applied Economic and Social Research, The University of Melbourne, Melbourne. The study used data from Australian government surveys of "business units," which are primarily entire companies except for some large firms that report financial details for divisions. Although the surveys did not name companies and did not use public financial reports, they asked firms to report profitability defined as "the sum of accounting profit, interest expense, depreciation, investment expenditure, leasing capital and R&D expenditure."

40 Hansson, Bo. 2007. Company-based determinants of training and the impact of training on company performance Results from an international HRM survey. Personnel Review, Vol. 36 No. 2, pp. 311-331. Emerald Group Publishing Limited. www.emeraldinsight.com/0048-3486.htm. Note, though, that the author reported finding no correlation between *the proportion of employees trained during any given year* and a company being in that top tier with respect to profitability. In addition, he did not investigate how the correlations he found differ by country even though his data showed considerable variation, from nearly 63% of wages spent on training in Finland to 12% in Bulgaria.

41 Cosh, Andy, et. al. 2003. The Relationship between Training and Business Performance. UK Department for Education and Skills, Research Report RR454. More specifically, the authors concluded: "Training expenditure per firm generally has a positive impact on the change in the profit margin and the impact is greater amongst the smaller firms in the sample. When training is measured by the level of training expenditure per employee, the impact on profit margins is much less significant in both economic and statistical terms." They did not offer theories as to why they found no correlation between training expenditures per employee and profit margins.

42 Gloster, Rosie, et. al. 2010. Perspectives and Performance of Investors in People: A Literature Review. Evidence Report 24. UK Commission for Employment and Skills. http://webarchive.nationalarchives.gov.uk/20140108090250/http://www.ukces.org.uk/assets/ukces/docs/publications/evidence-report-24-perspectives-and-performance-of-investors-in-people.pdf. See also http://www.investorsinpeople.co.uk/.

43 To be IIP accredited, firms must "meet 39 evidence requirements from the core framework." The principles that inform the framework "break down into 10… indicators." Some closely relate directly to HR policies which are the immediate focus of this study, that is they concern whether "'[p]eople's contribution to the organisation is recognized and valued"; "[p]eople are encouraged to take ownership and responsibility by be involved in decision-making"; and "[p]eople learn and develop effectively." "The Standard," Investors in People, 2014. Others pertain to

the existence and nature of a company's overall business strategy and its "people management" strategy, managers' capabilities, etc. As the main text suggests, the ultimate efficacy of HR policies as such depends on the latter organizational attributes.

44 Gloster, Rosie, et. al. 2010. Perspectives and Performance of Investors in People: A Literature Review. Evidence Report 24. UK Commission for Employment and Skills. http://webarchive.nationalarchives.gov.uk/20140108090250/http://www.ukces.org.uk/assets/ukces/docs/publications/evidence-report-24-perspectives-and-performance-of-investors-in-people.pdf.

45 Zwick, Thomas. 2007. Apprenticeship training in Germany: investment or productivity driven? ZAF 2 und 3/2007, S. 193-204. Profit was "calculated by subtracting the expenditure on inputs and the wage sum from the turnover (all divided by the number of employees) and by subsequently taking the logs in order to reduce the impact of outliers on the results."

46 In 1994 the European Union established a right for workers in multinational companies to form groups called works councils to facilitate consultation and information exchange with management. See Vitols, Sigurt. 2009. European Works Councils: an assessment of their social welfare impact. European Trade Union Institute, Working Paper 2009.04.

47 Mohrenweiser, Jens; Thomas Zwick. 2009. Why do firms train apprentices? The net cost puzzle reconsidered. Labour Economics 16, 631–637. Elsevier B.V.

48 Wright, Patrick, et. al. 1999. The role of human resource practices in petro-chemical refinery performance. International Journal of Human Resource Management, 10, 551−571. Taylor & Francis Ltd. All the data, including on profits, came from survey answers provided by refinery managers.

49 That is, there are concerns about "who can provide the most accurate reports of HR practices, what dimensions of the practices provide the most valid descriptions (e.g.; use, coverage, effectiveness, etc.) and the unit of measurement over which one can provide an accurate report of these practices. These different assumptions may each be right, and simply point to different constructs that are being assessed. For instance, Becker and Huselid… and Gerhart… distinguished between the HR policies (i.e. what the organization has defined as the practices that should be used by managers/supervisors) and HR practices (those actually used by a manager/supervisor and their subordinates)." "HRM and Performance: What Do We Know and Where Should We Go?" by Jaap Paauwe, Patrick Wright, and David Guest, Chapter 1 in *Human resource management and performance: Achievements and Challenges* Editors: Jaap Paauwe, David Guest, Patrick Wright, Wiley, April 2013,pp. 1-13, 8-9.

50 Ashton, David; Johnny Sung. 2006. How Competitive Strategy Matters? Understanding the Drivers of Training, Learning and Performance at the Firm Level. Research Paper 66. Warwick Business School, University of Warwick, Coventry, UK.

51 Abdel-Wahab, Mohamed; et. al. 2008. An exploration of the relationship between training grants and profitability of UK construction companies. International Journal of Training and Development 12:3.

52 Nikandro, Irene, et. al. 2008. Training and firm performance in Europe: the impact of national and organizational characteristics. The International Journal of Human resource Management, Vol. 19, No. 11, November, 2057–2078. The issues may be cast more broadly. To some degree, national educational policy reflects the extent to which company-based training is seen as necessary in relation to the success of the prevailing business model. For example, in the U.S. context it has been remarked that "[h]iring may well be more difficult now simply because employers have to do much more of it because substantial declines in average employee tenure translate into more frequent vacancies. The decline of lifetime employment practices and the associated rise of lateral hiring have been underway for some time, especially in larger organizations where promotion from within had been more common. When employees who have been promoted from within leave unexpectedly, it may be difficult to fill their jobs from within because no internal candidates may be ready for advancement. A decline in promotion-from-within systems also increases hiring challenges substantially by expanding the range of skills that must be recruited. Most hiring is no longer at the entry level, where skills requirements are modest. Now, virtually every position is potentially filled by outside hires." Cappelli, Peter. 2015. "There is a Skills Gap.*If you believe that, you've been diverted from the real issues." Milken Review, First Quarter 2015. http://assets1c.milkeninstitute.org/assets/Publication/MIReview/PDF/16-27-MR65.pdf

53 Barrett, Alan; Philip O'Connell. 1999. Does Training Generally Work? The Returns to In-Company Training. Bonn. Discussion Paper No. 51. Institute for the Study of Labor.

54 Some scholars have suggested that a sharp distinction between formal and informal training does not capture the learning that takes place. They contend that the two typically occur together and reinforce each other. See Manuti, Amelia, et al. 2014. Formal and informal learning in the workplace: a research review. International Journal of Training and Development, Vol. 19 No. 1, 1-17.

55 Saks, Alan; Lisa A. Burke-Smalley. 2014. Is transfer of training related to firm performance? International Journal of Training and Development 18:2.

56 Bartel, Ann. 1995. Training, Wage Growth and Job Performance: Evidence from a Company Database. Journal of Labor Economics, 13 (July): 401-25. http://www0.gsb.columbia.edu/mygsb/faculty/research/pubfiles/815/training%20wagegrowth.pdf.

57 Bartel, Ann. 2000. Measuring the Employer's Return on Investments in Training: Evidence From the Literature. Industrial Relations, Vol. 39, No. 3. http://www0.gsb.columbia.edu/faculty/abartel/papers/measuring_employer.pdf

58 Chochard, Yves; Eric Davoine. 2011. Variables influencing the return on investment in management training programs: a utility analysis of 10 Swiss cases. International Journal of Training and Development 15:3.

59 Doucouliagos, Chris; Pasquale Sgro. 2000. Enterprise return on a training investment. Adelaide: NCVER References-National Centre for Vocational Education Research.

60 Morrow, Charley, et. al. 1997. An Investigation of the Effect and Economic Utility of

Corporate-wide Training. Personnel Psychology 50

61 Benabou, Charles. 1996. Assessing the Impact of Training Programs on the Bottom Line. National Productivity Review/Summer. John Wiley & Sons, Inc.

62 Bassi, Laurie. The Impact of U.S. Firms' Investments in Human Capital on Stock Prices. 2004. http://www.mcbassi.com/wp/resources/pdfs/Impact.pdf.

63 Mitchell, Daniel; Edward Lawler. 1989. Alternative Pay Systems, Firm Performance and Productivity. Center for Effective Organization Publication G 89-6 (149). School of Business Administration, University of Southern California.

64 Becker, Brian. Barry Gerhart. 1996. The Impact of Human Resource Management on Organizational Performance: Progress and Prospects. The Academy of Management Journal, Vol. 39, No. 4, pp. 779-801. Academy of Management. http://www.jstor.org/stable/256712.

65 Becker, Brian, et. al. 1997. HR as a Source of Shareholder Value: Research And Recommendations. Human Resource Management, Spring, Vol. 36, No. 1. John Wiley & Sons, Inc.

66 Tamkin, Penny. 2005. The Contribution of Skills to Business Performance. Brighton, England. Institute for Employment Studies. http://www.employment-studies.co.uk/pdflibrary/rw39.pdf.

67 Task Force on Human Capital Management. 2003. Accounting for People Report. UK Department for Trade and Industry. http://webarchive.nationalarchives.gov.uk/20090609003228/http://www.berr.gov.uk/files/file38839.pdf.

68 Kochan, Thomas, Eileen Appelbaum, Carrie Leana, and Jody Hoffer Gittell. February, 2013. *The Human Capital Dimensions of Sustainable Investment: What Investment Analysts Need to Know*. Working paper prepared for the Sustainable Investment Research Initiative Sustainability & Finance Symposium, June 7, 2013. Washington, D.C. Center for Economic and Policy Research. http://www.cepr.net/documents/publications/human-capital-investment-2013-03.pdf

69 Huselid, Mark. 1995. The impact of human resource management practices on turnover, productivity, and corporate financial performance. Academy of Management Journal, 38, 635-672.

70 The studies are listed in Table 3 with full references in the bibliography.

71 The authors crafted four indices: "Access — the effective resourcing of roles in the organisation in terms of initial recruitment, ongoing job moves and succession activity;" "Ability — the skills and abilities of the workforce. In essence, the quality of people that the organisation has at its disposal, and the ongoing development activity of those individuals which maintains and further develops their capability;" "Attitude —…the engagement, motivation and morale of the workforce and the meaning they find in work, their beliefs about the workplace and their willingness to put in additional effort;" and "Application — the opportunities made available to individuals to apply themselves." Tamkin, Penny, et. al. 2008. People and the Bottom Line. Brighton, England. Institute for Employment Studies. http://www.theworkfoundation.com/DownloadPublication/Report/187_187_peopleandbottomline.pdf. The authors reported that "[s]tatistical

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

72 Tamkin, Penny, et. al. 2008. People and the Bottom Line. Brighton, England. Institute for Employment Studies. http://www.theworkfoundation.com/DownloadPublication/Report/187_187_peopleandbottomline.pdf.

73 Watson Wyatt. 2002. Human Capital As a Lead Indicator of Shareholder Value. http://www.oswego.edu/~friedman/human_cap_index.pdf. The study did not provide details typically found in academic papers, such as how the index was constructed or how it merged the two data sets and combined the 30 indicators in the first one with the 19 in the second.

74 Bauer, Rob, et. al. 2009. Employee Relations and Credit Risk. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1483112.

75 Lee, Michael Byungnam; Yong-Hee Chee. 1996. Business strategy, participative human resource management and organizational performance. The Case of South Korea. Asia Pacific Journal of Human Resources, 34(1). The authors suggested that the results should be interpreted with caution because of the small sample size.

76 Derwall, Jeroen. 2007. The Economic Virtues of SRI and CSR, Chapter 5: Human Capital Management and Financial Markets. Rotterdam. Erasmus Research Institute of Management. Erasmus University.

77 The other three indices are talent attraction and retention; labor practices such as workforce diversity; and "organizational learning," defined as learning and knowledge management systems, which are typically aimed at deepening employees' understanding of the firm's strategy and its core activities and building intellectual capital.

78 The paper continued by saying: "Although there is evidence that human capital management systems contribute to enhancing performance, our work strongly suggests that the specific constituents of the HCM concept are the most value relevant, most notably the human capital development practices that comprise a combination of skill gap management, employee training and appraisal practices, and the controlling of human capital policies."

79 Ichniowski, Casey. 1990. Human Resource Management Systems and the Performance of U.S. Manufacturing Business. Cambridge, Ma. NBER Working Paper No. 3449.

80 Boselie, Paul, et. al. 2005. Commonalities and contradictions in HRM and performance research. Human Resource Management Journal, Vol. 15, no 3, 2005. Many of the studies examined in this paper looked at productivity and other outcomes in addition to investment ones.

81 Fleetwood, Steve; Anthony Hesketh. 2011. Explaining the Performance of Human Resource Management. Cambridge University Press. In a later publication Hesketh

broadens his criticism: "Where some researchers point to a growing body of 'scientific' methods we can use to 'measure' the relationship between people and organisational performance, others have suggested there is in fact much more heat than light emitted by the now voluminous outpourings of academic research papers, books, and reports from academics, consulting houses and think tanks. Most executives remain highly skeptical of such techniques." Hesketh Anthony. 2014. Managing the value of your talent: A new framework for human capital measurement. CIPD, p. 9, http://www.cipd.co.uk/hr-resources/research/managing-value-talent-framework-human-capital.aspx

82 See, for example: Peccei, Riccardo, et. at., 2013. HRM, Well-Being and Performance, Chapter 2 of Paauwe, Jaap; Paul Boselie. 2005. HRM and Performance: What's Next? Center for Advanced Human Resource Studies, Cornell University, School of Industrial and Labor Relations. Working Paper #05-09; Paauwe, Jaap, et. al. 2013. HRM and Performance: What Do We Know And Where Should We Go? Chapter 1 of Guest, David, et. al. 2013. HRM and Performance: Achievements and Challenges. http://www.wiley.com/WileyCDA/WileyTitle/productCd-1405168331.html. and Combs, James, et. al. 2006. How Much Do High-Performance Work Practices Matter? A Meta-Analysis Of Their Effects On Organizational Performance? A Meta-Analysis Of Their Effects On Organizational Performance. Personnel Psychology, 59, 501–528. Blackwell Publishing.

83 Task Force on Human Capital Management. 2003. Accounting for People Report. UK Department for Trade and Industry. http://webarchive.nationalarchives.gov.uk/20090609003228/http://www.berr.gov.uk/files/file38839.pdf.

84 Task Force on Human Capital Management. 2003. Accounting for People Report. UK Department for Trade and Industry. http://webarchive.nationalarchives.gov.uk/20090609003228/http://www.berr.gov.uk/files/file38839.pdf.

85 It might be that companies with certain HR policies perform better in financial terms not due to those policies as such but because adopting them reflects better corporate leadership. If so, further analysis would be required to determine whether the presence of such stronger leadership is a necessary condition for those HR policies having the perceived impact on financial performance.

86 See for example: Guest, David. 2011. Human resource management and performance: still searching for some answers. Human Resource Management Journal, Vol. 21, no 1.

87 See, for example, Guest, David, et. al. 2003. Human Resource Management and Corporate Performance in the UK. British Journal of Industrial Relations, 41:2 June. 0007–1080. Wright et al., 2005; Guest, David. 2011. Human resource management and performance: Still searching for some answers. Human Resource Management Journal, 21: 3-13.

88 CEDEFOP. 2011.The impact of vocational education and training on company performance. European Centre for the Development of Vocational Training (Cedefop). Luxembourg: Publications Office of the European Union.

89 See, for example: Hansson, Bo; Ulf Johanson; Karl-Heinz Leitner. 2004. The impact of human capital and human capital investments on company performance. Evidence from literature and European survey results. Third report on vocational training research in Europe: background report. Page 292. Luxembourg: Office for Official Publications of the European Communities, 2004 (Cedefop Reference series, 54). http://www.cedefop.europa.eu/EN/Files/BgR3_Hansson.pdf.

90 Watson Wyatt. 2002. Human Capital As a Lead Indicator of Shareholder Value. http://www.oswego.edu/~friedman/human_cap_index.pdf.

91 Percival, Jennifer, et. al. 2013. Return on investment for workplace training: the Canadian experience. International Journal of Training and Development, 17.1.

92 Wright, Patrick, et. al. 2005. The relationship between HR practices and firm performance: Examining causal order. Personnel Psychology, 58, 409-446.

93 Wall, Toby, et. al. 2005.The romance of human resource management and business performance, and the case for big science. Human Relations, Volume 58(4).

94 CEDEFOP. 2011.The impact of vocational education and training on company performance. European Centre for the Development of Vocational Training (Cedefop). Luxembourg: Publications Office of the European Union.

95 For example, according to Wall and Woods, based on their review of what they deemed to be 25 high quality studies, "effect sizes are typically small, and the criteria used to judge statistical significance, and hence to draw conclusions about the reliability of findings, are often lenient, even in large sample studies." Wall, Toby, et al. 2005. The romance of human resource management and business performance, and the case for big science. Human Relations, Volume 58(4), 429–462, 451. By contrast, the meta-analysis by Combs et al. of 92 papers on HPWPs found that their "impact on organizational performance is not only statistically significant, but managerially relevant." Combs, James, et. al. 2006. How Much Do High-Performance Work Practices Matter? A Meta-Analysis Of Their Effects On Organizational Performance? A Meta-Analysis Of Their Effects On Organizational Performance. Personnel Psychology, 59, 501–528,518. Blackwell Publishing.

96 The difference in views is starkly presented by two papers: A 2010 review of two decades of the research on HR policy and firm performance argued that the core correlation model "is fundamentally misspecified because it gets the causal chain backwards." Kaufman, Bruce. 2010. SHRM Theory in the Post-Huselid Era: Why It Is Fundamentally Misspecified. Industrial Relations, Vol. 49, No. 2. The author suggests the field is replete with other "misspecifications" as well, such as assuming that the positive returns from investments in HR policies do not diminish over time. By contrast, at roughly the same time, Huselid and Becker contended that "the impact of [high-performance work systems] on performance is both economically and statistically significant." Huselid, Mark, and Becker, Brian. 2011. Bridging Micro and Macro Domains: Workforce Differentiation and Human Resource Management. Journal of Management, Vol. 37 No. 2, March.

97 Task Force on Human Capital Management. 2003. Accounting for People Report.

UK Department for Trade and Industry. http://webarchive.nationalarchives.gov.uk/20090609003228/http://www.berr.gov.uk/files/file38839.pdf.

98 See http://www.cipd.co.uk/hr-resources/valuing-your-talent.aspx.

99 CIPD. 2015. Human Capital Reporting: Investing for Sustainable Growth. http://www.cipd.co.uk/binaries/human-capital-reporting_2015-sustainable-growth.pdf

100 One way companies can present such information would be to offer a so-called "strategy" map, or alternatively to describe critical strategic issues. Another approach would be to describe the risks their HR strategy addresses, such as avoidance of disruptions to operation and value destruction. Such reporting possibilities are discussed in: Bassi, Laurie, et. al. 2011. The Smarter Annual Report, How Companies are Integrating Financial and Human Capital Reporting. Creelman Lambert, McBassi and Company, pp. 44-46. http://www.mcbassi.com/wp/resources/pdfs/The_Smarter_Annual_Report.pdf.

101 Paauwe, Jaap, et. al. 2013. HRM and Performance: What Do We Know And Where Should We Go? Chapter 1 of Guest, David, et. al. 2013. HRM and Performance: Achievements and Challenges. http://www.wiley.com/WileyCDA/WileyTitle/productCd-1405168331.html.

102 Paauwe, Jaap, et. al. 2013. HRM and Performance: What Do We Know And Where Should We Go? Chapter 1 of Guest, David, et. al. 2013. HRM and Performance: Achievements and Challenges.

103 Strack, Rainer, et. al. 2014. Creating People Advantage 2014-2015. The Boston Consulting Group, pp. 5 and 19.

104 Harvard Business Review, 2013. Connecting Workforce Analytics to Better Business Results, pp. 1 and 2. https://hbr.org/resources/pdfs/comm/sumtotal/hbr-sumtotal-report-aug.pdf

105 Gerhart, Barry. 2013. Research on Human Resources and Effectiveness: Some Methodological Challenges, Chapter 9 in *Human resource management and performance: Achievements and Challenges*, Editors: Jaap Paauwe, David Guest, Patrick Wright, Wiley, April.

105 Langevin Heavey, Angela, et. al. 2013. Measurement of Human Resource Practices: Issues Regarding Scale, Scope, Source, and Substantive Content, Chapter 8 in *Human resource management and performance: Achievements and Challenges,* Editors: Jaap Paauwe, David Guest, Patrick Wright, Wiley, April.

107 Kochan, Thomas, et. al. 2013. The Human Capital Dimensions of Sustainable Investment: What Investment Analysts Need to Know. Working paper prepared for the Sustainable Investment Research Initiative Sustainability & Finance Symposium, June 7, 2013. Washington, D.C. Center for Economic and Policy Research. http://www.cepr.net/documents/publications/human-capital-investment-2013-03.pdf

108 Patterson, Malcom, et. al. 2004. Integrated manufacturing, empowerment, and company performance. Journal of Organizational Behavior, 25, 641–665. John Wiley & Sons, Ltd.

109 Boxall, Peter. 2013. "Building Highly-Performing Work Systems: Analysing HR

Systems and Their Contribution to Performance," Chapter 3 in *Human resource management and performance: Achievements and Challenges*, Editors: Jaap Paauwe, David Guest, Patrick Wright, Wiley, April, 2013.

110 Guest, David; Anna Bos-Nehles. 2013. "HRM and Performance: The Role of Effective Implementation," Chapter 5 in Human resource management and performance: Achievements and Challenges, Editors: Jaap Paauwe, David Guest, Patrick Wright, Wiley, April 2013, p. 90. See also, for example, Collings D. 2014. Toward Mature Talent Management: Beyond Shareholder Value. Human Resource Development Quarterly. Vol. 25 No.3, 301-319; and MacKenzie C. et al. Through the looking glass: challenges for human resource development (HRD) post the global financial crisis – business as usual? Human Resource Development International, Vol. 15, No. 3, July 2012. 353-364. In some measure such a recognition of the need to acknowledge, respect, and take account of workers as active (and potentially proactive) agents at the workplace brings the conversation about the materiality of workplace relationships to investment performance back to the conversation about workplace relationships in normative terms.

111 Sung, Sun Young, Choi, Jin Nam. 2014. Multiple dimensions of human resource development and organizational performance. Journal of Organizational Behavior, 35. 851-870. Interestingly, it was not mediated measures of employee competence. Note, this was time a lagged study, that is, the authors collected data on HR-related variables such as expenditures on training in 2005, and measures of employee competence and commitment in 2007 and return on investment data from 2008 and 2009. Id. at 857.

112 Al Ariss, Akram, et. al. 2014. Talent Management: Current Theories and future research directions. Journal of World Business, Vol. 49. An added complication is that employee interviews exclude those employed indirectly through subcontracting, as independent contractors or through franchises even though their work is essential to the success of a company's business model. These indirect employment relations may pose potential legal issues, for example, ones of employment misclassification and legal attribution of responsibility as a joint employer. They also may entail reputational or operational risks if the effect of problems with the indirect labor force is felt back in the production chain. Even more complications may affect firms that employ significant numbers of undocumented workers, directly or indirectly.

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114 Edmans, Alex. 2007. Does the Stock Market Fully Value Intangibles? Employee Satisfaction and Equity Prices. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=985735.

115 CIPD. 2015. Human Capital Reporting: Investing for Sustainable Growth. http://www.cipd.co.uk/binaries/human-capital-reporting_2015-sustainable-growth.pdf.

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