

CONNECTING THE DOTS...

Linking Training Investment to Business Outcomes and the Economy

WORK AND LEARNING

Knowledge Centre



April 2007

Ultimately, the Canadian standard of living is determined, in large part, by the quality and quantity of skills deployed in the economy.

*The Skills Factor in Productivity and Competitiveness
Conference Board of Canada (2005)*

A company's human resource practices—its commitment to the skill and training of its employees—are far and away the most powerful predictors of improvements in companies' productivity and profitability."

*Does Training Pay? Evidence from Australian Enterprises
National Centre for Vocational Education Research (Blandy 2002)*

Allan Bailey

Disclaimer

This report has been prepared for the Canadian Council on Learning's Work and Learning Knowledge Centre (WLKC) by Allan Bailey, CEO, Learning Designs Online. It is issued by the Work and Learning Knowledge Centre as a basis for further knowledge exchange. The opinions and conclusions expressed in the document, however, are those of the author and do not necessarily reflect the views of the WLKC members.

The Work and Learning Knowledge Centre is one of five knowledge centres established in various learning domains by the Canadian Council on Learning. The WLKC is co-led by Canadian Manufacturers & Exporters and the Canadian Labour Congress.

For further information:

Alex Stephens, Coordinator
Work and Learning Knowledge Centre
1 Nicholas Street, Suite 1500
Ottawa, Ontario K1N 7B7
613-241-3222 ext 244
info@wkc-csamt.ca

Canadian Council on Learning
215-50 O'Connor
Ottawa, Ontario K1P 6L2
info@ccl-cca.ca

TABLE OF CONTENTS

Executive summary	4
Introduction	8
Training's links to the economy	9
▪ Why don't we train more?	11
▪ The global efforts to demonstrate training's value	13
▪ Two approaches to evaluating economic and business outcomes	15
Industry level evidence (macro-level analysis)	17
Firm level evidence (The case study approach)	22
▪ Australia	24
▪ Ireland	27
Evaluation methodologies	30
Discussion	33
Conclusion	36
Appendix A — ROI evaluation methodology	38
Appendix B — Firm-level case studies	47
Appendix C — Macro-level studies	60
Appendix D — References	67

Executive Summary

This paper addresses a rising chorus of national and international studies that have singled out some pervasive and fundamentally unhealthy trends in the Canadian economy. Specifically, Canada's preparedness to compete in the increasingly competitive, knowledge-based, global marketplace is in jeopardy. For some years, Canada's economic growth has been lagging precariously behind that of its major competitors such as the United States. From the research, it seems clear that this downslide is rooted in a chronic national blind spot—a lack of awareness that investing in the human capacity of Canada's workforce is paramount to success.

This is regrettable because much of the research literature on training's impacts on business performance suggests that firms which invest more in training typically report higher productivity and wage levels. A recent World Bank study of 1,500 enterprises, for example, found that the return on training investment was 24%. It found that an increase in training of 10 hours per year per employee was associated with a 0.6% increase in productivity. Such results suggest that the level of investment by Canadian firms in skills development may have an important bearing on economic performance and will become especially critical as we advance further into the knowledge economy.

This paper reviews some of the key issues relating to Canada's economic performance and explores critical linkages between weak national productivity growth, business performance and underinvestment in training and skills development.

Training's Links to the Economy

Over recent years, Canada's economic performance has fallen behind many of our major competitors. Between 2000 and 2005, for example, the rate of Canada's productivity growth has been only 25% of that of our major trading partner, the United States.

A key reason for this weak performance may be low levels of investment by Canadian firms in workforce training and skills development. It is known, for example, that the most important factor explaining the difference in economic growth between countries is the relative level of skills of their workforces. According to Statistics Canada, investment in education and skills training is three times as important to economic growth as investment in physical capital.

Nevertheless, Canada has been slipping in the rankings among the countries of the Organization of Economic Co-operation and Development (OECD) in terms of the priority placed on employee training. In addition, Canada is slipping in the OECD rankings of how much money per capita is spent on training. For example, the participation rate of U.S. employees in training is 50% greater than that for Canadian workers.

This low participation rate in training is particularly evident in the small to medium size enterprises (SME) that make up the vast majority of Canadian companies. Workers employed in large firms are almost twice as likely to participate in training as workers in small companies.

Why do we not train more?

A key reason behind the reluctance to invest in training is cost. As well, many employers are concerned about lost production time and disruptions to business activities while employees are on training. These concerns are exaggerated in smaller firms who traditionally pay lower wages, have higher turnover, and face higher costs of credit. The higher cost of borrowing, for example, makes training relatively more expensive for small firms.

Another frequently expressed disincentive to train is the fear by organizations that workers, as a consequence of acquiring new skills, are of greater value to competitors who may lure them away with the promise of higher salaries (the so-called poaching dilemma). Studies, however, suggest that the poaching concern is largely unfounded. But because they pay lower average wages and have higher turnover rates, smaller firms nevertheless frequently perceive themselves to be especially vulnerable to poaching.

One of the most prominent barriers to training is the uncertainty around the issue of value for money. In the past there have been few methodologies to help business owners link training to business outcomes. As a result, employers frequently consider skills development as a discretionary cost only tangentially related to business success. Many business owners are reluctant to make “faith-based” investments in training activities that cannot be clearly linked to improved bottom line results.

A number of recent Canadian reports reflect a sentiment in the business community that before employers can be persuaded to spend more on skills development, they will need to see more compelling evidence that investing in training has a positive return on investment (ROI).

Elsewhere in the world, several governments have also identified the urgency to encourage increased investment in skills development by demonstrating training’s positive impact on business outcomes. Australia and Ireland, in efforts to enhance their nation’s prospects of success in the knowledge economy, have launched extensive national training evaluation initiatives to gather evidence on training’s economic impact. For the government of Ireland, the goal of the research was to demonstrate the business benefits of skills development and thereby increase the adoption of training in Ireland beyond its “current low level.”

Evaluating training's impact

Over time, a body of evidence pointing to a positive relationship between training and productivity has been accumulating. The evidence has been gathered using two distinctly different approaches. On the one hand, large-scale, macro-level studies based on extensive surveys or large databases are used to investigate the links between training investment levels and wages and productivity across a group of companies, an entire industry, or a particular segment of the economy. The other approach is to employ smaller case studies that can be used to evaluate the specific business impact of a training program within an individual organization.

One example of the positive effect of training relationships was uncovered in a twelve-year U.K. study that found that a 5% increase of workers being trained in an industry (say from 10 % of all workers to 15%) is associated with a 4% increase in productivity and a 1.6% increase in wages.

Another noteworthy insight from the research is the comparatively low level of investment in essential skills development in Canada. In spite of the fact that four out of ten working Canadians do not have the literacy skills needed to participate in the knowledge economy, investments by employers in essential skills training accounts for only 2.2% of all training spending.

Since macro-level research is based on large datasets, the results from a study in one industry or region can often be generalized to predict outcomes in another region or industry. Such studies, therefore, are especially useful to economists and government policy-makers. However, the outcomes of macro-level studies are less useful to business owners since they pertain to broader economic issues and are typically expressed in complex terms difficult for non-specialists to understand. As a result, their findings offer little guidance to employers considering the value of specific training investments. As a consequence, it is doubtful if the generally positive results from such research do much to encourage the business community to increase training investment levels.

Case studies, on the other hand, may be of greater value to the business community because they employ evaluation methodologies that are more familiar to business owners. Such studies typically investigate the link between training investments and business performance. Case studies are also more useful to employers because they provide more tangible evidence of training's impact on specific business measures (increased sales, greater output, reduced waste, reduced turnover, etc.) as well as benefit/cost ratios and ROI.

The case study approach, however, may be considered less useful by policymakers and economists because their results are statistically less valid since they are based on company by company studies rather than the large datasets employed in macro-level research.

In Australia, a national training evaluation initiative based on case studies was launched to help make companies aware of “the significant increase in their bottom line that could occur if they were to identify and pursue the highly profitable training opportunities that often exists within their own enterprises.” Training evaluation case studies were carried out on Australian companies from various industries ranging in size from 400 to 27,000 employees. The final report revealed positive returns on investment in all cases ranging from 30% (fuel efficiency training) to 1,277% (safety training). (Doucouliagos 2000)

The studies were completed as part of a broader focus on linking training to business outcomes by Australia’s National Centre for Vocational Education Research (NCVER). This report observed that the “commitment to the skill and training of its employees are far and away the most powerful predictors of improvements in company’s productivity and profitability.”

Ireland’s experience in evaluating the business impacts of training realized similar positive results. Three of the twelve Irish studies returned negative ROI, meaning the cost of the training was greater than the value of the resulting business returns. In the nine other cases, however, returns on investment ranged from 32% (management and supervisory skills training) to 828% (call centre sales training). Similar to the Australian initiative, Irish authorities were motivated by the need to “to unlock and grow the human talent pool that will maintain (Ireland) at the forefront of global competitiveness.”

The Irish government also investigated the commonly-used Kirkpatrick/Phillips training evaluation methodology to assess its appropriateness as an evaluation tool for use by non-experts in the businesses community.

The Kirkpatrick/Phillips methodologies evaluate training’s impact on several levels: participant satisfaction, learning, application of learning to the job, business impact, and ROI. Importantly, this evaluation approach includes several strategies to ensure that training’s contribution to business improvements is differentiated, or isolated, from other factors that could also be contributing performance improvements (e.g., a new employee bonus program, productivity gains from new technologies, fluctuations in the economy, etc.).

In addition to demonstrating training’s contribution to business outcomes, the Irish studies also validated the soundness of the Kirkpatrick/Phillips training evaluation methodology as well as verifying their appropriateness as a relatively easy-to-use tool for evaluating the effectiveness of training programs.

In Canada there appears to be a growing awareness of training’s importance at the political and academic level. However, to date there have been no initiatives comparable to the Australian and Irish efforts to encourage greater adoption of training by providing the business community with practical evidence of the business benefits of investing in human capacity development.

There is a generalized concern that Canadian industry on the whole is not making the investments in training it needs to in order to meet the challenges of intense competition, rapid innovation, and economic restructuring.

Developing Skills in the Canadian Workplace
Canadian Policy Research Network (Betcherman 1997)

Introduction

The landscape of the Canadian workplace is changing dramatically. The collision of powerful domestic and global forces are challenging our conventional wisdom—compelling us to rethink our traditional workplace practices. Perhaps nowhere is this more evident than in our attitudes towards how we nurture the skills and knowledge of our workforce.

As a result of forces such as new technology, globalization, the knowledge economy, and changing demographics, our commitment to training and skills development is increasingly vital to success—even survival—of businesses and nations.

Canada's global competitiveness (productivity), for example, has been on a downslide for almost a decade due largely to weak efforts to upgrade the skills of our adult workers. According to the Organization for Economic Co-operation and Development (OECD 2005), less than 30% of adult workers in Canada participate in job-related education compared with 45% in the U.S. Also, U.S. firms spend about 50% more in training per employee than Canadian companies. (Goldenberg 2006)

This paper reflects upon some of the challenges faced by Canada's economy and by Canadian employers. It explores some of the key issues

Human capital formation, through education, training and skills development, is recognized as a primary determinant of worker productivity and earnings as well as firm productivity—and, therefore, broader economic growth.

Chaykowski 2003

faced by decision makers in government and business as they ponder the wisdom of promoting more investment in training. What is the real benefit to Canada's national economy from training employees? What is the payoff to businesses for investing in training? What is the evidence that training improves the bottom line? Are there any credible and easy-to-use strategies organizations can adopt to evaluate business returns and performance improvements from training?

Training's Links to the Economy

For more than half a decade, Canada has been slipping behind many of its competitors in productivity. For example, the World Economic Forum's 2005 Global Competitiveness Report detailed Canada's decline in competitiveness, sliding from 6th place in 1998 to 15th place in 2004. The Conference Board of Canada notes: "Since 2000, Canada's productivity growth has been weak (0.9% per year) compared to the U.S. 3.8%." (Conference Board 2005a)

In the matter of declining productivity, the business segment comprised of SMEs is the focus of special concern in Canada and elsewhere. SMEs account for more than 95% of all businesses in Canada and employ more than 65% of working Canadians. Yet, while productivity of large companies (more than 500 employees) has improved dramatically since the early 1970s, the productivity of small firms (less than 100 employees) has seen a prolonged drop over the past quarter of a century. (Baldwin 2002) (Chaykowski 2003)

Many observers place much of the blame for Canada's productivity slide on a relatively weak commitment to training and skills development compared to some of its key trading partners. Underscoring this concern, Alan Nymark, former Deputy Minister of Human Resources and Skills Development Canada, observes, "One of Canada's weakest links [in labour productivity] is upgrading the skills of our adult workforce." (Nymark 2005) The importance of training to Canada's economic competitiveness is fundamental. A recent Statistics Canada report claims that more than half of the differences in economic growth between countries can be explained by differences in the average skill level of their workforces. (Statistics Canada 2006)

According to Statistics Canada, "Investment in human capital, that is, in education and skills training, is three times as important to economic growth as investment in physical capital, such as machinery and equipment. This implies that investments in raising the average level of skill could yield large economic returns."

Investment in human capital, that is, in education and skills training, is three times as important to economic growth as investment in physical capital, such as machinery and equipment.

Statistics Canada

(Coulombe 2004) The conclusion seems inescapable:

Our willingness or reluctance to support training and on-the-job skills development may have a profound impact on our national competitiveness and our future standard of living. This conclusion becomes increasingly relevant in the knowledge economy. As reported by the Canadian Council on Learning, between 1991 and 2003 the number of high-knowledge businesses increased by 78% and the number of low knowledge firms decreased by 3%. (Canadian Council on Learning 2007) Observes Nymark, "It is estimated at least five million adult Canadians will require skills upgrading if Canadian businesses are to keep up with, and get ahead of, our global competitors."

Facing such challenges, Canada's gaps in developing its human capacity not only contribute to our current productivity decline but, ominously, do not bode well for the future. In 2002, for example, 265,000 full-time jobs were vacant across Canada, according to the Canadian Federation of Independent Business, due to lack of suitably skilled candidates. The CFIB report *Labour Pains* concludes, "As the shortage of skilled labour grows, SMEs need to become even more innovative in finding hiring alternatives. Short of workers, one-third of firms chose to ignore new business opportunities, depriving themselves and the economy of growth." (Dulipovici 2003a)

From the available evidence, it would seem that Canada's business community fails to make the connection between human capital development, business performance, and economic growth. The Conference Board of Canada's 2005 Learning and Development Outlook survey, for example, notes that in 2003 Canadian firms spent only \$834 per employee on training, while US firms spent \$1,135 per employee. The average investment in training as a percentage of payroll was 1.55% in Canada compared with 2.34% in the US. (Conference Board 2005b)

The Conference Board also reports that "learning is a priority with only a third of Canadian organizations." In a 2005 Issue Statement, *Changing Employers Behaviour About Training*, the Board notes that the importance Canadian employers place on training is also slipping compared to our competitors. From 2002 to 2004, Canada slipped from 12th place to 20th in the priority it places on employee training. (Conference Board 2005a) (IMD2004)

This less-than-encouraging state of affairs prompted the Conference Board's rueful reflection, "Is this where Canadian companies want to be in the learning and innovation competition—behind their primary competitors and partners?"

It is speculated that the decline in productivity and lack of commitment to training might be linked to structural changes in the Canadian economy. Over the past quarter of a century,

for instance, there has been steady reduction in the proportion of Canadians employed in large firms and a sharp increase in the percentage who work in small companies. If skills

The participation rate of core-age workers (25-54) in employer-sponsored training was 34% in Canada, compared to 43% and 56% in the U.S. and the U.K. respectively. Such findings have led to concerns that the business sector in Canada may not be investing enough in the training of its workforce.

Chaykowski 2003

development is indeed a key to economic success, this demographic trend may well harbour unwelcome tidings for Canada's future standard of living. It is especially troubling that the participation rate in employer-supported formal training is much lower for smaller firms than for larger firms. In fact, employees of large companies (more than 100 employees) are twice as likely to receive formal training as those of small firms (less than 100 employees). (Peters 2004) (Lin 2003)

Why don't we train more?

The confluence of Canada's declining grades in productivity and our apparent underinvestment in training invites questions: Why don't we train more? If, as the Statistics Canada's report suggests, education and skills are three times as important as investments in physical capital, why are Canadian firms behind our market rivals in training investments? Amidst the drumbeat of pronouncements over the last half decade that we are in the new economy—the knowledge economy, the new era of continuous learning—why is our national commitment to training still flatlining and actually declining compared to some of our key trading partners? What are the barriers or disincentives that dissuade firms from training more?

It should be acknowledged at the onset that not all firms necessarily need training. For some, it might be unlikely that business outcomes would be improved by additional investment in training. In some firms, for example, low skill job requirements may be satisfied with existing staff. Still other companies may operate in environments in which competitiveness and success are primarily determined by other factors such as low cost or the availability of natural resources. (Betcherman 1998a)

Not surprisingly, one of the foremost reasons cited for not training is cost. Training has been viewed traditionally as a discretionary expense and thus has been summarily exempted from the need to demonstrate its value to the business. Training costs include not only the financial outlays to purchase or develop the training programs but also the indirect costs of reduced productivity (opportunity cost) incurred when employees are off the job attending training. If the trainee also happens to be a supervisor or a similarly essential staff member, the disruption to operations may have even greater impact.

These perceived risks from investing in training may have a special resonance in smaller firms which, as a group, already confront several challenging realities. We know, for example, that smaller firms compared to larger enterprises pay lower wages to workers, have more limited access to credit, are more likely to file for bankruptcy, and have higher turnover rates. (Chaykowski 2003)

To a greater or lesser extent, each of these factors likely militates against investment in training. For instance, since access to credit is more expensive for smaller firms, the cost of training can be comparatively higher than it is for larger firms. Another key aspect of training costs relates to who in the organization delivers the training. In large firms professional trainers or co-workers tend to provide training. However, in smaller companies training duties often fall to senior managers and supervisors, thus contributing to higher marginal costs of training compared to larger firms. (Chaykowski 2003)

For these and other reasons, training expenditures per employee for small firms (20 employees or less) are two times as high as they are for large firms (more than 100 employees). Not surprisingly, employer opinion surveys confirm that smaller firms are

indeed more likely than large firms to respond that costs of training present a barrier to investing in skills development. (Betcherman 1997)

Another perceived disincentive for training is the supposed risk that by providing training, employers are also making their workers more attractive to other organizations willing to pay more for skilled employees—the so-called poaching issue. These apprehensions can have even greater traction with SMEs who may feel especially vulnerable to the threat of poaching since smaller firms on average pay lower wages and experience higher turnover rates. (Chaykowski 2003)

In reality, however, the risk of poaching appears to be an exaggerated concern. A U.K. review of the formal research on the matter, *Review of Information on the Benefits of Training for Employers*, concludes that “the danger of poaching skilled workers is not increased by offering them training, and it is probably reduced somewhat.” This finding applied equally to British and American research data reviewed in the study. “Whether the training is for youths or for adults, the effect (of training) is mostly to reduce the probability of employees quitting their jobs in any one period, and thereby to increase the tenure of jobs, but not by much.” (Green 1997)

Another study speculates that the provision of training may actually improve retention by providing motivation in the workplace and persuading employees that they are with a good employer. “The evidence points consistently towards the provision of training actually lowering the risk of workers leaving, rather than increasing it.” Ananiadou (2003)

Perhaps the major barriers to investing in training are the enduring uncertainties that cloud the question of value. Traditionally, the idea of linking training investments to business outcomes has been viewed as an elusive, if not naive, goal. But today, business owners increasingly demand the same level of accountability from training investments and expect answers to the same questions posed to the other business functions: What is the payoff? If we invest in skills development for our employees, what will it do for the bottom line? Will the benefits outweigh the costs?

Another possible explanation for underinvestment in training is that the concern by some that the value derived from training investments is not obvious to investors.

“...because firm’s investments in intangible areas are not visible to the (capital) markets, they are instead treated purely as costs on the corporate balance sheet. Market pressures to maximize quarterly and annual earnings almost certainly reduce firm’s incentives to invest in human capital, leading to an under-investment by most firms. ... Thus, despite this increasing frequency with which CEOs repeat the mantra that ‘people are our most important assets,’ the market currently creates powerful disincentives for firms to actually invest in their people.”

Laurie Bassi (2001)

Human Capital Investment and Firm Performance

Until recently there has been little useful information to help business leaders answer these kinds of questions. In the absence of evidence, the question of whether to invest in training frequently comes down to guesswork or, as others have put it, “faith based”

decision making. As it happens, this dearth of convincing evidence of training's value may be a key piece of the puzzle explaining why Canadian industry under-invests in training compared to its competitors.

It appears that many Canadian employers and business owners are stalled at this barrier; many unsure, many not persuaded of training's worth to the organization. For example, the Canada Council on Learning's report, *Employer Investment in Workplace Learning in Canada*, reveals that "many employers do not appear to be convinced" of training's value to the business. The study concluded that in order to persuade Canadian businesses to spend more on skills development, "the argument for training and the return on investment must be made much more 'compelling' for employers if they are going to decide to invest in training for their workers as opposed to (investing in) physical capital or other investments." (Goldenberg 2006)

The global efforts to demonstrate training's value

In fact, there has been considerable worldwide effort over recent years to attach economic and business value training investments. The majority of this research has been academic in nature, designed more to guide government policy decision making than to influence training investment decisions. This body of research typically reports high-level economic outcomes indicating that increased levels of training and skills development do, indeed, correlate to higher levels of industrial productivity and the economy.

However, this line of research seldom yields the sort of evidence needed to persuade business leaders to invest in training, such as training's impact on business outcomes—increased output, quality, or profitability. Almost a decade ago, the Canadian Policy Research Network after reviewing many of these studies observed, "There are major gaps in our knowledge of training outcomes." The review concludes, "This is especially true on the firm side where virtually no analysis exists on the impacts of workplace training on key outcomes like productivity, quality, sales, and profits." (Betcherman 1997)

Half a decade later another Canadian study carried out by Industry Canada arrived at much the same conclusion: "We have very little in the way of micro-level data or other information... regarding the returns to training for firms or outcomes measures such as productivity or profitability." The Industry Canada report maintained that, "Investment in training will only occur if the benefits of the investment outweigh the costs." The authors cited a need for a "systematic case study approach" to collect evidence on training investments and outcomes in Canada. "We need to focus on the implications of training for workers wages, firm productivity, and profitability in order to assess whether or not the training investment is an advantageous one." (Chaykowski 2003)

With an estimated \$85 billion being spent each year on workplace learning in North America alone, it is not surprising that other countries are seeking harder evidence of

training's real value also. For almost half a decade, the world's premier training society, the American Society for Training & Development's (ASTD), has reported in its annual training industry benchmarking survey that the top concern of training and HR business leaders worldwide is the need for training "to produce results and to show a return on investment."

Many countries now recognize that their economic future may hinge on the business community making the connection between human capital development and business performance. In a report, *Return to Enterprises on Training Investment*, the Australian government concludes that, "unless the returns on training investment are quantified, the transition to a high-performance company can falter." Released by the Australian National Centre for Vocational Educational Research (NCVER) and the Australian National Training Authority (ANTA), the report warns "with billions of dollars invested in training annually by Australian companies, we can expect [employers] will require an increasingly rigorous assessment of the value of their training investment and how it impacts on company performance." (McDonald 2000)

The government of Ireland, too, has linked the success of its economy to increasing the levels of training also. A national report released in 2006 cautions for the need to demonstrate to the business community training's crucial role in improving company performance and bottom line results: "If training adoption by Irish companies is to increase beyond its current low level, then it is vital to prove the benefits of training in terms of its contribution to business goals." (Skillnets 2006)

In response to these concerns, the governments of Australia and Ireland independently launched national initiatives to explore the linkage between investments in training and business outcomes. Their goal was to evaluate different types of training programs implemented in a variety of organizational settings in order to gain a first hand understanding of the relationship between training and business outcomes. Based on evidence from previous economic studies, researchers were persuaded that such evaluations would demonstrate to decision makers the positive business outcomes and the bottom line value of investing in training.

In the United States, the country's leading training association, the ASTD, launched an extensive series of educational programs, workshops, and a community of practice to promote awareness of training measurement and evaluation methodologies that companies can use to assess the business impact and returns on investment of their training programs.

"In today's competitive marketplace, organizations want every investment to produce a business result. Increasingly, organization leaders responsible for learning are being asked to demonstrate the value of training."

Learning and Development 2005

The Conference Board of Canada

Two approaches to evaluating economic and business outcomes

What is the proof that investing in human capital development improves business performance, profitability, or national economic competitiveness? Indeed, what hard evidence exists to demonstrate training makes any contribution to the bottom line? In fact, can human capital development—a seemingly intangible, ineffable process—ever really be quantified?

According to the ASTD annual surveys most companies have limited expertise when it comes to evaluating the outcomes of their training efforts. The vast majority of organizations rely most heavily on post-program smile sheets, which monitor participant satisfaction but yield little insight into training's impact on business goals. According to the Conference Board of Canada, less than one company in ten evaluates the business impact and return on investment of their training programs. (Conference Board 2005b) This absence of feedback may be the heart of the matter. A 1997 report from the Canadian Policy Research Network, *Developing Skills in the Canadian Workplace*, concludes that, "company managers and public policymakers lack the tools needed to evaluate the impacts of training on firm performance. Understanding the links between training and performance and measurement of the magnitude of the impacts is critical for training to become deeply rooted in the workplace." (Betcherman 1997)

In the recent past, there have been some significant efforts by a few large organizations possessing the in-house expertise and the resources to investigate the business contribution of their own training investments. A striking example is the unprecedented initiative by the consulting firm Accenture to evaluate the business impact of its own training expenditures for its 260,000 employees over the entire history of the company. Using proprietary measurement techniques the company carried out an exhaustive analysis of the profit contribution of training on a per-employee basis. The company learned from the study that investing in training indeed pays off. Training investments at Accenture over the long run yielded a ROI of 353%. (In other words, every dollar spent on training was returned to the company and, in addition, \$3.53 in profit was generated.) As a result of this project, Accenture implemented an enterprise-wide, continuous evaluation process into its learning management systems, allowing the organization to evaluate the business impact of all future training programs. (Galvin 2003)

Few organizations, however, have the accounting and financial expertise of a global consulting company at their disposal. Fortunately, simpler and more accessible evaluation methodologies are becoming increasingly available to small and large organizations alike. As well, mounting evidence increasingly suggests a positive connection between skills development and economic productivity. Over the last decade or so, an accumulating body of knowledge from around the world is making it easier for Canadian organizations to connect the dots between training investments, business performance, and national economic success.

Two quite different research approaches in particular help dissipate the fog of uncertainty that has long obscured the true value training investments generate for the organization. In one approach, large-scale, macro-level studies provide us with a high-altitude view of training impact on a national or an industry-wide scale. On the other hand, a growing number case study evaluations of training provide a more focused, ground-level view of how specific training programs impact business performance and ROI for an individual firm.

Both perspectives offer unique benefits.

Large-scale, macro-level analysis based on extensive surveys or large databases can be used to investigate the links between training investment levels and wages and productivity across a group of companies, an entire industry, or a particular segment of the economy. Such research is typically conducted by economists and policy researchers and is useful to government policymakers since it provide statistics-driven evidence of the effects of training based on data collected from a large number of companies.

Because of the large populations of firms surveyed, the output of such research is statistically valid and readily generalized to other industries or settings. (That is, the results from a study of one

country or sector may be used to predict similar outcomes in a different country or industrial sector.)

As a result, this research approach is an important tool to inform government policymaking and to nurture awareness of how training

In a modern economy, a firm cannot afford to neglect investments in the human capital of its workers... ..The study of firm investments in physical capital is much more developed than the study of firm investments in human capital even though the latter may be at least as important as the former in modern economies.

(R. Alimeida, World Bank 2006)

fits into the national or industry strategy for improving productivity and global competitiveness. In Canada, several important macro-level studies have been conducted to investigate training's impact, and elsewhere, various international studies have documented economic outcomes from training in other countries around the world.

As it turns out, however, this high-level view offers little guidance to employers and decision makers pondering the wisdom of training investments. Typically such studies are focused on macro outcomes relating to an entire industry or the national economy and thus usually yield few insights into the sort of data most meaningful to employers, such as business outcomes and return on training investment.

The other approach to evaluating training's financial impact is to conduct more focused, company-level case study evaluations. Case studies can be used to investigate the extent to which one or more training programs influence key business performance outcomes in an individual company. This approach is arguably more useful to employers and business

owners because it provides more tangible evidence of specific business and financial outcomes (increased sales, increased output, time savings, reduced waste, reduced turnover, etc.). As such, case study results are practical, relevant, and can be reported in terms business professionals worldwide understand. Equally important, the most widely-used case study methodologies employ the same time-tested evaluation techniques familiar to business owners the world over—business impact analysis, benefit/cost ratios, and return on investment (ROI).

Although Canadian businesses currently have few domestic case study models to refer to, there is a growing library of informative studies conducted internationally. These studies document the bottom-line impact of a wide variety of training initiatives in all sectors of the economy, including both the public and private sectors.

Each evaluation approach—macro-level analysis and case study—offers useful but distinctly different perspectives on training’s impact on business and the economy. In the past, policymakers the world over have relied almost exclusively on the macro-level evidence to guide planning and policy and to answer the broad questions about value and importance of skills development. Except for Australia and Ireland, the relatively newer body of case study research has so far had little discernible influence on national public policymaking.

In Canada, the groups that policymakers frequently seek to influence—the Canadian business community and other employers—appear have had little meaningful exposure to the evidence from either macro-level analysis or case study evaluations of training’s generally positive impacts on productivity.

It seems reasonable to expect that the results and methodologies from the global research could substantially animate the efforts to persuade Canadian industry to increase investment in human capital. As we seek our footing through the unfamiliar terrain of the knowledge economy, it may be worthwhile to encourage business leaders to consider carefully the symmetry of encouraging evidence emerging from two quite different lines of enquiry—macro-level analysis and case study research.

Industry level evidence

Macro-level analysis

A growing body of research from around the world has built a persuasive case for training’s positive contribution to productivity and the economy. Based on statistical analysis of data collected from large numbers of companies (company performance, training frequency, wages, etc.), researchers have established a convincing pattern of evidence that increased levels of training activity in a firm are correlated to higher levels of productivity. For convenience, this paper refers to such large-scale, industry-level research as *macro-level* analysis.

One of the most recent macro-level studies, conducted by the World Bank (Almeida 2006), examined the return of investment in human capital (formal job training) to 1,500 firms in Portugal over a 5-year period. The study found that on average the return was 24% for those enterprises providing training and -7% for those not providing training. The research showed that an increase in training of 10 hours per year yielded an increase in productivity of 0.6%. The study concluded that “formal job training is a good investment for many firms and the economy, possibly yielding higher returns than other investments in physical capital or schooling.”

However, in spite of the impressive evidence of positive business payoff from training, the study’s authors were mystified at the relatively low level of training in these companies: “It is puzzling why these firms train on average such a small proportion of the total hours of work (less than 1%).” Unsurprisingly, perhaps, the authors speculated that the reason may be that companies have traditionally lacked solid evidence of training’s impact, leading them to invest small amounts in training.

Another research initiative, a twelve-year study of the U.K. manufacturing sector, set out to examine how training impacts corporate performance. The research was initiated to investigate the widely held perception that British industry suffers from a productivity gap with lower output per worker than its competitors. Conducted by the London-based Institute for Fiscal Studies, one of the goals of the study was to investigate the proposition, “If productivity is the malady, is training the cure?” The report, *Who Gains When Workers Train?*, examines data such as education, experience, and job tenure along with industry-level data such as wages, value-added, labour, and capital over the period 1984 to 1996. (Dearden 2000b)

The results showed that increases in the proportion of workers trained in an industry are correlated to substantial increases in value added per worker (productivity). Researchers found that an increase of 5% of workers trained in a given industry (say from an average of 10% to 15%) was associated with a 4% increase in productivity and an increase in 1.6% in wages. In other words, both the company and its workers share in the financial payoff from increased levels of training.

The study authors acknowledge an important caveat that some of the firms with high productivity might also have introduced high levels of technology and its associated training. Thus the observed improvements might not necessarily be attributable solely to training since such improvements might also have been driven by efficiencies related to technological innovation (which might not have been reflected in the study database).

More likely, however, this study suggests, as have others, that much of the existing economic research, although it frequently points to substantial positive outcomes from training, may in fact *undervalue* the true relationship between increased levels of training and improved business results. *Who Gains When Workers Train?*, for example, arrives at the following conclusion: “The importance attached by policymakers to training is not

misplaced. [These results suggest] economists may have actually underestimated the importance of training for modern economies.” Another study by the European Centre for the Development of Vocational Training concurs: “In general, the weakness of data and the weakness of the methods used in the reviewed studies do not exaggerate the [positive results of training’s impact on productivity].” Rather, such studies “tend to underestimate their impact on company performance.” (Hansson 2004)

A 2004 Canadian study, *Productivity and Wages*, explored the impact on productivity of investing in new workplace technologies and in education and training. The Department of Finance study showed that providing training in computer skills yielded productivity gains and that the payoffs were greatest when lower-skilled workers received computer skills training. A 10% increase in the share of workers receiving computer training resulted in productivity gains of 4.5%. Productivity gains are lower for employees who are already using computers (2.9%) or who have a university degree (2.1%) after computer skills training. The study is based on data from Statistics Canada covering more than 24,000 employees at 6,300 work locations across Canada. (Turcotte 2004)

An earlier Statistics Canada study, *Innovation, Training and Success*, revealed an equally convincing link between company performance and the level of innovation and training. The study explains that in an average manufacturing industry over the course of a decade, more than 40% of the market share is transferred from declining firms to growing firms. The research examined the subset of companies that were growing to find out what makes some firms grow faster than others. The study looked at the factors that differentiated the more successful “growing” companies from the least successful “growing” companies. (Baldwin 1999)

Researchers found that the more successful of the growing companies “attribute their success to having developed competencies in a wide range of different areas—one of these is the emphasis that is placed on skilled labour.” The most important factor, however, that distinguishes faster from slower growing companies is innovation.

Innovators, it was found, place greater emphasis than non-innovators on hiring skilled workers. But according to the study, “what really distinguishes innovators is their reliance on formal training programs.” Among the more successful innovators in the goods industries, training is an important component of a strategy that combines R&D, adoption of new technologies, or the development of new processes. In the service sector, the innovation strategy relies less on new capital equipment and more on strategic skilling of the workforce. Concludes the study: “there is evidence that a training strategy, by itself, has more impact on the success of a firm—probably because it is more likely to be *the* innovation strategy of the firm.”

A study conducted between 1995 and 1997 by the Canadian Policy Research Network (CPRN) looked at managers’ perceptions of training’s impact on revenue and productivity. The study, *Developing Skills in the Canadian Workplace*, concluded that firms with

training programs performed better than firms that did not train. In addition, the advantage was greatest for those respondents with the strongest commitment to training. The first part of the study was based on telephone interviews with some 2,500 companies of all sizes, in all regions, and all industries. The initial findings of the interviews were later substantiated by statistical analysis (regression analysis). (Betcherman 1997)

The CPRN research unearthed many useful insights into training in Canada. One of the key lines of inquiry explores firm size and training investment. The report asks, “Why are small firms less likely to train?” It turns out that smaller firms actually spend more *per employee* on training than larger companies do. Training expenditures per employee (or per trainee) are twice as high in firms with 20 or less employees as they are for companies with 100 or more people. The report explains that training has high fixed costs that larger firms can recoup through economies of scale which are not available to smaller establishments. As well, training’s disruptive side effects (e.g., employees off the job) have greater relative impact on smaller firms. Further, smaller firms are less likely to be aware of appropriate training opportunities or to have contacts with educational institutions that provide training.

The CPRN study also reports on the evidence that access to training is not equally distributed. Employees in managerial, professional, and technical occupations, for example, are more likely to receive job-related training, while those in primary, labour, clerical, and administrative positions are less likely to do so. The likelihood of receiving training is higher for males than for females. Also, the chances of receiving training increases with education level, age (up to 45), and length of time with the company. Indeed, according to HRSDC figures, 52% of workers with university training have participated in job-related training, while just 38% with a college diploma or trade certificate participated. For those Canadian workers with secondary school education or less, only 18% participated in workplace training. (Nymark 2005)

The CPRN review explores another troubling issue: the low level of employer investment in essential skills training. The review concluded that, “Canadian employers play essentially no role in the provision of basic skills, including literacy.” This assessment recently received support from the Conference Board of Canada: “basic training skills continue to sit at the bottom of the training priorities, accounting for only 2.2% of training investments in 2004.” (Conference Board 2005b) The paucity of essential skills training

becomes more problematic in light of recent OECD findings, reported by the Canada Council on Learning,

Canadian employers play essentially no role in the provision of basic skills, including literacy.

Betcherman (1997)

that, “42% of working-aged citizens—some 5.7 millions Canadians—have literacy skills *below* the level necessary to participate successfully in the knowledge economy.” (Goldenberg 2006) (Nymark 2005) This surprisingly low level of basic skills has become a defining, if disquieting, feature of the modern Canadian workforce skills profile.

Canada's weak record of supporting essential skills in the workforce may imply substantial, unwelcome economic ramifications. Consider, for instance, a recent Statistics Canada study that demonstrates the relationship between the level of essential skills proficiency of a country's workforce and that country's economic performance in terms of productivity and Gross Domestic Product (GDP). "A country that achieves literacy scores 1% higher than the average ends up... ..with labour productivity and GDP per capita respectively higher than other countries by 2.5% (productivity) and 1.5% (GDP) on average. This result holds true whether literacy is measured by prose, quantitative, or document skills." (Coulombe 2004) It may not be unreasonable, therefore, to assume that this chronic weakness in essential skills leaves Canada's economy at a distinct competitive disadvantage as we are drawn inexorably into the gravitational pull of the global knowledge economy.

Currently, there is little direct evidence relating the level of essential skills in an enterprise to its business performance. A U.K. review of the research, *The Benefits to Employers of Raising Workforce Basic Skills Levels*, noted that, "our knowledge of basic skills training and the effects of poor basic skills in the workplace is fragmentary and highly inadequate. Given the importance of the subject, it is really quite remarkable how limited are the studies in this field of enquiry." (Ananiadou 2003)

Beyond its detrimental impacts on the organization and the economy, the effects of low essential skills may exact an unfair and lamentable toll on individual workers and their families. Notes the U.K. study, "There can be no doubt from the evidence available that poor basic skills are strongly associated with low earning, limited job prospects, and heightened risk of unemployment for the individual." (Ananiadou 2003)

In summary: macro-level evidence

In the main, the outcomes from the macro-level research provide encouraging evidence of training's robust, positive impact on the economy, productivity, wages, and even shareholder value. Indeed, there are indications that these large-scale statistical studies may actually *undervalue* the benefits of training.

However, to the business community, large-scale, macro-level evidence may be of limited practical benefit. Although this so-called econometric research provides academics and government policymakers with insightful panoramas from the "50,000 foot level," it has little real meaning to decision makers in the business world. Such studies, driven by complex statistical models, may not supply organizations with the information or the prescriptions they can readily use to predict the profitability of training investments in their own workplace settings.

Training boosts shareholder value...

A three-year ASTD study (*Profiting from Learning: Do Firms' Investments in Education and Training Pay Off?*) of 575 US companies offered the first definitive proof that investment in training directly improves business and stock market performance. The data, collected between 1996 and 1998, showed that when companies were ranked by how much they spent on training (per employee), those that spent more on training did much better than those that spent less. Firms in the top half of the ranking had a Total Shareholder Return (TSR) 45% higher than the weighted average of the S&P 500, and an astonishing 86% higher than firms in the bottom half of the ranking.

Laurie Bassi (2000)

Firm-level evidence

The case study approach

Business decision makers' needs for more tangible evidence of training's benefits are left unsatisfied by the esoteric and generalized results from macro-level analyses. From the perspective of the organization, therefore, a more useful approach may be to examine what actually happens—the bottom line results at the company level—when decisions are taken to invest in training.

By looking at specific situations and individual business cases in other organizations, decision makers may be able to identify successful training strategies and outcomes that may be transposed to their own organizations. On the flip side, organizations can learn to avoid investing in training programs or approaches that have been shown to be ineffective or that result in unattractive business outcomes. This approach patterns the renowned case study methodology originated by Harvard Business School through which successful business practices are examined, shared, and repeatedly replicated.

Typically, case studies are conducted at the individual company level and yield a variety of outcome data pertinent to the business setting such

The Payoff from Apprenticeship Training

A landmark Canadian study on the cost/benefit of apprenticeship training reveals for the first time that employers accrue \$1.38 for every dollar they invest in training an apprentice. Traditionally employers perceive the cost of apprenticeship training as a major barrier to apprenticeship programs. Although the costs associated with apprenticeship training are readily quantifiable, it has been more difficult to measure and demonstrate the business benefits of hiring apprentices.

The results of the study released in June 2006 are encouraging to those in labour movement concerned about apprenticeship and skills shortages. Says Allan Bruce of the International Union of Operating Engineers, the benefits of apprenticeship training have long been suspected but only anecdotal evidence has been available until now. "Not only do these findings provide us with actual data to substantiate what we suspected all along, they also establish the business case for hiring apprentices. This should create more opportunities for Canadian youth."

Apprenticeship- Building a Skilled Workforce for a Strong Bottom Line
Canadian Apprenticeship Forum (2006)

as benefit-cost ratio and ROI. An attraction of this approach is that ROI is a familiar decision tool employed routinely by businesses throughout the world. Using these techniques employers can measure or predict the investment benefits of training and performance in much the same way as they do with physical capital and equipment purchases.

Until the beginning of 1990s, however, there had been little existing evidence demonstrating training's business value, one way or the other. In the first place, the tools and methodologies to readily evaluate training did not exist. Perhaps because of this, corporate mythology has traditionally accepted training as a "soft" business activity that cannot be measured, and rather should be considered a discretionary cost that is unlikely to contribute "hard" business benefits—at least benefits that will yield to financial analysis.

Since the early 1990s, however, the introduction and growing adoption of credible training measurement and evaluation methodologies have sparked a re-examination of training's contribution to business success and of the practicality of measuring this contribution. These new methodologies have transformed a task that once may have been viewed as impossible or daunting into a reasonably straightforward undertaking.

In many countries however, including Canada, most organizations still remain largely unaware of these new case study evaluation techniques or are unsure of how to apply them. The Conference Board of Canada's *Learning and Development Outlook 2005*, for example, reports that only 12% of member organizations currently measure the business results of training and only 8% measure training's return on investment. The relatively small number of Canadian companies that evaluate training business impact, explains the Conference Board, "underscores the difficulty that exists in measuring the organizational results and financial returns." (Conference Board 2005b)

It may be argued that the limited awareness and practice of training evaluation helps perpetuate the Canada's track record of investing in training at a substantially lower rate than some of its international competitors. Companies that currently don't train have little useful evidence to encourage them to do so. And those that do train mostly lack the tools or practices to detect and evaluate the improvement in business performance that might result from their training investments.

Other countries experiencing productivity pressures similar to Canada's have launched national initiatives to draw attention to training's strategic importance and to demonstrate, at the firm level, what the weight of evidence suggests at the macro-level—that is, training makes good business sense. As previously mentioned, Australia and Ireland have implemented national training evaluation initiatives aimed at helping their domestic business communities make the crucial connections between the development of human capital, global competitiveness, and business success.

Australia

“Investment in training is important if Australian firms are to achieve the status of high-performance enterprises.”

Enterprise Return on a Training Investment
(Doucouliagos 2000)

In 2000, Australia’s National Centre for Vocational Education Research (NCVER) concluded that for the benefit of the Australian economy, more effort was needed to communicate strategic importance of human capital development to Australian organizations. Based on a review of the international research literature on training’s value, NCVER’s report *Does Training Pay?*, concludes that the evidence “clearly indicates” that a company’s human resource practices—its commitment to the skill and training of its employees—“are far and away the most powerful predictors of improvements in companies’ productivity and profitability.” (Blandy 2000)

The challenge facing the Australian government, however, was to convince employers of this fact given the existing dearth of evidence of training’s value in the Australian business context. In the absence of clear proof, Australian companies simply fail to appreciate the potential business benefits from developing their human capital. “Many firms may not be aware of the significant increase in their bottom line that could occur if they were to identify and pursue the highly profitable training opportunities that often exist within their own enterprises.” (Blandy 2000)

NCVER concluded that the solution was to “develop a body of evidence [case studies] indicative of the types of financial benefits Australian firms have received from training.” A second goal should be to provide Australian companies with an evaluation methodology with which “individual companies could assess for themselves, whether it would pay them to shift from being ‘low-training’ companies to ‘high-training’ companies.”

In response, NCVER and the Australian National Training Authority (ANTA) developed an ROI evaluation methodology and launched a series of nation-wide evaluation studies to examine training’s economic impact on a number of representative Australian companies. Notably, the Australian studies encompassed a broad profile of firms ranging in size from 400 to 27,000

employees and included a range of business types including manufacturing,

Individuals, firms and entire economies stand to reap substantial financial as well as non-financial returns from well-designed and -delivered training programs.

Doucouliagos 2000

transportation (railway), and charity organizations. The point of investigating such a diverse group was to emphasize that the benefits to be gained from training are independent of the company’s type of business activity, size, or ownership (i.e., domestic or multinational).

The Australian case studies, conducted by economists Dr. Chris Doucouliagos, Dean of Deakin University School of Economics, and Dr. Pasquale Sgro, also from Deakin, measured a range of business outcome measures from increased productivity and sales to reduced staff turnover, fuel usage, and training costs. The research revealed a dramatic range of training returns from 30% ROI (resulting from reductions in locomotive fuel usage) to 1,277% ROI (resulting from increased safety and reduced insurance premiums in an Australian chemical enterprise). (See Table 1)

Table 1: Australia’s NCVER Business Impact/ROI Case Study Highlights

Case Study	Employees	Type of Training	Business Measures	Estimated ROI
Australia–New Zealand Direct Line (Transportation – Freight)	300	Effective personal leadership	Increased productivity Reduced repair costs Reduced storage costs Reduced labour costs	323%
Franklin’s (Retail)	27,000	Induction training	Reduced costs of induction	1,000%
Huntsman Chemical Company (Manufacturing)	400	Safety training	Increased safety Reduced insurance premiums	1,277%
Kodak Australasia (Manufacturing)	2,000	Operator training	Increased productivity	256%
QR (Queensland Rail) (Transportation – Rail)	14,800	Fuel efficiency	Reduced fuel usage Reduced draft and buff forces	30%
Target Australia (Retail)	23,000	Lifestyles inventory	Increased sales Reduced staff turnover	980%

The authors note that, “on the basis of the case studies, it can be concluded that *significant returns* from training can be expected and these are independent of industries, ownership, structure, and nature of the business operations.”

The researchers note that these generous rates of return “are very large indicating the possibilities open to organizations.” Significantly, the authors also note that the actual ROIs realized by the participating firms might be even higher than the results reported. “The ROIs are likely to be lower bound estimates as all the costs could be identified but not all the benefits.”

Case studies... show that enterprise returns to training can be exceptionally high, especially for training that is highly specific, rapidly accomplished, and related to the introduction of new technology or working patterns. Such training pays a firm, even if labour turnover is high.

(Blandy 2000)

The report cautions, however, “The fact that ROI was positive and [statistically] significant for all case studies does not mean that training will always have positive returns.” Nor does it mean that training will always be positive or that all training programs implemented in these organizations will always generate positive ROI. Rather, what the studies do say about training is that, “a well designed and delivered training program can be expected to generate significant returns and is likely to compare favourably with other forms of investment.”

ROI is simply a way of comparing the value of the financial returns on an investment in training to the cost of the original investment. A positive ROI indicates that the financial return is greater than the costs of the training. In the case of Kodak Australia, for example, the increased productivity resulting from operator training produced a 256% return on the training investment. That means every dollar spent on training was returned and, in addition, a *profit* of \$2.56 was earned.

It is worth considering that although ROI is one of the best ways to benchmark the effectiveness of an investment in training, it is not always a straightforward task to compare ROI results from one company to the next or from one training program to another. The report notes, for example, “that an ROI of 50% for one company may be of more economic and strategic importance than an ROI of 200% for another company.”

The Australian research also identified additional, valuable information that can be gleaned from firm-level case studies but that are not revealed by large-scale macro-level analyses. Because such firm-level evaluations are conducted on a case-by-case basis, a great deal of useful *qualitative* information can be gathered along with the *quantitative* business results. For example, in situations where it is sometimes difficult to place a meaningful dollar value on training’s benefits (e.g., safety training or diversity training), the case study methodology makes it possible to report, along with the business results, such intangible outcomes as employee satisfaction, reduced stress, a less (socially) toxic workplace environment, etc. In many instances, feedback about such qualitative outcomes may be as important—if not more important—than financial outcomes such as higher profits and ROI.

Significantly, several of the Australian case studies, including Huntsman Chemical Company and Australia–New Zealand Direct Line (ANZDL), reported qualitative benefits from training in addition to positive financial outcomes. In the case of Huntsman Chemical Company, the report identifies important non-monetary benefits from safety training. A key outcome reported is improved quality of working and leisure life enjoyed by employees who have avoided physical injury as a result of reduced accident rates.

Similarly, the ANZDL study draws attention to important qualitative outcomes from its effective personal leadership program. Training participants reported a variety of so-called “intangible benefits” from the training, including improved self-esteem, confidence, and

personal effectiveness. As the following participant quotes illustrate, case study interviews can be used to capture important qualitative changes such as self-confidence, self-perception, and self-realization: “I’m more motivated and have a greater desire to achieve goals,” “I have become more clever and confident in doing things.” “I am better organized, better at goal setting, better at positive thinking—I can!”

From the perspective of the Canadian business community, the Australian case studies should provide encouraging examples of training’s potential value. They show that substantial returns can be achieved from skills development regardless of the size of the company and the type of business. Moreover, as these cases demonstrate, other important, intangible measures—social and personal—can, and should be, captured and included in the overall assessment of a training program’s success.

Ireland

“One of the major competitive advantages that Ireland currently enjoys is the high level of knowledge and skills amongst our workforce. That said, this competitive advantage needs to be continuously developed, with skill gaps closed and a culture of life-long learning promoted. Such steps—along with the need to assist lower-skilled employees move up the skills chain—will create an environment where human talent and creativity will be the key driver of sustainable competitive advantage.”

Micheál Martin T.D.
Minister for Enterprise, Trade and
Employment, Ireland (Skillnets 2006)

Canadian business leaders might also look to Ireland for another national benchmark initiative aimed at raising employers’ awareness of the business value of training. The Irish studies employed a similar case study approach along with business impact and ROI evaluation methodologies. Like Canada and Australia, Ireland faces similar national productivity challenges and many of the same skills and knowledge shortcomings. The Irish government recently launched a national skills enhancement and training evaluation initiative to further its goal, in the words of Michael Martin, Ireland’s Minister for Enterprise, Trade and Employment, “to unlock and grow the human talent pool that will maintain [Ireland] at the forefront of global competitiveness.” (Skillnets 2006)

The Irish evaluation pilot was spearheaded by Skillnets, Ireland’s government-labour-industry association that is akin to the Canadian Sector Council program. The Skillnets ROI Impact Project was conducted between 2004 and 2005, involved 12 companies, and differed significantly from the Australian case studies in that the research was carried out by company personnel who had received special evaluation training sessions rather than by outside academic economists. Notably, the evaluation methodology employed in Ireland was less complex and more accessible to non-experts than the Australian case study methodology.

Measuring the impact of training has always presented a challenge to trainers and enterprises alike... If enterprises cannot see or show the value of training, they will continue to remain ambivalent around its implementation.

Domhnall Mac Domhnaill
Chairman, Skillnets Ltd., Ireland (Skillnets 2006)

The twelve Irish organizations represented a variety of business types and resulted in the evaluation of a broad spectrum of training, including safety training, plant operations, new employee induction orientation, basic skills and leadership training.

A secondary goal of the Skillnets pilot was to validate the evaluation methodologies employed in the studies—the Kirkpatrick and Phillips evaluation models, developed by Dr. Donald Kirkpatrick and Dr. Jack Phillips. The goal was to test the usability and the applicability of these well-known methodologies in evaluating the impact of training in the Irish business setting.

As with the Australian experience, many of the training initiatives in the Irish studies demonstrated substantial returns on investment (Table 2). It is noteworthy that three or the twelve training initiatives in the pilot project reported negative ROI, confirming the cautions from the Australian study and from the majority of the high-level, econometric studies—that training frequently but not always results in “significant returns” to the organization.

Table 2: Results from Ireland’s Skillnets Impact Evaluation Pilot Projects

Case Study	Employees	Types of Training	Business Measures	Estimated ROI
Bord Na Móna	2,000	Technical training	Time savings Cost reduction	37%
Braun Oral B Ireland, Ltd	1,000	Soft skills	Reduced scrap	695%
Choice Hotels Ireland	1,500	Call centre sales	Increased sales	828%
Complete Laboratory Systems (CLS)	20	Food safety training	Increased sales	(- 81%)
Constructive Solutions	11	Management development	Increased productivity	285%
Diageo - St James's Gate Brewery Dublin	278	Technical training	Increased productivity	121%
Glanbia Meats Plc	840	Basic skills	Cost reduction	61%
Hilton Hotel Dublin	>50	Health & safety	Accident reduction	212%
Laepple Ireland Ltd	248	Health & safety	Accident reduction	150%
Lionbridge Technologies (Veritest)	>50	Management & supervisory skills	Cost reduction	32%
Masterchefs	>50	Soft skills	Quality improvement (Cost reduction)	(- 97%)
Novartis Ringaskiddy Ltd	520	Management development Soft skills	Increased productivity	(- 42%)

In the case of Complete Laboratory Systems (CLS), the negative ROI may not be a result of the training but, rather, it may be an artifact of the conservative nature of the Phillips ROI MethodologyTM. The Phillips approach requires the costs and benefits of training be annualized in the first year, meaning that only business benefits that accrue within the first 12 months after training are included in the study. However, due to the particular nature of the CLS training initiative, the financial benefits would not be realized until more than twelve months after the study’s completion and after the Skillnets report had been published.

Enterprises... in the absence of formal evaluations, appear to make judgments about the benefits of training on the basis of faith.” Billet (1997)

The secondary evaluation objective of the pilot—to independently evaluate the Kirkpatrick and Phillips evaluation models—established that the evaluation models were methodologically sound, comprehensive, and credible. It was concluded that methodology is ‘acceptable in the Irish business context’ provided that participating organizations received adequate training and support in the use of the methodologies.

At its completion, the entire Skillnets pilot evaluation project was itself subject of a separate and independent evaluation by Dr Anthony Foley, Dean of Dublin City University Business School. The resulting evaluation recognized the “well-conceived” methodology and concurred with the project’s underlying premises that a) that Ireland’s “present training levels by firms are low relative to (Ireland’s) strategic needs,” and b) “if enterprises are to significantly increase their training levels it must be shown, as precisely as possible, that training produces a clear contribution to success.” Dr. Foley’s review concluded that the Skillnets effort to demonstrate the value of training to Irish industry was “strategically important, well designed and excellently managed and the awareness of measurement was increased.” (Private Communication)

Many decision makers are inherently skeptical about the value of training, especially in an era of cost competitiveness. Thus it is important for champions within the organization to develop information systems that allow management to identify the costs and benefits of training, just as they can for physical forms of investment.”

(Betcherman 1998a)

Evaluation methodologies

As it happens, the complementary Kirkpatrick and Phillips training evaluation models employed in the Skillnets pilot are the most widely used training evaluation frameworks today. Although other methodologies or variants of the Kirkpatrick Phillips method might be employed (such as Accenture’s proprietary enterprise evaluation technique), no other approach enjoys quite the degree of acceptance as do the Kirkpatrick and Phillips methodologies.

A chief advantage of these evaluation approaches is its relative ease-of-use and their widespread adoption. The subject of more than a dozen books, both approaches have been adopted and promoted by the American Society for Training & Development (ASTD), the world’s largest training and performance association. In particular, the Phillips ROI Methodology™ has been adopted by the ASTD as its standard training performance

Training must be recognized as an *investment*, not simply an expense... Without the capacity to evaluate the real returns from their training investments, firms likely undervalue these returns against other sorts of investments where accounting information is more complete.
(Betcherman 1998b)

evaluation model to measure business impact and ROI. Through workshops, publications

and a professional learning network, the ASTD recommends the Phillips model to its 15,000 member organizations as a “comprehensive and systematic performance-based” evaluation approach.

More than 3,000 organizations are currently using Phillips ROI Methodology™ to evaluate the impact of their workplace learning and human resources investments. It is estimated that some 5,000 ROI impact studies are conducted annually and more than 100 published case studies are available to training professionals.

Origins

The Phillips ROI Methodology™ is similar in many respects to the Kirkpatrick evaluation model. In fact, the Phillips’ approach might be thought of as a more recent evolutionary phase of the Kirkpatrick approach which has dominated training evaluation for almost half a century.

In 1959, Dr. Donald Kirkpatrick published a series of articles called *Techniques for Evaluating Training* as an outgrowth of his Ph.D. research at the University of Wisconsin, Madison. In this work, Dr. Kirkpatrick developed the now famous four levels of training evaluation.

Level 1 (Reaction): Did participants like it? (The familiar smile sheets)

Level 2 (Learning): Did they learn?

Level 3 (Behaviour): Did participants’ behaviour change as a result of the training program...?

Level 4 (Results): Did the training have positive business or intangible results?
(Kirkpatrick 2005)

Dr. Kirkpatrick’s evaluation levels have been in use in almost every country in the world. Almost all organizations that deliver formal training use at least some of Kirkpatrick’s levels to evaluate their programs.

In the late 1970s, this model was elaborated by Dr. Jack Phillips in order to introduce more precision and to more closely align it with common business evaluation practices. Phillips updated Level 4 denoting it as *Business Results* and added a fifth level, return on investment (ROI). Essentially, Phillips’ contribution makes it easier to more explicitly express the training impact in terms of monetary values. This makes it possible for business and training professionals to more readily assess the bottom line impact and compare the training program’s ROI with the returns from other potential business investments.

Dr. Phillips also added a substantial measure of credibility to this analytical process by developing ten techniques to isolate the business impact of the training program from other unrelated factors (bonus programs, new technology systems, marketing promotions, etc.) that could also be improving business results. In this way, only the benefits from the

training investment are included in the calculations. Finally, the Phillips model included techniques for accounting for all the costs associated with the development and delivery of the training program.

The Return on Investment formula is:

$$\text{ROI} = \frac{\text{Total Program Benefits} - \text{Total Program Costs}}{\text{Program Costs}} \times 100\%$$

or,

$$\text{ROI} = \frac{\text{Net Program Benefits}}{\text{Program Costs}} \times 100\%$$

(Phillips 2003)

(Note: For a more in-depth treatment of the Phillips ROI evaluation methodology see Appendix A)

Summary of firm-level evidence

On the whole, the body of evidence from firm-level analysis appears to support in a more tangible way the positive relationship between training and business performance suggested by much of the macro-level research. Indeed, much of the case study evidence suggests that training can have substantial positive impacts. As expressed in the NCVER report, *Research at a Glance: Returns on investment in Training*, that “the returns to training investments are nearly always positive and can be very high.” (NCVER 2002) The evidence from Australian and Irish studies show, as have numerous other published case studies (See Appendix B Firm-Level Case Studies), that the return on investments in training programs are indeed substantial, ranging from 30% to more than 1,000%. Such return rates are especially generous when compared with typical business hurdle rates of 14% to 20%. (The hurdle rate is the minimum ROI a company requires before investing in a project or purchase.)

Of equal significance, perhaps, is the evidence that the positive impacts of training benefits small organizations as well as large. As reported in *Research at a Glance*, “these rates of return depend neither on firm size nor the industry in which the firm is located but on the nature of the training program and its relevance to the business needs of the firm.” This also confirms view of evaluation authorities such as Dr. Phillips that an important precondition in order for training to trigger performance improvements is that the program first satisfies some business need or is aligned to the strategic business objectives of the company. The more focused the training is on the actual needs of the business, the more likely it is to result in positive ROI. (NCVER 2002) (Phillips 2003)

Discussion

The evidence from macro-level and firm-level analysis present a convincing argument that increased training and skills development can have substantial payoffs for individual organizations and national economies. The logic implicitly suggests greater opportunities for success to governments and board rooms that recognize this fact and take advantage of it.

The addition of firm level analysis to the more traditional macro-level research encourages a broader and richer perspective to the evaluation of training's contribution to enterprise or national productivity. Equally important, this added perspective helps offset some of the perceived limitations of the macro-level evidence.

One of the drawbacks to macro-level evidence, for instance, has been its complexity. Many non experts may find difficulty in drawing meaning from the results which are often expressed in the arcane vernacular of professional statisticians and economists. Moreover, explains Dr. Robert Glover, author of *ROI Analysis of Education and Training in the Construction Industry*, macro-level research cannot create the sufficiently detailed or convincing picture of the relationship between training and business outcomes that managers need in order to make effective investment decisions. Writes Glover, a Research Scientist for the Ray Marshal Center for the Study of Human Resources, Texas, complicated statistical methods are “considered by many business practitioners as an unusable ‘black box’ that obscures these relationships and yields mysterious results which are difficult to trace back to inputs.” (Glover 1999)

Macro-level analysis also suffers from other intrinsic limitations. Many of the research studies, for example, are based on datasets that were developed originally for reasons unrelated to training. Consequently, they seldom include the some of the most basic factors, (e.g., the type of training, training methodology, costs, or business outcomes) that are needed to more fully illuminate the relationship between skills development and business performance.

Crucial factors such as training costs are often unavailable. “Most of the research surveyed so far,” agrees a study from the U.K. National Research and Development Centre for Adult Literacy and Numeracy, “has looked at the impact of training on productivity and innovation but has not included data on training costs. It leaves unresolved the question of whether and when training is a good investment, or what is the rate of return earned on investment in training.” (Ananiadou 2003)

In addition, such studies can suffer because there are no coherent definitions of training that all companies adhere to and use when responding to research surveys. Typically absent from much of the macro-level analysis, for example, is useful information such as the purpose of training (essential skills, induction, sales, or managerial, etc.), the type of training (informal, on-the-job, or formal), or the training delivery method (self-study,

classroom, mentored, elearning, or facilitated online). Concludes one study, *The Impact of Education and Training and Human Capital Investments on Company Performance*, “It seem likely that what companies report as training is what they have data for, no matter what is defined as training in each specific survey.” (Hansson 2004)

On the other hand, firm-level case studies relating training to business outcomes and ROI often yield easier-to-understand and perhaps more convincing evidence, from the perspective of employers, of the link between training and performance improvement. Firm-level evidence uses language familiar to business professionals and deals in widely understood business performance measures (increased sales, reduced waste, increased production, ROI, etc.). Adopting the case study approach to evaluating training, writes Glover, gives business practitioners the kind of transparent, actionable information they need. “Instead of scientific standards of statistical validity and reliability that characterize the academic (macro-level) approach, firms prefer to see an explicit, logical and common-sense linkage between training and outcomes.” (Glover 1999)

On the other hand, firm-level evidence might be less useful to policymakers because the results cannot reliably be generalized. Unlike the statistics-driven econometric studies, case studies are conducted on one firm at a time and usually on one training program at a time. Consequently, such research does not furnish sufficiently large datasets from which reliable inferences can be drawn for policy purposes.

Furthermore, the existing case study literature typically leaves unexplored other factors that might potentially have contributed to the strikingly positive returns generated by a large portion of training programs evaluated. It may well be, for example, that firms agree to participate in training evaluation studies also observe best practices in their training and human resource development activities. As a result, rather than resulting from training alone, much of the improved business outcomes might have been caused by the organization’s effective change management practices that facilitate more efficient transfer of newly learned skills to the job. Other firms, with less well developed change management practices, might not achieve the same level of business impact, even from the same training program. As well, the training programs which were selected by management for evaluation might conceivably have been influenced by a desire (conscious or otherwise) to demonstrate positive results. By the same token, management might be disinclined to spend resources evaluating training programs that they suspect might yield poor results and negative ROI.

The availability of easy-to-use tools such as Kirkpatrick/Phillips methodologies in a sense democratizes the process of training evaluation by making it easier for firms to conduct their own evaluations. (Much of the evaluation in the Skillnets Impact Evaluation Pilot Project, for example, was carried out by staff from the companies under study who had first received training in using the Phillips methodology.)

Wider use of such evaluation tools, it could be argued, might also contribute to general improvements in performance of businesses and the economy. By continuously monitoring the effectiveness of their training investments, organizations can identify those expenditures that are contributing to the bottom line and those that are not. Programs yielding positive ROI can be continued or expanded. Those showing negative ROI can be improved or discontinued. It is important for firms to be able to recognize when training programs do not result in net benefit and to find out why (especially if the program is strategically important or consumes large, ongoing operating expenses). A systematic evaluation can help determine, for example, if the program content was relevant in the first place; if it was poorly delivered; whether learning occurred; and, whether trainees had an opportunity to apply the new knowledge and skill once they returned to the job after training.

If investing in training is important to the economy, another important consideration is the lack of guidance available to help employers select the most effective training programs that might yield the greatest business benefits. There is almost no comparative evidence benchmarking the relative business value of different training categories (i.e., induction, management, sales training, etc.). Observes the authors of one U.K. study, “Unfortunately, the [macro-level research] literature rarely provides details on the nature of the training involved, let alone the on the particular skills which are increased as a result of it.” (Ananiadou 2003)

This lack of granularity may have deep economic consequences. Consider the veil of ambiguity surrounding our understanding formal and informal training. Although by some estimates as much as 70 % of all training is delivered informally, very little research has been done to quantify the relative costs and benefits of informal versus formal training. Which types of training, for example, are more effectively delivered by informal methods? Given a specific training requirement or an identified skills gap, which delivery method, formal or informal, will have the largest impact on business outcomes and ROI? How can the costs and benefits of informal learning be measured in the first place? One study summed up the dilemma, “If a worker cannot solve a problem and walks down the corridor to spend three quarters of an hour talking the issue through with a more experienced colleague, who is to know or to calculate and record the cost in staff time?” (Keep 2002)

For the Canadian economy, where the majority of businesses are small to medium size organizations, these kinds of issues are critical. Smaller organizations, for example, already facing substantial financial and resource disincentives for training adoption, might benefit greatly from some form of guidance to help them select the most suitable and effective types of training to provide maximum leverage from their limited budgets. In addition to formal and informal learning, a proliferation of options abound—coaching, mentoring, collaborative learning, stretch assignments, online learning, podcasts, wikis, and blogs.

All organizations, small and large, face uncharted oceans of uncertainty when they seek to identify best training practices for any given need. Although a myriad of training options are available, much of the training landscape today is essentially *terra incognita* especially for smaller firms seeking to determine which training programs, models, practices or strategies are most economical and yield the most favourable business outcomes.

The globalization of product and capital markets, and the accelerated rate of development and diffusion of technological innovation, has rendered *traditional* sources of economic advantage less potent.

The argument, then, is that the quality of a nation's labour force becomes a major determinant of a nation's economic competitiveness... then it is the 'quality' dimension of labour that represents the last source of competitive advantage."

(Chaykowski 2003)

Conclusion

Evidence from macro-level research suggests that formal training is a good investment that can possibly yield higher returns than investments in physical capital. Studies also suggest that increasing the level of skills development leads to increases in wages for employees as well as enhancing an organization's productivity. At the firm level, much of the case study evidence from around the world demonstrates that companies can reap substantial returns from investing in training. In some research, the benefits for companies with higher levels of training investment was shown to extend beyond improving business outcomes to include driving higher total shareholder returns by comparison to those firms with lower levels of training investment.

Much of the macro-level research and the growing body of case study research indicate convincingly that investment in training yields value to companies, employees, and the economy as a whole. Such evidence suggests that formal training is a good investment with the potential to yield higher returns than investments in physical capital. These findings are especially significant in light of Canada's comparatively weak track record in investing in workplace training, productivity, and economic growth. Further, combining the two lines of inquiry—macro- and firm-level—substantially enriches the evidence base making it more useful to a wider community.

The addition of evidence from firm level analysis significantly extends the audience for such research beyond the traditional realm of policymakers and labour economists. The combination of macro-level and firm-level research creates a firmer and more convincing evidence base with greater potential to mobilize the business community to enhance levels of training activity.

In particular, it is likely that the growing availability of firm-level case studies may prove to be a more relevant and a more potent tool to promote the adoption of higher levels of training activity with Canadian business owners than the macro-level evidence.

It is equally likely, however, that Canadian employers currently are largely unaware of this encouraging body of evidence generated for the most part in other countries. It would seem prudent, therefore, to seek ways to share these experiences with the business community in Canada. Taken together, firm level case studies provide employers with the most practical evidence available that training, when it is well designed, delivered, and aligned to the goals of the enterprise, can substantially improve business performance.

It is possible that greater levels of training investment in this country might also be further encouraged by the generation of a domestic body of evidence demonstrating the value of investing in skills development. Such 'Made in Canada' evidence might prove more compelling: amplifying the message on a wavelength that resonates more vigorously with Canadian employers.

Of particular concern is that large, yet vulnerable constituency comprised of small to medium size enterprises. SMEs firms face greater disincentives to train and typically have more limited resources than larger firms have. Most important, according to the evidence, SMEs typically have fewer opportunities than larger firms to learn about available training options and best practices in human resource development. Any initiatives to encourage increased adoption of training in Canada, therefore, would do well to target this strategically important community.

Essential skills also warrant special consideration. Basic skills are clearly pivotal, not only to Canada's success in the knowledge economy, but arguably to our very notions of personal worth and enfranchisement. Although employers spend very little of their training budgets on essential skills upgrading, there appears to be little hard evidence to encourage them to do so. It seems clear, therefore, that any endeavour to establish the real benefits to employers from investing in basic skills development could yield significant social as well as economic rewards.

Supporting the broader adoption of easy-to-use training evaluation methodologies will give Canadian organizations the tools they need to judge the wisdom and impact of their training decisions. On the national level, connecting the dots between skills development and business outcomes may have substantial, long-run economic consequences. More important, perhaps, such insights may serve to encourage greater levels of investment in the human capacity of all working Canadians.

APPENDIX A—

ROI Evaluation Methodology

Return on Investment (ROI)

Because of its appropriateness to the business setting, the evaluation model that resulted from the work of Dr. Donald Kirkpatrick and Dr. Jack Phillips has become the most widely used training evaluation methodology in the world. Therefore, it may be useful to highlight some of the key features of this framework focusing on the Phillips ROI Methodology™ which more closely reflects evaluation practices commonly observed in the world of business and finance.

ROI and cost-benefit analysis are familiar decision-making tools used in business management worldwide. They are used most commonly to analyze planned investment decisions for the acquisition of capital equipment and technology. At its simplest, ROI is the ratio of the net benefits of an investment compared to its total costs.

The formula for ROI is:

$$\text{ROI} = \frac{\text{Total Program Benefits} - \text{Total Program Costs}}{\text{Program Costs}} \times 100\%$$

or,

$$\text{ROI} = \frac{\text{Net Program Benefits}}{\text{Program Costs}} \times 100\%$$

In order to conduct a training ROI analysis, the Phillips model recommends an 18-step process that systematically moves through the key steps from needs assessment through program objectives development, evaluation strategy, evaluation instrument design, data collection, analysis, return on investment calculating, reporting, etc.

The Phillips model measures training outcomes at five levels:

Level	Brief Description
1. Reaction, Satisfaction, & Planned Action	Measures participant's reaction to the program and outlines specific plans for implementation.
2. Learning	Measures skills, knowledge, or attitude changes.
3. Application and Implementation	Measures changes in on-the-job behavior and specific application and implementation.
4. Business Impact	Measures business impact of the program.
5. Return on Investment (ROI)	Compares the monetary value of the results with the costs for the program, usually expressed as a percentage.

Chain of impact

Ideally, when a training program is implemented, according to Phillips, it should create a chain of impact at several levels beginning at Satisfaction/Planned Action and ending in ROI. When business results and ROI are to be measured (Levels 4 & 5), it is also important to evaluate the other levels. A chain of impact should occur through the levels as skills and knowledge learned (Level 2) are applied on the job (Level 3) to produce business impact (Level 4). If measurements are not taken at each level, it is difficult to conclude that the business results achieved were actually caused by the program. On the other hand, if a negative ROI results from the training investment, the evaluator should be able to identify which link(s) in the chain was broken (e.g., the participants did not learn (Level 2), or they were unable to successfully apply the new learning on the job (Level 3). From the perspective of the organization, the value of the information gathered increases with movement along the chain of impact from Level 1 (Reaction, Satisfaction, and Planned Action) to Level 5 (ROI). The following provides a summary of the five levels:

Level 1: Reaction, Satisfaction, and Planned Action measures the satisfaction of program participants as well as their plans to apply what they have learned. Most organizations evaluate at Level 1, often with a generic, end-of-program questionnaire. While this level of evaluation is useful, a favorable reaction does not ensure that participants have learned new skills or knowledge. (Dixon, 1990)

Level 2: Learning focuses on what participants learned during the program using tests, skill practices, role playing, simulations, group evaluations, and other assessment tools. A learning check is helpful to ensure that participants have absorbed the program material and know how to use it properly. However, a positive measure at this level is no guarantee that what is learned will be applied on the job. The literature is laced with studies showing the failure of learning to be transferred to the job. (Broad, 1997)

Level 3: Application and Implementation recommends several types of follow-up methods to determine whether participants applied what they learned once back on the job. The frequency and use of the new skills and knowledge are important determinants of success at Level 3. Although Level 3 evaluation is important to gauge the success of

the application of a program, it still does not ensure that there will be a positive business impact as a result of the training.

Level 4: Business Impact focuses on the actual business results achieved by training participants as they apply what they have learned in their workplaces. Typical Level 4 measures include output, quality, costs, and time. Although the program may produce a measurable and substantial business impact, there may still be a concern that the program costs too much.

Level 5: Return on Investment (ROI), the ultimate level of evaluation, compares the monetary benefits from the program with the program costs. Although the ROI can be expressed in several ways, it is usually presented as a percentage or cost/benefit ratio. (Phillips 2005)

As discussed in body of *Connecting the Dots*, two key refinements distinguish Dr. Phillips' models from the Kirkpatrick model—the use of isolation techniques and intangibles.

Isolation techniques: In the past, a major barrier to evaluating the business impact of training was the perception that it is all but impossible to separate training's impact from other factors in a business that may also influence the organization's bottom line. An important feature of the Dr. Phillips' evaluation model, therefore, is the recognition that credibility depends on the extent to which the methodology takes into account other influencing factors. The Phillips model uses ten techniques to isolate the business impact of training influencing sources such as changes in the competitive environment, marketing programs, employee bonus schemes, seasonal effects that may also be contributing to business improvements, etc.

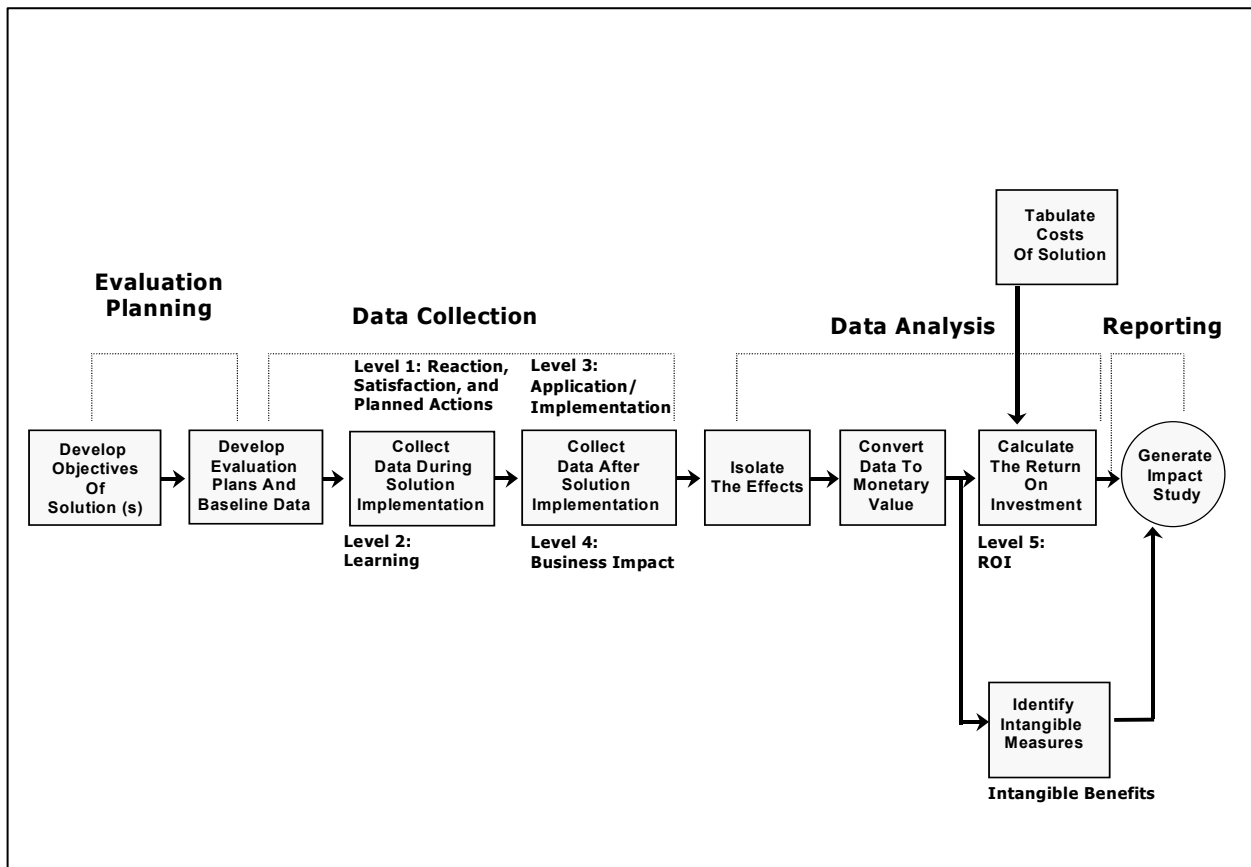
Intangibles: A further refinement by Phillips to the Kirkpatrick model is the addition of intangibles. According to the methodology, it is important to recognize that some outcomes cannot be easily measured and converted to monetary values. Attempting to put a dollar value on outcomes such as customer satisfaction, a less stressful work environment, and employee satisfaction can be extremely difficult, and the results may be of questionable value. Trying too hard to attach a business value can call into question the credibility of value of the outcome and possibly the entire evaluation effort. As a result, the Phillips methodology recommends that evaluators do not try to convert those "soft" business measures, and instead report them as intangible benefits along with the "hard" business improvement outcomes such as increase in sales, reduced defects, time savings, etc.

The ROI evaluation process

It worthwhile noting that evaluation may serve a number of key quality control functions in addition to determining the business value of a training program or investment. Some of the other objectives of evaluation are to

- improve the quality of learning and outcomes
- determine if a program is accomplishing its objectives
- identify the strengths and weaknesses in the learning process
- determine the cost/benefit analysis of an Human Resources Development (HRD) program
- assist in marketing HRD programs in the future
- determine if the program is appropriate for the target audience
- establish a database that can assist in decision making about the program
- establish priorities for funding

ROI Process Model



Phillips ROI Methodology™ (Phillips 2001)

Two of the most critical stages in the Phillips ROI model are data collection and data analysis.

Data Collection

A central challenge of the ROI process is data collection—selecting the method(s) appropriate for the setting and the specifics of the new program within time and budget constraints. Depending on the nature of the training program, hard data (representing output, quality, cost, and time) or soft data (customer satisfaction and job satisfaction) may be collected in the course of the evaluation. The following are some of the key data collection methods employed in the Phillips/Kirkpatrick approaches.

- **Follow-up surveys and questionnaires** to measure satisfaction and reactions from stakeholders, as well as to uncover specific application issues with the programs.
- **On-the-job observation** to capture application and use.
- **Tests and assessments** to measure the extent of learning.
- **Interviews** to measure reaction and determine the extent to which the program has been implemented.
- **Focus groups** to determine the degree of application of the program in job situations.
- **Action plans** to show progress with implementation on the job and the impact obtained.
- **Business performance monitoring** to show improvement in various performance records and operational data.

Data Analysis

An often overlooked issue in most evaluations is the process of isolating the effects of a program. This is perhaps the most crucial step in a training evaluation because many other factors (e.g., marketing programs, employee bonus programs, etc.) will influence business performance data after a new program is implemented. Therefore, to establish the credibility of a training study, it is important to use one or more techniques to isolate the business impact caused by the training program from other possible factors. There are ten strategies for isolating the training impact. The following are some of the most often used isolation strategies.

- A pilot group of participants in a program is compared with a **control group** not participating in the program to isolate program impact.
- **Trend lines** are used to project the values of business impact data, and projections are compared with the actual data after a major corporate program or initiative.
- **Participants/stakeholders estimate** the amount of improvement related to a program; supervisors and managers estimate the impact of a program on the output measures.

Converting data to monetary values

In order to calculate the ROI, the data collected in a Level 4 evaluation is converted to monetary values and compared to program costs. This requires a value to be placed on each unit of data connected with the program. Increased in output measures (e.g., increased sales) are converted to monetary values based on their unit contribution to profit. In most organizations, standard values are normally available for such measures. Other techniques may be used such as converting the value of quality improvements or using participants' wages where employee time has been saved as a result of the program.

Tabulating program costs

In order to calculate the benefit/cost and the ROI, all of the costs involved in the program must be tabulated. Among the typical cost components of training programs that should be included are the cost to design and develop the program, the cost of all program materials provided to each participant, travel and accommodation, and the fully loaded salaries (i.e., salaries plus benefits) of participants and facilitators.

Calculating the Return on Investment

The ROI is calculated using the program benefits and costs. The key metrics are benefit/cost ratio (BCR) and ROI. The benefits/cost ratio is the total program benefits divided by the total costs. The BCR formula is

$$\text{BCR} = \frac{\text{Total Program Benefits}}{\text{Total Program Costs}}$$

The return on investment is the **net** benefits divided by total program costs, as described earlier.

Example:

A sales training program delivered to 34 retail sales associates results in an increase in sales contributing an increase in profits to the organization of \$120,000 per year. The total cost of the program was \$90,000.

The benefit cost ratio is

$$\begin{aligned} \text{BCR} &= \frac{\$120,000}{\$90,000} \\ &= 1.33:1 \end{aligned}$$

In other words, for every \$1.00 spent on the training program, \$1.33 is returned.

The ROI of the program is:

$$\begin{aligned} \text{ROI} &= \frac{\$120,000 - \$90,000}{\$90,000} \times 100\% \\ &= \frac{\$30,000}{\$90,000} \times 100 \\ &= \mathbf{33\%} \end{aligned}$$

For every dollar spent on the training program was returned and an additional \$0.33 is left over as profit.

Intangible benefits

In addition to monetary benefits, most training programs will have intangible, non-monetary benefits. Intangibles are those measures that cannot easily be converted to monetary values. According to Phillips, "In some programs, such as interpersonal skills training, team development, leadership, communications training, and management development, the intangible (non monetary) benefits can be more important than tangible (monetary) measures. Consequently, these measures should be monitored and reported as part of the overall evaluation. In practice, every project or program, regardless of its nature, scope, and content will have intangible measures associated with it. The challenge is to efficiently identify and report them." (Phillips 2003)

Typical intangible variables include items such as

- Stress reduction
- increased organizational commitment
- Grievance reduction
- improved customer satisfaction
- reduced complaints
- reduced conflicts

Typical ROI results

Evaluations can be conducted on a wide variety of training programs or any change initiative implemented in organizations. It is not uncommon for training programs to show high returns on investment. In fact, investment in training programs often results in higher returns than many other investments such as capital equipment or technology.

The following are some typical results selected from real-world evaluation studies. Note the wide variety of program types evaluated and the broad range of business measures, including employee turnover, reduced waste, sales, and time saving. Also, it is not uncommon for a single program to result in the simultaneous improvement of several measures. (Note: Not all programs will result in positive ROI. Perhaps the key factor in gaining positive ROI is the extent to which the program is aligned with the key business goals of the organization.)

Study/Setting	Target Group	Program Description	Business Measures	ROI
Cracker Box	Managers, Manager trainees	Performance management training	Reduced turnover, absenteeism, & waste	298%
Healthcare	Managers, Supervisors, Later all employees	Anti-sexual harassment training	Reduced turnover & grievances	1,052%
Hewlett-Packard	Inside sales management team, Inside sales reps	Sales training for complex computing systems	Inside sales	195%
Verizon Communications	Training practitioners, Customer service	Customer service skills training	Reduced call escalations	(- 85%)
High Tech	Managers, Supervisors, Project leaders	Meeting skills, Miscellaneous business measures	Time savings (reduced number & duration of meetings)	506%
Imperial National Bank	Potential future leaders	Leadership training	New product development, New customer acquisitions	62%

Study/Setting	Target Group	Program Description	Business Measures	ROI
Canadian Valve Company	New employees	Equipment operations training	Reduced time, scrap, & turnover Improved safety	132%
Retail Merchandise Company	Sales associates	Retail sales skills	Increased sales revenues	118%
U.S. Department of Veterans Affairs	Managers, Supervisors	Leadership competencies	Cost, time savings, Reduced staff requirements (FTEs)	159%
Garrett Engine (Allied Signal)	Maintenance staff, Hourly employees	Team building	Reduced equipment downtime	125%
Nortel Networks	Future leaders	Executive coaching	Increased output productivity, sales, employee retention	788%
Metro Transit Authority	Supervisors, Drivers	New hire screening, employee coaching	Reduced schedule delays & absenteeism, Increased employee satisfaction	822%
Miami VA Medical Center	All employees	Self-mastery training using learning maps	Time & costs saving	3%
United Petroleum	Sales engineers	Sales skills training, Incentive program	Increased sales, monthly revenue, & customer satisfaction	206%
US Federal Intelligence Agency	High value experts	Internal Masters degree program	Professional employee retention (reduced turnover)	153%
International Car Rental	First level managers	Leadership training	Increased productivity & sales, Cost and Time savings	105%

**APPENDIX B –
FIRM LEVEL CASE STUDIES
Return on Training Investments**

INDUSTRY TYPE	Manufacturing (Machining and assembling valves)	Size: SME																											
TRAINING TYPE	Machine Operator Training																												
COMPANY NAME	Canadian Valve Company																												
KEY BUSINESS MEASURES	Training time, machining scrap, turnover, safety																												
RESULTS	ROI 132%																												
OVERVIEW	A pilot training program was launched to investigate the potential cost savings that might be realized by implementing a permanent training program to train new machine operators. As a result of the substantial potential benefits forecasted by the pilot, management decided to set aside floor space and budget for a permanent training program with two full-time professional trainers.																												
BACKGROUND/ TRAINING SOLUTION	<p>A chronic high turnover rate for machine operators was causing lost production output as a result of downtime while new (and inexperienced) operators were hired and trained. Management considered traditional on-the-job training time as excessive and the results unsatisfactory. In addition, new operators created high scrap rates and caused excessive equipment downtime as a result of improper operation of machinery. Another indirect outcome of poor training practices was that new hires made frequent mistakes and consequently would be the subject of hostile reactions from their supervisors. In frustration, many new hires quit partway through the program.</p> <p>Solution: Management proposed a pilot program to investigate the payback from adopting a new strategy that would take training out of the production environment. A complete training plan was developed detailing objectives, program structure, and duration. Training was to be conducted under the supervision of a professional instructor who was also a competent machine operator. This approach freed the line supervisors to devote more of their time to their primary tasks of supervising and motivating machine operators. The strategy involved evaluating the ROI of the pilot program and using the results to estimate the potential annual return on investment from implementing a permanent training program.</p>																												
EVALUATION STRATEGY	Methodology: Phillips ROI Methodology (All five levels)																												
RESULTS	<table> <tr> <td colspan="3">Training costs:</td> </tr> <tr> <td>Equipment (surplus lathes, desks, etc.)</td> <td></td> <td>\$19,000</td> </tr> <tr> <td>(\$115,000 prorated over 5 years)</td> <td></td> <td></td> </tr> <tr> <td>Space (Rental)</td> <td></td> <td>\$10,000</td> </tr> <tr> <td>Annual program development costs</td> <td></td> <td>\$7,500</td> </tr> <tr> <td>(\$15,000 prorated over 2 years)</td> <td></td> <td></td> </tr> <tr> <td>Salaries (two instructors)</td> <td></td> <td>\$80,000</td> </tr> <tr> <td>Maintenance</td> <td></td> <td>\$15,000</td> </tr> <tr> <td>TOTAL</td> <td></td> <td>\$131,500</td> </tr> </table>		Training costs:			Equipment (surplus lathes, desks, etc.)		\$19,000	(\$115,000 prorated over 5 years)			Space (Rental)		\$10,000	Annual program development costs		\$7,500	(\$15,000 prorated over 2 years)			Salaries (two instructors)		\$80,000	Maintenance		\$15,000	TOTAL		\$131,500
Training costs:																													
Equipment (surplus lathes, desks, etc.)		\$19,000																											
(\$115,000 prorated over 5 years)																													
Space (Rental)		\$10,000																											
Annual program development costs		\$7,500																											
(\$15,000 prorated over 2 years)																													
Salaries (two instructors)		\$80,000																											
Maintenance		\$15,000																											
TOTAL		\$131,500																											
BENEFITS	<table> <tr> <td colspan="3">Annual benefits included savings as a result in reductions in the following cost categories:</td> </tr> <tr> <td>Training time</td> <td></td> <td>\$33,000</td> </tr> <tr> <td>Machining scrap</td> <td></td> <td>\$45,000</td> </tr> <tr> <td>Turnover</td> <td></td> <td>\$115,200</td> </tr> <tr> <td>Accidents</td> <td></td> <td>\$14,250</td> </tr> <tr> <td>Maintenance expenses</td> <td></td> <td>\$97,500</td> </tr> <tr> <td>TOTAL</td> <td></td> <td>\$304,950</td> </tr> </table>		Annual benefits included savings as a result in reductions in the following cost categories:			Training time		\$33,000	Machining scrap		\$45,000	Turnover		\$115,200	Accidents		\$14,250	Maintenance expenses		\$97,500	TOTAL		\$304,950						
Annual benefits included savings as a result in reductions in the following cost categories:																													
Training time		\$33,000																											
Machining scrap		\$45,000																											
Turnover		\$115,200																											
Accidents		\$14,250																											
Maintenance expenses		\$97,500																											
TOTAL		\$304,950																											

ROI	ROI = Net benefits/Total Costs = 304,950-131,500/131,500 = \$173,450/131,500 = 132%
COMMENTS	Phillips (1997)

INDUSTRY TYPE	Telecommunications	Size: Large														
TRAINING TYPE	Call Centre Customer Service Skills															
COMPANY NAME	Verizon															
KEY BUSINESS MEASURES	Improvement in customer feedback, Reduction in calls escalated to supervisory level															
RESULTS	ROI: Year 1 (-85%) Year 2 (-54%)															
OVERVIEW	Early evaluation of a vendor-supplied customer service training provided management with sufficient evidence to justify the early cancellation of an expensive training initiative that was not delivering value to the organization. As a result of this decision, Verizon saved the majority of the program's estimated two-year costs—or more than \$800 000.															
BACKGROUND/ TRAINING SOLUTION	<p>Verizon purchased an expensive training program to provide advanced customer service skills to 600 representatives of the Enterprise Business Group call centre. However, the program was selected, purchased, and implemented without a formal needs assessment. This oversight suggests a likely reason that the program ultimately demonstrated negative business impact (the payoff was less than the program costs).</p> <p>Solution: The goal of the two-day leader led program was to reduce the number of customer calls escalated to the supervisory level. The program consisted of key skills areas such as how to open a call, diagnosing problems, identifying needs, listening skills, and closing the call.</p>															
EVALUATION STRATEGY	<p>Methodology: Phillips ROI Methodology (All five levels)</p> <p>Key Points: Use of control groups to isolate the business impact of the training from other factors. (3 sites evaluated, 20 participants at each site—10 who received training compared with 10 who did not.)</p>															
RESULTS	<p>Program Costs:</p> <p>Anticipated Training costs (Year 1):</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;">Purchase Price</td> <td style="text-align: right;">\$157,900</td> </tr> <tr> <td>Instructor Costs</td> <td style="text-align: right;">\$ 24,780</td> </tr> <tr> <td>Participant Costs (time off the job)</td> <td style="text-align: right;">\$ 185,071</td> </tr> <tr> <td>Materials</td> <td style="text-align: right;">\$104,700</td> </tr> <tr> <td>ROI Evaluation Costs</td> <td style="text-align: right;">\$ 15,576</td> </tr> <tr> <td>TOTAL</td> <td style="text-align: right;">\$488,027</td> </tr> </table> <p>Program Benefits</p> <p>Annual benefits included savings as a result in reductions in the following cost categories:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;">Reduction in Escalations</td> <td style="text-align: right;">\$71,568</td> </tr> </table>		Purchase Price	\$157,900	Instructor Costs	\$ 24,780	Participant Costs (time off the job)	\$ 185,071	Materials	\$104,700	ROI Evaluation Costs	\$ 15,576	TOTAL	\$488,027	Reduction in Escalations	\$71,568
Purchase Price	\$157,900															
Instructor Costs	\$ 24,780															
Participant Costs (time off the job)	\$ 185,071															
Materials	\$104,700															
ROI Evaluation Costs	\$ 15,576															
TOTAL	\$488,027															
Reduction in Escalations	\$71,568															
ROI	<p>ROI = Net benefits/Total Costs = $71,568 - 488,027 / 486,347 =$</p> <p style="text-align: center;">$- \\$416,077 / 486,347 = - 85 \%$</p> <p>Note: Total costs of program over two years would have been \$802,578 and total anticipated return to the organization would have been \$214,704 (-72% ROI).</p>															
COMMENTS	Phillips (2001)															

INDUSTRY TYPE	Retail	Size: Large												
TRAINING TYPE	Retail Sales Skills													
COMPANY NAME	Retail Merchandise Company													
KEY BUSINESS MEASURES	Sales increase													
RESULTS	ROI = 118%													
OVERVIEW														
BACKGROUND/ TRAINING SOLUTION	<p>Executives of a large U.S. retail chain (420 stores) selling small household items and gifts (electronics, jewelry, etc.) had connected chronically slow sales growth with the weak selling skills of their sales associates—a lack of active or proactive customer involvement. To boost sales, a promising sales training program was identified. But before rolling out the program across all stores, management decided to implement the training in 3 locations, monitor the business results, and make recommendations.</p> <p>Solution: The 3-day training program, Interactive Selling, involved the use of 5 simple skills. The program provided participants with opportunities to learn interactive selling techniques and to practice new sales skills with classmates.</p>													
EVALUATION STRATEGY	<p>Methodology: Phillips ROI Methodology (All five levels)</p> <p>Key Points: Use of control groups to isolate the business impact of the training from other factors. Regional managers selected locations with common factors (store size, average income of customer base, store traffic levels, and similar store performance).</p> <p>Level 1 (Reaction/Satisfaction Survey): Evaluation demonstrated that participants had a positive reaction to the program and saw the relevance of the skills. (Scored greater than 4 on a 5-point scale).</p> <p>Level 2 (Learning): In role-play activities, participants demonstrated appropriate selection and use of skills.</p> <p>Level 3 (Application Survey): 78% of participants reported they used the skills taught. 52% of participants used all five skills with all customers.</p>													
BUSINESS RESULTS	<p>Program Benefits:</p> <p>After 15 weeks, the average sales per employee of the trained pilot group (\$12,075) were compared with the average of the control group (\$10,449). The difference (\$1,626) is multiplied by 2% (the retail chain's standard profit contribution) to yield the average weekly profit contribution from the training.</p> <p>The total annual benefit from training:</p> <p>$\\$32.50 \times 48 \text{ weeks} \times 48 \text{ sales associates} = \mathbf{\\$74,880}$</p> <p>Program Costs</p> <table> <tr> <td>Facilitation Fees (3 courses @ \$3750)</td> <td>\$11,250</td> </tr> <tr> <td>Program Materials</td> <td>\$1,680</td> </tr> <tr> <td>Meals/refreshments</td> <td>\$4,032</td> </tr> <tr> <td>Participants Salaries (+ 35% load factor)</td> <td>\$12,442</td> </tr> <tr> <td>Miscellaneous</td> <td>\$3,580</td> </tr> <tr> <td>Total</td> <td>\$32,984</td> </tr> </table>		Facilitation Fees (3 courses @ \$3750)	\$11,250	Program Materials	\$1,680	Meals/refreshments	\$4,032	Participants Salaries (+ 35% load factor)	\$12,442	Miscellaneous	\$3,580	Total	\$32,984
Facilitation Fees (3 courses @ \$3750)	\$11,250													
Program Materials	\$1,680													
Meals/refreshments	\$4,032													
Participants Salaries (+ 35% load factor)	\$12,442													
Miscellaneous	\$3,580													
Total	\$32,984													

ROI	<p>ROI = Net Benefits/Total Costs</p> <p>= $\\$74,880 - 32,984 / 32,984 = 127\%$</p>
COMMENTS	<p>As a result of the favourable ROI predicted, the company elected to adopt the training program for all stores. As a double-check on the accuracy of the three-month control group study, the company continued to collect data for 12 months as the sales skills program was rolled out across the chain's 420 stores. As it turned out, the real annual business benefits actually exceeded the improvement predicted by the ROI study.</p> <p>Phillips J. (2001)</p>

INDUSTRY TYPE	Meat Processing	Size: Medium																				
TRAINING TYPE	Essential Skills Training																					
COMPANY NAME	Glanbia Meats plc (Ireland)																					
KEY BUSINESS MEASURES	Production efficiency Improved communications Recruitment and retention Efficiency of service functions																					
RESULTS	ROI 61%																					
OVERVIEW	Introducing essential skills training (English as a Second Language) results in substantive ROI and, perhaps equally important, yields many significant intangible benefits for the company and its workforce. (See "Comments" below)																					
BACKGROUND/ TRAINING SOLUTION	<p>In response to severe labour and skills shortages, Glanbia employs non-English speaking, migrant workers in its meat processing division. In order to support new workers integrating into Irish society and to improve their effectiveness on the job, Glanbia agreed to invest in a language training program.</p> <p>Solution: A language training program was conducted in evenings after work. After training, assessment identified more than one-third of the 32 new employees had achieved a "certification" level of achievement while others improved their language skills to varying degrees.</p>																					
EVALUATION STRATEGY	<p>Methodology: Phillips ROI Methodology (All five levels)</p> <p>Because of the language competency issues, evaluation data was collected using a facilitated questionnaire for levels 1 through 3 (Reaction, Learning, and Application on the Job).</p> <p>Isolation—The business impact of training was isolated from other potential impacts using supervisors' and managers' estimates.</p>																					
BUSINESS RESULTS	<table> <tr> <td>Program Benefits:</td> <td></td> </tr> <tr> <td>Up-skilling saving</td> <td>€ 1,000</td> </tr> <tr> <td>Recruitment/retention savings</td> <td>€ 3,300</td> </tr> <tr> <td>Accident savings</td> <td>€ 3,000</td> </tr> <tr> <td>Lower running costs</td> <td>€ 5,918</td> </tr> <tr> <td>Total Benefits</td> <td>€ 13,218</td> </tr> <tr> <td>Program Costs</td> <td></td> </tr> <tr> <td>Facilitators fee</td> <td>€ 6,700</td> </tr> <tr> <td>Other costs</td> <td>€ 1,500</td> </tr> <tr> <td>Total Costs</td> <td>€ 8,200</td> </tr> </table>		Program Benefits:		Up-skilling saving	€ 1,000	Recruitment/retention savings	€ 3,300	Accident savings	€ 3,000	Lower running costs	€ 5,918	Total Benefits	€ 13,218	Program Costs		Facilitators fee	€ 6,700	Other costs	€ 1,500	Total Costs	€ 8,200
Program Benefits:																						
Up-skilling saving	€ 1,000																					
Recruitment/retention savings	€ 3,300																					
Accident savings	€ 3,000																					
Lower running costs	€ 5,918																					
Total Benefits	€ 13,218																					
Program Costs																						
Facilitators fee	€ 6,700																					
Other costs	€ 1,500																					
Total Costs	€ 8,200																					
ROI	<p>ROI = Net Benefits/Total Costs = €13,218-8,200/8,200 X 100% = 61%</p>																					
COMMENTS	<p>Apart from the monetary benefits, there were significant intangible benefits including increased confidence of employees resulting in improved employee satisfaction, more fulfilling experience for employees living in their new community, enhanced profile for Glanbia Meats as a responsible employer, and greater retention and recruitment of employees. As well, the training opened career development opportunities that made it easier for new employees to progress through promotion and further career development. Skillnets (2005)</p>																					

INDUSTRY TYPE	Brewing Industry	Size: Medium																
TRAINING TYPE	Cross-Skills Training																	
COMPANY NAME	St. James's Gate Brewery Dublin (Diageo)																	
KEY BUSINESS MEASURES	Cost reduction Increased maintenance efficiency Productivity improvements																	
RESULTS	ROI 121%																	
OVERVIEW	This study evaluated a Cross Skilling program implemented to support a major change initiative designed to move a manufacturing facility from a single operative to a multi-skilled, team based process. In addition to the substantial return on investment, this training program yielded important intangible benefits such as enhanced reputation of the brewery within the Diageo Group as well as the development of a positive, supportive team culture.																	
BACKGROUND/ TRAINING SOLUTION	<p>St James's Gate Brewery has been in operation for nearly 300 years and produces kegged stout (Guinness) and ale (Kilkenny). In 2001, management decided to rationalize operations because costs were too high. A number of measures were implemented including reduction of head count, moving to 24/7 operations, and training. The training component involved upskilling single-skill workers (electrical, mechanical, or operations) so that they could perform in a multi-skilled, team-based environment.</p> <p>Solution: Cross-Skills Training program was a key factor in the achieving the business targets of the James's Gate change initiative. The training, initiated through a customized train-the-trainer approach, was designed to enable team members to operate in a "no demarcation" ethos and to enable the development of new, flexible team structures having the required skill sets to carry out all tasks competently and successfully. The training occurred over nine months with 91 team members and 32 supervisors across different departments.</p>																	
EVALUATION STRATEGY	<p>Methodology: Phillips ROI Methodology (All five levels)</p> <p>Level 2 (learning) data was obtained using performance demonstration and competency assessment for skills attained.</p>																	
BUSINESS RESULTS	<p>Program Benefits:</p> <table> <tr> <td>Total Change Initiative Benefits</td> <td>€ 4,705,000</td> </tr> </table> <p>(First 12 months)</p> <p>Participants estimation of % benefits caused by training 47%</p> <p>Participants confidence in their estimate 68%</p> <p>Probable contribution by training (0.47 X 0.68) 32%</p> <p>(Note: Supervisors and department heads were also asked for their estimates on the percentage contribution of training to the total benefits. The participants' estimates were chosen because they were lowest and thus provide the most conservative estimate.)</p> <p>Financial benefit of the Cross-Skills Training program:</p> <table> <tr> <td>€ 4 705 000 X 0.32 =</td> <td>€ 1,517,833</td> </tr> </table> <p>Program Costs:</p> <table> <tr> <td>Trainees' time (fully loaded)</td> <td>€ 168,502</td> </tr> <tr> <td>Back filling for trainers</td> <td>€ 400,000</td> </tr> <tr> <td>Cost of time for technical co-coordinator</td> <td>€ 37,500</td> </tr> <tr> <td>Cost of Train the Trainer Programs</td> <td>€ 42,058</td> </tr> <tr> <td>Other costs</td> <td>€ 39,625</td> </tr> <tr> <td>Total Costs</td> <td>€ 687,685</td> </tr> </table>		Total Change Initiative Benefits	€ 4,705,000	€ 4 705 000 X 0.32 =	€ 1,517,833	Trainees' time (fully loaded)	€ 168,502	Back filling for trainers	€ 400,000	Cost of time for technical co-coordinator	€ 37,500	Cost of Train the Trainer Programs	€ 42,058	Other costs	€ 39,625	Total Costs	€ 687,685
Total Change Initiative Benefits	€ 4,705,000																	
€ 4 705 000 X 0.32 =	€ 1,517,833																	
Trainees' time (fully loaded)	€ 168,502																	
Back filling for trainers	€ 400,000																	
Cost of time for technical co-coordinator	€ 37,500																	
Cost of Train the Trainer Programs	€ 42,058																	
Other costs	€ 39,625																	
Total Costs	€ 687,685																	
	<p>ROI = Net Benefits/Total Costs = 1,517,833-687,685/687,685 X 100% = 121%</p>																	

COMMENTS	In addition to the financial benefits of the Cross-Skills Training, there were substantial intangible benefits as well enhanced job satisfaction since each staff member is now competent in a number of roles. The St James's Gate Brewery also gained in stature in the larger Diageo Group as a result of its success in improving productivity, quality, and flexibility. (Skillnets 2005)
-----------------	--

INDUSTRY TYPE	Health Care	Size: Large (6550 employees)																																				
TRAINING TYPE	Anti-Sexual Harassment & Awareness Training																																					
COMPANY NAME	Healthcare Inc. (United States)																																					
KEY BUSINESS MEASURES	Reducing costs of grievance process Employee turnover																																					
RESULTS	ROI 1,052%																																					
OVERVIEW	Evaluation of anti-sexual harassment training programs reveal that such training is not only important from the point of view of individual dignity and human rights, but also because of the extremely steep costs of disaffected employees leaving the organization and the costs of ongoing grievance procedures.																																					
BACKGROUND/ TRAINING SOLUTION	<p>In the U.S. and elsewhere, sexual harassment continues to grow as a major employee-relations issue. Healthcare Inc (HI) management ordered a training needs assessment after recognizing the excessive numbers and costs of sexual harassment claims. As well, HI recognized the high costs of employee turnover to the organization that resulted from such incidents. (Exit interviews revealed that 11% of terminating employees identified sexual harassment or a hostile environment as a factor in their decision to leave.)</p> <p>Solution: HRD staff designed a one-day sexual harassment workshop for all first- and second-level supervisors and managers (655 participants). The goal of the training was to enable supervisors to better understand the company's policies and to identify inappropriate and illegal behaviour related to sexual harassment. Supervisors were expected to communicate this information to direct reports and generally work to ensure the workplace is free from harassment complaints.</p>																																					
EVALUATION STRATEGY	<p>Methodology: Phillips ROI Methodology (All five levels)</p> <p>It was determined that an ROI analysis was required in order to confirm the value of the training investment. If the analysis determined a negative ROI the program would not be discontinued. Instead, this would provide the organization with a "red flag" alert that the program requires a redesign in order to ensure the program's objectives of reducing or eliminating harassment.</p>																																					
BUSINESS RESULTS	<table> <tr> <td colspan="3">Business Benefits</td> </tr> <tr> <td>Reduction in grievance process</td> <td></td> <td>\$ 360,276</td> </tr> <tr> <td>Reduction in turnovers (legal costs, etc.)</td> <td></td> <td>\$2,840,632</td> </tr> <tr> <td>Total</td> <td></td> <td>\$3,200,908</td> </tr> <tr> <td colspan="3">Costs</td> </tr> <tr> <td>Participants salaries</td> <td></td> <td>\$181,807</td> </tr> <tr> <td>Assessment (est. cost of time)</td> <td></td> <td>\$9,000</td> </tr> <tr> <td>Program development/acquisition</td> <td></td> <td>\$15,000</td> </tr> <tr> <td>Program coordination/acquisition</td> <td></td> <td>\$9,600</td> </tr> <tr> <td>Travel & lodging for facilitators, materials, food</td> <td></td> <td>\$31,580</td> </tr> <tr> <td>Evaluation</td> <td></td> <td>\$31,000</td> </tr> <tr> <td>Total</td> <td></td> <td>\$277,987</td> </tr> </table>		Business Benefits			Reduction in grievance process		\$ 360,276	Reduction in turnovers (legal costs, etc.)		\$2,840,632	Total		\$3,200,908	Costs			Participants salaries		\$181,807	Assessment (est. cost of time)		\$9,000	Program development/acquisition		\$15,000	Program coordination/acquisition		\$9,600	Travel & lodging for facilitators, materials, food		\$31,580	Evaluation		\$31,000	Total		\$277,987
Business Benefits																																						
Reduction in grievance process		\$ 360,276																																				
Reduction in turnovers (legal costs, etc.)		\$2,840,632																																				
Total		\$3,200,908																																				
Costs																																						
Participants salaries		\$181,807																																				
Assessment (est. cost of time)		\$9,000																																				
Program development/acquisition		\$15,000																																				
Program coordination/acquisition		\$9,600																																				
Travel & lodging for facilitators, materials, food		\$31,580																																				
Evaluation		\$31,000																																				
Total		\$277,987																																				
ROI	<p>ROI = Net Benefits/Total Costs = \$3,200,908 - \$277,987/\$277,987 = 1,053%</p>																																					
COMMENTS	Phillips J. (1997)																																					

INDUSTRY TYPE	Government	Size: Large																		
TRAINING TYPE	Leadership Competencies																			
COMPANY NAME	U.S. Department of Veterans Affairs																			
KEY BUSINESS MEASURES	Cost/time savings Reduced staff requirements (fewer FTEs)																			
RESULTS	ROI 159%																			
OVERVIEW	A common misconception is that impact measurement and ROI only apply to organizations in the private sector (that is, firms that produce or sell goods and generate revenues and profits). In fact, 85% of training ROI evaluations undertaken in the business world today pertain to key measures such as quality, cost, and time—all measures that govern the success of public sector organizations.																			
BACKGROUND/ TRAINING SOLUTION	<p>The Department of Veterans Affairs (DVA) offers a full range of medical, surgical, and mental health services to 1.7 million veterans through an integrated network of health facilities across the U.S. Continuous leadership training is required to ensure the 13,258 full-time equivalent employees (FTE) help the DVA accomplish its mission. DVA executives were concerned about the looming succession crisis predicted to unfold over the upcoming five years as 75% of leadership personnel became eligible for retirement.</p> <p>Solution: The DVA developed and delivered a 10-day leadership development program addressing 8 core areas (Interpersonal Effectiveness, Systems Thinking, Creative Thinking, Customer Service, etc.). Delivered over a six-month period, the program was highly interactive using cohort collaboration and a blended learning approach that included classroom and video conferencing components.</p>																			
EVALUATION STRATEGY	<p>Methodology: Phillips ROI Methodology (All five levels)</p> <p>Given the crucial strategic importance of the program to the DVA and the large commitment of resources and dollars, it was decided to conduct an extensive business impact and ROI analysis using the Phillips ROI Methodology.</p> <p>Participants were asked to estimate the financial benefits that would result from the new knowledge and skills being applied on the job (decreased patient wait times, increased database capture of insurance information, increased billing, etc.).</p>																			
BUSINESS RESULTS	<p>Business Benefits (increased means test capture, imputing all documentation into computer, decreasing patient waiting times in lab draws, eliminated the need to add 2 full-time equivalent employees, etc.)</p> <table> <tr> <td>Total Business Benefits</td> <td>\$1,190,287</td> </tr> <tr> <td>Program Costs</td> <td></td> </tr> <tr> <td>Salary (participants)</td> <td>\$289,422</td> </tr> <tr> <td>Travel Costs</td> <td>\$42,534</td> </tr> <tr> <td>Presenter Fees (incl. travel)</td> <td>\$58,142</td> </tr> <tr> <td>Development Costs</td> <td>\$8,128</td> </tr> <tr> <td>Evaluation Fees</td> <td>\$17,000</td> </tr> <tr> <td>Overhead and other costs</td> <td>\$44,812</td> </tr> <tr> <td>Total Costs</td> <td>\$460,038</td> </tr> </table>		Total Business Benefits	\$1,190,287	Program Costs		Salary (participants)	\$289,422	Travel Costs	\$42,534	Presenter Fees (incl. travel)	\$58,142	Development Costs	\$8,128	Evaluation Fees	\$17,000	Overhead and other costs	\$44,812	Total Costs	\$460,038
Total Business Benefits	\$1,190,287																			
Program Costs																				
Salary (participants)	\$289,422																			
Travel Costs	\$42,534																			
Presenter Fees (incl. travel)	\$58,142																			
Development Costs	\$8,128																			
Evaluation Fees	\$17,000																			
Overhead and other costs	\$44,812																			
Total Costs	\$460,038																			
ROI	<p>ROI + Net Benefits/Total Costs = \$1,190,287 - \$460,038/\$460,038 = 159%</p>																			
COMMENTS	Phillips P. (2002)																			

INDUSTRY TYPE	Chemical and Plastics Manufacturing	Size: Medium (400 Employees)
TRAINING TYPE	Safety Training	
COMPANY NAME	Huntsman Chemical Company (Australia)	
KEY BUSINESS MEASURES	Reduced costs from workplace accidents Reduced safety premiums	
RESULTS	Year 1: - 95% ROI Year 2: 1,277% ROI	
OVERVIEW	After identifying its safety record as a key performance indicator (KPIs), a safety program was implemented resulting in substantial reduction in the annual corporate insurance premiums. Moreover, management recognized that the social rate of return would be higher since reduced injuries translates into improved quality of working and leisure life for employees who benefit from the program.	
BACKGROUND/ TRAINING SOLUTION	As part of their strategic planning process, Huntsman had developed several KPIs, including safety—as measured by the medical treatment injury frequency rate (MTIFR). In 1997, 275 employees received training that showed how individual actions and behaviours contribute to accidents in the workplace. Delivered in 20 sessions (three hours each), the program covered a range of issues, including strategies for accident prevention, incident analysis, and the role of human behaviour in incident causation. Solution: The expectation was that training would reduce accidents in the workplace.	
EVALUATION STRATEGY	Data Collection, Multivariate Analysis, ROI Calculation In order to quantify the business impact of the training program, Huntsman employed the evaluation methodology developed by the Australian Office of Training and Further Education. (Doucouliagos 2000) This four-step methodology involves gathering performance data before training and again after training. In this case the data represented measures such as lost time Injuries (LTI) (i.e., any event resulting in inability to work in at least one day), medical treatment cases (treatment by medical practitioner), and First Aid. Results showed substantial reductions in all three categories. Statistical analysis was performed to ensure that the safety improvements were statistically significant. The analysis showed a reduction of LTIs from an average 1.65 per month before training to 0.55 per month after training. To isolate this improvement from other possible factors, a multivariate analysis (multiple regression analysis) was performed. This analysis showed that training had a clear positive impact on the monthly lost-time injury rates. The results also showed this outcome was statistically significant (at the 10% level).	
BUSINESS RESULTS	(Note: Due to issues of confidentiality, the exact dollar values of business results for this impact evaluation have not been disclosed, but it has been revealed the cost reduction is in the six figures.) The key business impact for Huntsman is the subsequent reduction of insurance premiums (WorkCover premiums) paid by the company. It is important to note that premium rates represent a lagged value—that is, current insurance premiums are based on safety performance recorded in previous years. Therefore the benefits of current safety improvements will not be captured until the next year's premium rate are set. The insurance premiums to be paid out by Huntsman in the year after the safety training program represented a 36% reduction over the average annual premiums paid in the three years prior to implementation of the training program (1996–99).	
ROI	Year 1 (the year training was implemented) ROI = -95% (Training costs had been incurred, yet no benefit (reduced premiums) was realizable). Year 2 (the year following training) ROI = 1,277%	

COMMENTS	<p>The 1,277% ROI in this evaluation clearly demonstrates the benefits of the safety program: for every dollar spent on training \$12.77 was gained in reduced premiums.</p> <p>It is reasonable to expect that the business impact of safety training will persist into the future as a more informed and aware workforce can be expected to continue to have a reduced rate of LTIs and the organization will continue to benefit from the concomitant reduced WorkCover insurance premiums. Doucoulagos (2000)</p>
-----------------	--

INDUSTRY TYPE	Manufacturing (Jet Engines)
TRAINING TYPE	Soft Skills (Teambuilding)
COMPANY NAME	Garrett Engine (Allied Signal) U.S.
KEY BUSINESS MEASURES	Reducing equipment downtime (maintenance)
RESULTS	ROI = 125%
OVERVIEW	Garret Engine implemented team-building training to address response time and service completion time in their maintenance function.
BACKGROUND/ TRAINING SOLUTION	<p>Garrett was concerned about the downtime in its maintenance functions. The focus of attention was two key factors: a) response time, and b) completion time. Response time is the time it takes to respond to a service call and completion time is the time required to complete a job.</p> <p>Solution: In order to reduce these factors, the company implemented a 2-day teambuilding course for the maintenance and hourly employees including plumbers, electricians, and mechanics.</p>
EVALUATION STRATEGY	<p>Methodology: Phillips ROI Methodology (All five levels)</p> <p>The company wished to quantify the benefits of the training investment using a control group evaluation strategy. Four similar maintenance teams were identified—two randomly assigned to be trained (the pilot group) and two to serve as a control. Assessments conducted prior to training revealed that the pilot group were slower to respond to service calls than the control group and also performed more poorly than the control group in job completion time.</p> <p>Evaluation of team performance, conducted four weeks after training, revealed that the pilot groups significantly reduced response time and completion time, while the control groups' times remained unchanged.</p>
BUSINESS RESULTS	<p>After training the total downtime (response time plus completion time) for pilot group fell from 18.4 to 15.8 hours. The control group's downtime remained unchanged at 16 hours.</p> <p>Use of the maintenance department's estimates of average downtime costs revealed that after training, the control group's downtime cost was \$1,211 per job and the pilot group's costs were \$1,156. The difference—\$55 per job—reflects the savings per job that results from the training.</p>
ROI	The company assumed that the effect of training would last four work weeks. (A surprisingly conservative assumption. Ed.) Using this conservative estimate of training's effect, the ROI of training (net business benefit divided by total costs) was 125% .
COMMENTS	<p>The evaluators adopted a very conservative approach by assuming that training's impact would not last beyond the four weeks. This assumption was made because the evaluation data collection terminated at four weeks. Even although training's effects and business benefits might reasonably be expected to last longer, no data was collected so no additional business improvement is claimed.</p> <p>(Bartel 2000) (Pine 19930)</p>

APPENDIX C –

Macro-level Studies:

Training’s Impact on Productivity

(Key Examples)

TITLE	Barrett, Alan, and Philip O’Connell (2001) <i>Does Training Generally Work?</i> The Returns to In-Company Training.” <i>Industrial and Labor Relations Review</i> 54(3):647–62.
ORGANIZATION	Economic and Social Research Institute, Dublin, Ireland
MAIN FINDINGS	Two key results: 1) Training was found to have a “positive and significant” effect on productivity growth. 2) Of the two types of training— <i>general</i> training and training <i>specific</i> to the workplace—only general training has a positive effect on productivity.
METHOD	654 Irish enterprises in manufacturing, construction, and private service were surveyed in 1993 and again in 1995. The study inferred the change in productivity over this period was a result of training activities undertaken in 1993.
COMMENTS	(Barrett 2001)
QUOTES	“The positive effect of general training remains when we control for factors such as changes in work organization and corporate restructuring, firm size, and the initial level of human capital in the enterprise. Moreover, the impact of general training varies positively with the level of capital investment.” “Our (results) point to the need for a clearer understanding of how precisely training is translated into productivity increases.”

TITLE	Hansson, B et Al. (2004) <i>Impact of Education and Training and Human Capital Investment on Company Performance</i> Office for Official Publications of the European Communities (Cedefop Reference series, 54) Chapter 4 Cranet Survey Results.
ORGANIZATION	European Centre for the Development of Vocational Training (Cedefop)
MAIN FINDINGS	<p>The survey was analyzed to determine what factors are indicative of top performers (firms in the top 10% bracket in terms of profitability, productivity, innovations, service quality, and stock market performance).</p> <ul style="list-style-type: none"> ▪ Top performers' successes are due in part to their investment in training. ▪ Top performers spend more on training when compared with firms performing below average. ▪ Top performers train close to 10% more of their staff in a year compared to firms performing below average in service quality. ▪ High performers in service quality train significantly more of their employees (about 10% more) than those firms in the bottom half. (It is likely that achieving top service quality requires all staff to undergo regular training.) ▪ Top performers are more likely to have a written training policy and conduct training needs analysis than below average performing companies. <p>The data suggest that a firm's decision to train does not result from its past success (i.e., firms train because they can afford it) but, rather, it is training that generates profit.</p> <p>In the survey population, training investment as a percentage of payroll was 2.94%. (This is higher than the United States' 2.34% rate and Canada's rate of 1.55%.)</p>
METHOD	<p>Cranet (Cranfield Network of Comparative Human Resource Management) is a research collaboration of 39 universities and business schools that provides benchmarking and hard data on European human resource management trends, practices, and strategies for practitioners, policymakers, and academics.</p> <p>The 1999 survey, for example, was distributed to 50,000 organizations with 200 or more employees.</p> <p>Study also includes a review of the evidence on the impacts of training on productivity.</p>
COMMENTS	The Cranet survey is the largest and most representative independent survey of HRM policies and practices in the world. (Hansson 2004)
QUOTES	<p>"Investments in training generate substantial gains for firms even if employees can use this training in other firms."</p> <p>"In general, the weakness of data and the weakness of methods used in the reviewed studies do not exaggerate the results, but on the contrary, work against finding positive responses to human capital investment and thus tend to underestimate their impact on company performance."</p> <p>"More research is needed on the impact of training on SMEs."</p>

	<p>“The lack of a coherent definition of training that is used and reported consistently by companies is one of the more important issues for research on company training.”</p>
--	--

“A common definition of what to regard as training and a common definition of costs in training investments would be beneficial not only for researchers, but to compare companies, industries, and countries on company training.”

TITLE	Bassi, L J. et al. (2001) <i>Human Capital Investments and Firm Performance</i> Human Capital Dynamics (Working Paper).
ORGANIZATION	American Society for Training & Development (ASTD) Human Capital Dynamics
MAIN FINDINGS	<p>Bassi set out to test the hypothesis that if training generates economic returns, then it is likely to be reflected in the company's equity valuation.</p> <p>The study found that stock market success—total shareholder return (TSR)—was strongly correlated with training investment.</p> <ul style="list-style-type: none"> ▪ Every dollar invested in training returns \$3.36 - \$6.72 to the employer. Put another way, training investment yields between 336% to 672% ROI. ▪ The ASTD study found that an increase of \$680 in a firm's training expenditures per employee generates, on average, a 6% improvement in TSR in the following year, even after controlling for many other important factors. ▪ When the 575 firms are ranked by training expenditures, those in the top half of the ranking had an average TSR of 36.9%. The TSR for the firms in the bottom half was 19.8%. By comparison, the S&P 500 had an annual weighted return of 25.5% during the same period. (Translation: Firms in the top half had a TSR that was 86% higher than firms in the bottom half, and a TSR 45% higher than the S&P average.) ▪ ASTD found correlations between training investment and other key measures of financial performance. When compared to firms in the bottom half of the ranking, firms in the top quarter of the study group, as measured by average per-employee expenditures on training enjoyed: <ul style="list-style-type: none"> - higher profit margins (by 24%) - higher income per employee (by 218%) - higher price-to-book ratios on average than firms in the bottom quarter (by 26%)
METHOD	Bassi used the American Society for Training & Development's 1996–98 training benchmarking data surveyed from 575 publicly traded companies. This data was then merged with the 1995-99 Compustat (Standard and Poors) financial data on traded companies.
COMMENTS	(Bassi 2001)
QUOTES	"The message is clear: training pays off for businesses and investors alike, and rewards will come to those who pay more attention to the newly proven connection between training and bottom-line performance."

TITLE	Almeidia, R. and P. Carneiro (2006) <i>Costs, Benefits, and the Internal Rate of Return to Firm Provided Training</i> World Bank, Washington.
ORGANIZATION	World Bank
MAIN FINDINGS	<p>Estimates on return to training vary substantially across firms.</p> <ul style="list-style-type: none"> ▪ For firms providing training, returns are 24%. ▪ For firms not providing training, returns are -7%. ▪ An increase in training per employee of 10 hours per year, leads to an increase in current productivity of 0.8%. <p>Key Finding: Formal job training is a good investment for many firms and the economy, and <i>possibly yields higher returns than investment either in physical capital or in schooling</i>. Surprisingly, in spite of this, observed amounts of formal training are very small.</p>
METHOD	<p>Census data (1995–99) on 1,500 large Portuguese manufacturing firms with more than 100 employees. Among the special advantages of this study data is the fact that response was large because participation in the survey was mandatory. (In the business world, response rates to such studies are typically low.)</p> <p>Also, unlike most econometric studies, this one contains data on direct training costs, training duration, as well as productivity.</p>
COMMENTS	<p>Reflecting on the high results for training impact in this study, the authors comment, “It is puzzling why these firms train on average such a small proportion.” (Less than 1% of total work time.) The authors speculate that one of the reasons firms overlook the opportunities to generate even greater business benefits by increasing their level of training is that they are unaware of these benefits. Leadership—even in the successful firms—is unaware of the high returns their companies enjoy as a result of their training investments. (Almeida 2006)</p>
QUOTES	<p>“The study of firm investments in <i>physical</i> capital is much more developed than the study of firm investments in <i>human</i> capital, even though the latter may be at least as important as the former in modern economies.”</p> <p>“Such high returns suggest that company job training is a sound investment for firms and for the economy as a whole, possibly yielding higher returns than either investments in physical capital or investments in schooling.”</p>

TITLE	Bartel, A. (1995) <i>Training, Wage Growth, and Job Performance: Evidence from a Company Database</i> <i>Journal of Labour Economics</i> , vol.13, no.3, pp.401–425.
ORGANIZATION	Columbia University
MAIN FINDINGS	<p>Assuming a 10% annual depreciation in skills a company's ROI (Internal Rate of Return) from employee development training is 34.6 % and 36.6% on technical training.</p> <p>About half of the employees received some formal training during each of the five years (mean days range from 3.3 to 4.4).</p> <p>Individuals receiving training experienced an increase in their job performance scores, confirming the relationship between training and productivity.</p>
METHOD	Personnel records of a large manufacturing company with 19,000 employees over five years from 1986 to 1990.
COMMENTS	(Bartel 195)
QUOTES	<p>"I found strong evidence that assignment to training was indeed based on the individual's relative status."</p> <p>"Training was found to have a positive and significant effect on job performance, thereby confirming the robustness of the relationship between training and productivity."</p>

TITLE	Dearden, L. and H. Reed, J. Van Reenen (2000) <i>Who Gains When Workers Train? Training and Corporate Productivity in a Panel of British Industries</i> (Working Paper) Institute for Fiscal Studies London.
ORGANIZATION	Institute for Fiscal Studies, London, U.K.
MAIN FINDINGS	An increase of 5% in the proportion of employees trained in an organization (say from 10 to 15%) is associated with a 4% increase in productivity (value added per worker) and a 1.6% increase in wages. Formal training has a larger impact on productivity than informal training. Training also has a positive impact on wages. Training's impact on productivity is twice as large as its impact on wages.
METHOD	Study on the direct measures of industrial productivity based on the analysis of a panel of British industries between 1983 and 1996. Training information. These results are combined with complementary industry-level data sources on value-added, wages, labour and capital.
COMMENTS	(Dearden 2000)
QUOTES	"This paper suggests that the importance attached by policy-makers to training is not misplaced. Economists may have actually underestimated the importance of training for modern economies due to the existing empirical strategies." "A second major problem is that of endogeneity. Transitory shocks could raise productivity and induce changes in training activity (and of course in the other inputs, labour and capital). For example, faced with a downturn in demand in its industry, a firm may reallocate idle labour to training activities (the pit stop theory). This would mean that we underestimate the productivity effects of training because human capital acquisition will be high when demand and production is low."

APPENDIX D

REFERENCES

- Almedia, R. and P. Carneiro (2006) "Costs, Benefits and the Internal Rate of Return to Firm Provided Training," World Bank, Washington.
- Ananiadou, K. and A. Jenkins, A. Wolf (2003) "The Benefits to Employers of Raising Workforce Basic Skills Levels: a Review of the Literature," National Research and Development Centre for Adult Literacy and Numeracy, University of London, London.
- Baldwin, J. et al. (1999) "Innovation, Training and Success," Micro-Economics Analysis Division, Statistics Canada, Ottawa.
- Baldwin, J. and R. Jarmin, J. Tang (2002) "The Trend to Smaller Producers in Manufacturing," Micro-Economics Analysis Division, Statistics Canada, Ottawa.
- Ballot, G. and E. Taymaz (2001) "Firms' Human Capital, R&D and Performance: A Study on French and Swedish Firms." *Labour Economics* 8(4):443–62.
- Barrett, A. and B. Hovels (1998) "Towards a Rate of Return on Training: Assessing the Research on the Benefits of Employer-Provided Training," *Vocational Training European Journal*, vol.14 (August), pp.28-35.
- Barrett, A. and P. O'Connell (2001) "Does Training Generally Work? The Returns to In-Company Training," *Industrial and Labor Relations Review* 54(3):647–62.
- Bartel, A. (1994) "Productivity Gains from the Implementation of Employee Training Programs," *Industrial Relations* 33(4):411–25.
- Bartel, A. (1995) "Training, Wage Growth, and Job Performance: Evidence from a Company Database," *Journal of Labour Economics*, vol.13, no.3, pp.401–425.
- Bartel, A. (2000) "Measuring the Employer's Return on Investment in Training: Evidence from the Literature," *Industrial Relations* 39(3):502–24.
- Bassi, L. and M. van Buren (1998) "The 1998 ASTD State of the Industry Report," *Training and Development*, January, pp.23–43.

Bassi, L. and J. Ludwig, D. McMurrer, M. Van Buren (2000) "Profiting From Learning: Do Firms' Investments in Education and Training Pay Off?" A research White Paper by ASTD and Saba.

Bassi, L. and P. Harrison, J. Ludwig, D. McMurrer (2001) "Human Capital Investments and Firm Performance," Human Capital Dynamics. Bethesda.

Beaton, L. and S. Richards (1997) "Making Training Pay. How to Demonstrate the Organisational Benefits of Investing in Learning," Institute of Personnel and Development (U.K.) & Investors in People U.K., London.

Betcherman, G. and K. Newton, J. Godin (1990) *Human-Resource Management in a High-Tech World*, Economic Council of Canada, Ottawa.

Betcherman, G. and N. Leckie, K. McMullen (1997) "Developing Skills in the Canadian Workplace," Canadian Policies Research Networks Inc., Ottawa.

Betcherman, G. and K. McMullen, K Davidman (1998a) "Training for the New Economy," Canadian Policies Research Networks Inc., Ottawa.

Betcherman, G. and N. Leckie, K. McMullen (1998b) "Barriers to Employer-Sponsored Training in Canada," Canadian Policies Research Networks Inc., Ottawa.

Billett, S. (1998) "Enterprises and Vocational Education and Training: Expenditure and Expected Returns," *Journal of Vocational Education and Training*, vol.50, no.3, pp.387–402.

Bishop, J. and S. Kang (1996) "Do Some Employers Share the Costs and Benefits of General Training?" Centre for Advanced Human Resource Studies, Cornell University, Cornell, NY

Billett, S and M. Cooper (1997) "Returns to Enterprises from Investments in VET," Australian National Training Authority (ANTA), published by NCVET, Adelaide.

Black, S. and L. Lynch (1996) "Human Capital Investments and Productivity," *American Economic Review (Papers & Proceedings)* 86(2):263–67.

Black, S. and L. Lynch (2001) "How to Compete: The Impact of Workplace Practices and Information Technology on Productivity," *The Review of Economics and Statistics* 83(3):434–45.

Blandy, R. and M. Dockerty, A. Hawke, E. Webster (2000) "Does Training Pay? Evidence from Australian Enterprises," National Centre for Vocational Education Research Ltd., Leabrook, SA, Australia.

Bloom, M., and M. Burrows, B. Lafleur, R. Squires (1997) "The Economic Benefits of Improving Literacy Skills in the Workplace," (ERIC ED412340). Ottawa: Conference Board of Canada.

Blundell, R. and L. Dearden, C. Meghir, B. Sianesi (1999) "Human Capital Investment: The Returns from Education and Training to the Individual, the Firm and the Economy," *Fiscal Studies* 20, 1, 1–23.

Booth, A. and G. Zoega (2000) "Why Do Firms Invest in General Training? 'Good' Firms and 'Bad' Firms as a Source of Monopsony Power," *CEPR Discussion Paper 2536*. London.

Brinkerhoff, R. (1988a) *Achieving Results from Training: How to Evaluate Human Resource Development to Strengthen Programs and Increase Impact*, Jossey-Bass, San Francisco.

Brinkerhoff, R. (1988b) "An Integrated Evaluation Model for HRD," *Training and Development Journal*, February, 66-68.

Canadian Apprenticeship Forum (2006), "Apprenticeship—Building a Skilled Workforce for a Strong Bottom Line," Ottawa.

Canadian Council on Learning (2007), "The Skills Gap in Canada: The Knowledge Intensity of Canadian Jobs is Growing Rapidly, Lessons in Learning, Canadian Council on Learning Website Series

Canadian Labour Congress (2005) "Document No 9: Labour's Vision of Workplace Training and Life-Long Learning," Canadian Labour Congress 24th Constitutional Convention.

Carnevale, A. and E. Schulz (1990), "Return on Investment: Accounting for Training," supplement to the *Training and Development Journal*, July.

Carriou, Y. and F. Jeger (1997) "La Formation Continue dans les Entreprises et son Retour sur Investissement," *Economie et Statistique* 303, 45–58.

Catts, R. and E. McLendon, C. Forlin, C. Arden, J. James, C. Kossen (1996) "Validating Training Benefits in the Workplace," Vocational Education and Training Research Institute, University of Southern Queensland, Toowoomba.

Chaykowski R. and G. Slotsve (2003) "Employer Sponsored Training by Firm Size," Skills Research Initiative, Working Paper 2003 B-02, Human Resources Development Canada, Industry Canada, Social Sciences and Humanities Research Council, Ottawa.

Conference Board of Canada (2003) "Learning and Development Outlook, Canadian Organizations Continue to Under-Invest," Ottawa.

Conference Board of Canada (2005a) "Issue Statement #1: Changing Employers' Behaviour About Training," Ottawa.

Conference Board of Canada (2005b) "Learning and Development Outlook 2005 Moving Beyond the Plateau—Time to Leverage Learning Investment," Ottawa.

Conference Board of Canada (2005c) "The Skills Factor in Productivity and Competitiveness," Ottawa.

Coulombe, S. and J.F. Tremblay, S. Marchand (2004) "Literacy Scores, Human Capital and Growth Across Fourteen OECD Countries," Statistics Canada and Human Resources and Skills Development, Ottawa.

Curtain, R. (1998) "The Workplace of the Future: Insights from Futures Scenarios and Today's High Performance Workplaces," *Australian Bulletin of Labour*, vol.24, no.4, pp.279–294.

Davidson, J. and C. Doucouliagos, J. Macneil, M. Rimmer, P. Sgro, L. Watts (1997) "Return on Training Investment, Development of Enterprise Frameworks," ANTA, Melbourne.

Dearden, L. and H. Reed, J. van Reenen (2000a) "Estimates of the Impact of Improvements in Basic Skills on Aggregate Wages, Employment, Taxes and Benefits," *The Social Benefits of Basic Skills*, Institute for Fiscal Studies, London.

Dearden, L. and H. Reed, J. Van Reenen (2000b) "Who Gains When Workers Train? Training and Corporate Productivity in a Panel of British Industries," (Working Paper) Institute for Fiscal Studies, London.

Dearden, L., and S. McIntosh, M. Myck, A. Vignoles (2002) "The Returns to Academic, Vocational and Basic Skills in Britain." *Bulletin of Economic Research*, 54, 249–274.

Doucouliaagos, C. and P. Sgro (2000) "Enterprise Return on a Training Investment," National Centre for Vocational Education Research Ltd., Leabrook, SA, Australia.

Drake, K (1995) "The Economics of Learning on the Job: A European Perspective on Instruction-led and Experience-led Job Competence, Paper for a conference on *Efficiency and Equity in Education Policy*, Canberra.

Dulipovici, A. (2003a) "Labour Pains," Results of CFIB Surveys on Labour Availability, Canadian Federation of Independent Businesses.

Dulipovici, A. (2003b) "Skilled in Training," Results of CFIB Surveys on Training, Canadian Federation of Independent Businesses.

Employment Services Unit, Deakin University (1997) "Training Culture in Australia. A review of National and International Literature and Research. Final Report," Deakin University, Melbourne.

Ernst & Young (1995) "Study Finds Treating People as Assets Pays Off on Bottom Line," *The Lakewood Report*, 1, July.

Figgis, J. et Al. (2001) "What Convinces Enterprises to Value Training and Learning and What Does Not?" National Centre for Vocational Education Research Ltd., Leabrook, SA, Australia.

Galvin, T. (2003) "The 2003 Training Top 100," *Training Magazine*, February, 2-51.

Galvin, T. (2004) "The 2004 Training Top 100," *Training Magazine*, February, 22-51.

Glover, R. and D. Long, C. Haas, C. Alemany (1999) "Return-On-Investment (ROI) Analysis of Education and Training in the Construction Industry" University of Texas, Austin.

Goldenberg, M. (2006) "Employer Investment in Workplace Learning in Canada," Canadian Council on Learning, Ottawa.

Gollan, P. (1997) "Training and the Bottom Line," *Australian Financial Review*, July 14.

Green, F. (1997) "Review of Information on the Benefits of Training for Employers," Research Brief, Department for Education and Employment, DfEE Publications, Nottingham.

Groot, W. (1995) "Type Specific Returns to Enterprise-Related Training," *Economics of Education Review* 14 4, 323–333.

Groot, W. (1999) "Productivity Effects of Enterprise-Related Training," *Applied Economic Letters*, New York Routledge, 1999, Vol. 6, No. 6, p. 369-371.

Guest, D. (1997) "Human Resource Management and Performance: A Review and Research Agenda," *The International Journal of Human Resource Management*, vol.8, no.3, pp.263–276.

Hansson, B and U. Johanson, K. Leitner (2004) "The Impact of Education and Training and Human Capital Investments on Company Performance," Office for Official Publications of the European Communities (Cedefop Reference Series, 54).

Hayton, G. and J. McIntyre, R. Sweet, R. McDonald, C. Noble, A. Smith, P. Roberts (1996) "Final Report: Enterprise Training in Australia," Office of Training and Further Education (OTFE), Melbourne.

Hollenbeck, K. (1996) "A Framework for Assessing the Economic Benefits and Costs of Workplace Literacy Training," Paper presented at Workplace Learning: The Strategic Advantage Conference, Milwaukee, Wisconsin, (April) 29.

Institute for Management Development (IMD) (2000) *World Competitiveness Yearbook*, Lausanne, Switzerland.

Johanson, U. (1998) "Human Resource Accounting and Reporting," *Vocational Training European Journal*, vol.14 (August), pp.47–55.

Kaplan, R. and D. Norton (1992) "The Balanced Scorecard—Measures that Drive Performance," *Harvard Business Review*, (January–February), pp.71–79.

Kaplan, R. and S. Norton (1996) *The Balanced Scorecard*, Harvard Business School Press, Boston.

Keep, E. and K. Mayhew, M. Corney (2002) "Review of the Evidence on the Rate of Return to Employers of Investment in Training and Employer Training Measures," SKOPE Research Paper 34, ESRC Centre for Skills, Knowledge and Organisational Performance, Oxford University.

Kirkpatrick, D. and J. Kirkpatrick (2005). *Evaluating Training Programs: The Four Levels* (Third Edition), Berrett-Koehler Publishers, San Francisco.

Kirkpatrick, D. (1998) *Another Look at Evaluating Training Programs*, the American Society for Training & Development, Alexandria, VA.

Krueger, A. and C. Rouse (1998) "The Effect of Workplace Education on Earnings, Turnover, and Job Performance," *Journal of Labor Economics*, 16, 61–94.

Laplagne, P. and L. Bensted (1999) "The Role of Training and Innovation in Workplace Performance," Australian Productivity Commission Staff Research Paper, Melbourne.

Leimbach, M. (1994) "A Return on Investment Model for Evaluating Training," *Training and Development in Australia*, vol.21, no.1, pp.5–7.

Lesler, R. (1998) *The Productive Edge: How U.S. Industries are Pointing the Way to a New Era of Economic Growth*, WW Norton & Co., New York.

Lillard, L. and H. Tan (1992) "Private Sector Training: Who Gets it and What Are Its Effects," *Research in Labor Economics* 13, 1–62.

Lin, Z, and JF Tremblay (2003) "Employer Supported Training in Canada: Policy-Research Key Knowledge Gaps and Issues," Skills Research Initiative, Working Paper 2003 B-01, Human Resources Development Canada, Industry Canada, Social Sciences and Humanities Research Council, Ottawa.

Lynch, L. and S. Black (1998) "Beyond the Incidence of Employer-Provided Training." *Industrial and Labor Relations Review* 52(1):64–81.

McDonald, R. (1995) "Costing Training and Assessment," Issues Paper, Assessment Centre for Vocational Education and Training, Sydney.

McDonald, R. and J. Fyffe (2000) "Return to Enterprises on Training Investment," Australian National Training Authority, Sydney.

Miller, N. (1996) "Education and Training at the Ford Motor Company," in *The Economic Impact of Vocational Education and Training*, eds C Selby Smith and F Ferrier, AGPS, Canberra, pp.197–201.

Misko, J. (2001) "Getting to Grips with Returns on Investment in Training," National Centre for Vocational Education Research Ltd., Leabrook, SA, Australia.

Misko, J. and J. Moy, D. Colless, P. Ward, B. Hansford, R. Gerver, C. Lankshear (1996) *Work-based Training: Costs, Benefits, Incentives and Best Practice: Vol. 1*, NCVER, Adelaide.

Mitchell, K. (1994) "Putting Evaluation to Work for Human Resources Development," *Public Productivity and Management Review*, vol.18, no.2, pp.199–215.

Moy, J. and J. Misko, C. Lankshear, R. Brooker, C. Schwenke, R. Gerber, B. Hansford, D. Colless (1996) *Work-based Training, Vol.2, Case Studies*, NCVER, Adelaide.

Moy, J. and R. McDonald (2000) "Analysing Enterprise Returns on Training," National Centre for Vocational Education Research Ltd., Leabrook, SA, Australia.

National Association of Manufacturers (1994) "The Smart Workplace: Developing High-Performance Work Systems," a report to the members of the National Association of Manufacturers.

National Centre for Vocational Education Research (NCVER) (2002) "Research at a Glance: Returns on Investment in Training," Leabrook, SA, Australia.

Nymark, A. (2005) Speech delivered by Deputy Minister of Human Resources and Skills Development (A. Nymark) to the Canadian Council on Learning, July 2005, Toronto

Office of Training and Further Education (Victoria) (1998) "Benefits to Employers from an Investment in Training: Literature Review," OTFE, Melbourne.

Organization for Economic Co-operation and Development (1997) "Human Capital Investment: An International Comparison." OECD, Paris.

Organization for Economic Co-operation and Development (2002) "Thematic Review on Adult Learning, Canada Background Report," Paris.

Organization for Economic Co-operation and Development (2005a) "Education at a Glance OECD Indicators (Country Profile for Canada)," Council of Ministers of Education, Canada.

Organization for Economic Co-operation and Development (2005b) "Learning a Living: First Results of the Adult Literacy and Life Skills Survey," Statistics Canada and OECD, Ottawa and Paris.

Ottersten, E. and T. Lindh, E. Mellander (1996) "Cost and Productivity Effects of Firm Financed Training," Working Paper No. 455, Industrial Institute for Economic and Social Research, Stockholm.

Pearson, G. (1996) "More Than Money Can Say," Department of Education, Employment, Training and Youth Affairs, Canberra.

Peters, V. (2004) "Working and Training: First Results of the 2003 Adult Education and Training Survey," Statistics Canada, Ottawa.

Pfeffer, J. (1998) *The Human Equation: Building Profits by Putting People First*, Harvard Business School, Boston.

Phillips, J. (1991) "Measuring the Return on HRD," *Employment Relations Today*, Autumn, pp.329–342.

Phillips, P. (1994) *In Action: Measuring Return on Investment*, American Society for Training and Development, Alexandria.

Phillips, J. (1997) *Handbook of Training and Evaluation and Measurement Methods* (3rd Edition), Gulf Publishing, Houston.

Phillips, J. (Ed.) (1997) *Measuring Return on Investment*, Volume 2, American Society for Training and Development, Alexandria.

Phillips, J. and P. Phillips (2001) *Measuring Return on Investment*, Volume 3, American Society for Training and Development, Alexandria.

Phillips, J. and P. Phillips (2002) *Measuring ROI in the Public Sector*, Alexandria, Virginia: American Society for Training and Development, Alexandria.

Phillips, J. (2003) *Return on Investment in Training and Performance Improvement Programs*, 2nd Edition, Butterworth Heinemann, Burlington, MA

Pine, J. and T. Tingley (1993) "ROI of Soft-Skills Training," *Training*, February, pp.55–60.

Queensland Training Officers' Society (Billett, S.) (1994) "Cost-Benefits of Training: A Queensland Study," Office of Vocational Education Training and Employment Commission, Brisbane, Queensland.

Robinson, D. and J. Robinson (1989) "Training for Impact: How to Link Training to Business Needs and Measure the Results," Jossey-Bass, San Francisco.

Robinson, D. and J. Robinson (1995) *Performance Consulting: Moving Beyond Training*, Berrett Koehler, San Francisco.

Robinson, D. and J. Robinson (1998) *Moving From Training to Performance: A Practical Guidebook*, Berrett Koehler, San Francisco.

Robinson, P. (1997) *Literacy, Numeracy and Economic Performance*. London: Centre for Economic Performance, London School of Economics.

Schneider, H. and D. Monetta, C. Wright (1992) "Training Function Accountability: How to Measure Return on Investment," *Performance & Instruction*, March, pp.12–17.

Selby Smith, C. (1996) *Cost Benefit Issues*, National Colloquium on Research on Workplace Learning, University of Technology, Sydney.

Shackleton, J. (1993) "Investing in Training: Questioning the Conventional Wisdom," *Policy Studies*, vol.14, no.3, pp.29–40.

Shelton, S. and G. Alliger (1993) "Who's Afraid of Level 4 Evaluation? A Practical Approach," *Training and Development*, June, pp.43–46.

Skillnets (2005) "Case Studies from Skillnets Pilot Projects: Measuring the Impact of Training and Development in the Workplace," Skillnets Limited, Dublin.

Skillnets (2006) "Building Skills and Competitiveness Training Networks Programme Report 2002 – 2005," Skillnets Limited, Dublin.

Sloan, J. (1994) "Research into the Costs and Benefits of Vocational Education and Training (VET)," Paper presented at "Research Priorities in Vocational Education and Training—A Discussion," ANTA Research Advisory Council Conference, April, Sydney.

Smith, A. (2001) *Return on Investment in Training: Research Readings*, National Centre for Vocational Education Research Ltd., Leabrook, SA, Australia.

Stolovitch, H. and J. Maurice (1998) "Calculating the Return on Investment in Training: A Critical Analysis and Case Study," *Performance Improvement*, vol.37, no.8, pp.9–19.

Tan, H. and G. Barta (1995) "Enterprise Training in Developing Countries: Incidence, Productivity Effects and Policy Implications," Unpublished paper, The World Bank, Washington.

Turcotte, J. and L. Rennison (2004) "Productivity and Wages: Measuring the Effect of Human Capital and Technology Use from Linked Employer-Employee Data," Department of Finance, Ottawa.

Williams, L. (1996) "Measurement Made Simple," *Training and Development*, vol.50, no.7, pp.43–45.

Wooden, M. and M. Baker (1996) "Small Business and the Dollars and Sense of Training," *Australian Training Review*, no.8, May, pp.4–5.

Zwick, T. (2004a) "Employee Participation and Productivity," *Labour Economics* 11(6):715–40.

Zwick, T. (2004b) "Training—A Strategic Enterprise Decision?" In *Modern Concepts of the Theory of the Firm: Managing Enterprises of the New Economy*, edited by Günter Fandel, Uschi Backes-Gellner, Manfred Schlüter, and Jörg Staufenbiel, pp. 355–366. Berlin: Springer.

Zwick, T. (2006) "The Impact of Training Intensity on Establishment Productivity," *Industrial Relations: A Journal of Economy and Society*, Vol. 45, No. 1, pp. 26-46.