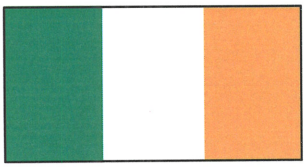
Measuring Return on Investment



Real-world case studies using the ROI Methodology in Ireland

Applications in

- Human Resources
- Learning & Development

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Skillnets
Enterprise-led learning networks

ROI INSTITUTE™

MEASURING RETURN ON INVESTMENT
Real World Case Studies Using the ROI Methodology in Ireland

Published in association with the ROI Institute, Inc
by the Impact Measurement Skillnet, 2006.

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Preface

Few topics generate as much interest among training and human resource development (HRD) professionals as return on investment. In almost every list of high priority issues in HRD, ROI ranks near the top. Professional journals and research-based publications regularly devote space to this important area.

Learning and HRD professionals around the world are seeking practical information about ROI and measurement and evaluation. Specifically, they want to see examples of successful applications of HRD measurement and evaluation at the business-results levels. Although quite a few books of case studies are now available, until now there has been no book of case studies that illustrate the successful application of measurement and evaluation techniques in an Irish context.

This book represents a successful fulfilment of this challenge by providing a unique collection of twelve case studies involving a wide range of training programmes. Each case covers the strategy, techniques, and methodologies utilized to measure the results of the program.

The case studies in the book were made possible by the funding of Skillnets, the enterprise-led training initiative jointly funded by the Irish Government and private industry. Skillnets involvement in promoting the concept of effective measurement and evaluation among Irish organisations has been a notable public service and one which will reap considerable benefits for years to come. The foresight of Maire Hunt, the CEO of Skillnets, and her team in pursuing this goal and cajoling and encouraging all those who participated in the Skillnets Pilot ROI project in 2004, from which these studies emerged, is to be applauded.

The individuals who were trained and went back to their companies to carry out these studies deserve great praise. They have broken new ground in the learning and development community in Ireland and were not afraid to tackle difficult and complex issues and stay the course to achieve a result.

Great credit is due to Samantha Plant, who is herself a fully certified ROI practitioner, and her colleagues at the Impact Measurement Skillnet for taking the initiative to publish this book. The Editor, Gerry Doyle of the Impact Measurement Centre, has been carrying the ROI message to scores of Irish organisations for the past four years and has gained invaluable experience in the practical implementation of this methodology. His work is an example to other partners of the ROI Institute and is greatly appreciated by us.

The book fills a literature void in Ireland by providing high-impact examples from real-world situations. It should bring a ray of hope to people who are struggling with this process and provide encouragement and satisfaction to those who have implemented similar methodologies.

Patti Phillips PhD
Jack Phillips, PhD
SERIES EDITORS

Introduction

The interest in accountability, including measuring the return on investment (ROI), is at an all-time high. ROI is now a tool for all types of organizations to measure the ultimate payoff of programs, processes, and initiatives. From corporations to non-profit organizations to all levels of government and from training, learning, HR, and coaching functions and from professional fields as varied as meeting planning, risk management, and community colleges, ROI is becoming part of the common language of accountability across all disciplines and functions around the world.

The ROI Methodology™ developed by Dr. Jack J. Phillips, captures six types of data to show the success of a program:

- Reaction, satisfaction, and planned actions
- Acquisition of knowledge and skills as well as changes in perceptions and attitudes
- Success with application and implementation
- Actual business impact measured in cost savings, productivity improvements, and time reductions
- The return on investment, showing the monetary benefits versus costs
- Intangible benefits such as employee satisfaction and customer satisfaction

The first four types of data follow the four levels established by Dr Donald L. Kirkpatrick, (ASTD: 1959) The fifth and sixth levels have been perfected by Dr Jack J. Phillips over the past twenty five years. Dr. Phillips outlines his approach to the six levels in his seminal book *Return on Investment in Training and Performance Improvement Programs* (Butterworth Heinemann Publishers, Inc, Woburn, MA 1997). Dr. Phillips has written extensively on the subject, publishing or editing dozens of books on the topic of ROI.

Background to the ROI Concept

Calculating Return-on-Investment (ROI) is a practice of modern management used in the analysis of many business strategies and operations. It is a standard measure used for predictive and diagnostic evaluation of business initiatives. Perhaps the most popular application of this tool is in the analysis of purchase decisions for investments in capital equipment or technology. ROI is simply a measure of benefit versus cost. Expressed as a percentage, ROI is determined by total net present benefits divided by total net present costs. Benefits and costs are converted into present values since they usually accrue over extended periods of time. In the context of training, ROI is a measure of the monetary benefits obtained by an organisation over a specified time period in return for a given investment in a training programme.

One of the earliest methods for evaluating training and performance improvement investments was the cost-benefit analysis process. The cost-benefit analysis compares the benefits of a program to its costs through a benefit-cost ratio (BCR) (Thompson 1980; Kearsley 1982; Nas 1996; Phillips 1997b). In formula form, the BCR calculation is: A benefit-cost ratio of one means that the benefits equal the costs. A benefit-cost ratio of two, written as 2:1, indicates that for each monetary unit spent on the programme two units were returned as benefits.

ROI, on the other hand, compares the net programme benefits and costs. The ratio is usually expressed as a percent by multiplying the fractional values by 100 (Phillips 1997). ROI can be used both to justify a planned investment and to evaluate the extent to which the desired return was achieved. To calculate ROI you must first make estimates or obtain measurements of the costs and benefits associated with a training programme.

Since the 1970s two basic approaches have evolved to conducting ROI analysis of training. Each confronts a different set of challenges. Until the late 1980s the most common approach was to view the measurement of ROI as a separate, discrete function independent of the training under evaluation. The advantages of this approach are simplicity, efficiency, and clarity in purpose and operation; it generally requires fewer resources and is less costly. However, this approach does not produce a rigorous and systematic result.

The second approach, which is more broadly conceived, and is now the most widely used is based on the premise that ROI is most effective when designed and implemented as an integral part of the whole training process. A comprehensive framework for ROI implementation incorporates all the phases of training, from initial training needs assessment and planning, program design, benchmarks and measures, data reporting and collection, through final evaluation (Darling 1993).

Chain of Impact

Crucial to this broad based approach is the chain of impact or linkage between the five levels. Phillips emphasises the "chain of impact" implied in the five-level evaluation model shown in Figure 1. Initially, it's essential to derive the measurable results of training from participants' application of new skills or knowledge on the job over a specific period of time after training is completed, a level 3 evaluation. Logically, successful on-the-job application of training content should stem from participants having learned new skills or acquired new knowledge, a level 2 evaluation Consequently, for a business-results improvement (a level 4 evaluation), the chain of effect implies that measurable on-the-job applications (level 3) and improvement in learning (level 2) are achieved. Without this preliminary evidence, it's difficult to isolate the effect of training or to conclude that training is responsible for any performance improvements. Practically speaking, if data is collected on business results (level 4), data should also be collected at the other three levels of evaluation. This applies equally to return on investment (level 5 evaluation).

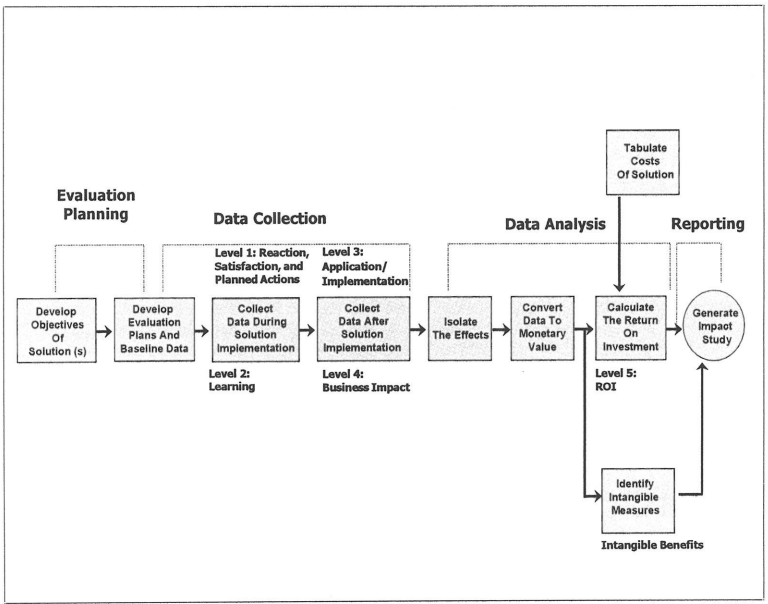


Figure 1 Phillips' Model for Determining the Return to Investment in Human Resource Development (HRD)
Source: Phillips (1997)

A Systematic Evaluation Model

Despite numerous obstacles, considerable progress has been made in developing methodologies to evaluate training and to calculate its ROI, reflective of a growing recognition of the importance of training. Jack Phillips has pioneered efforts to develop, systematise, and improve the practical evaluation methods used by training professionals and managers in the field. Phillips presents the most thorough ROI model, comprising 18 steps, emphasising a systemic approach to training evaluation. (See Table 1)

Table 1. A Systemic Evaluation Model: 18 Steps

1.	Conduct a needs assessment and develop tentative objectives
2.	Identify purposes of evaluation
3.	Establish baseline data
4.	Select Evaluation method/design
5.	Determine evaluation strategy
6.	Finalize programme objectives
7.	Estimate programme costs/benefits
8.	Prepare and present proposal
9.	Design evaluation instruments
10.	Determine and develop programme content
11.	Design or select delivery methods
12.	Test programme and make revisions
13.	Implement or conduct programme
14.	Collect data at proper stages
15.	Analyse and interpret data
16.	Make programme adjustments
17.	Calculate return on investment
18.	Communicate programme results

Source: Phillips (1997)

ROI Process

The crucial elements in this model, for those who wish to go as far as calculating the ROI of a training programme, commence at Level 4. Phillips' specifies the steps thereafter as follows:

1. Collect Level-4 evaluation data. Ask: Did on-the-job application produce measurable results? 2. Isolate the effects of training from other factors that may have contributed to the results. 3. Convert the results to monetary benefits. Phillips recommends dividing training results into hard data and soft data. He says hard data are the traditional measures of organisational performance because they're objective, easy to measure, and easy to convert to monetary values. They include output (units produced, items assembled, tasks completed); quality (scrap, waste, rework); time (equipment downtime, employee overtime, time to complete projects); and cost (overhead, accident costs, sales expenses). Conversely, soft data includes such things as work habits (tardiness, absenteeism); work climate (grievances, job satisfaction); attitudes (loyalty, perceptions); and initiative (implementation of new ideas, number of employee suggestions). 4. Total the costs of training. 5. Compare the monetary benefits with the costs. 6. The non-monetary benefits can be presented as additional - though intangible - evidence of the programme's success.

To define the Return on Investment, Phillips recommends that the following formula should be used:

Benefits/ Cost Ratio	=	Programme Benefits/ Programme Costs
ROI	=	Net Programme Benefits (Benefits-Costs)/ Programme Costs

Phillips's ROI Methodology applies a range of unique tools and techniques that enable the practitioner to complete difficult and challenging tasks such as: identifying business results of training and then converting them into monetary values, isolating the effects of the training from other factors that could have contributed to the results and identifying intangible benefits.

That is done through a lengthy, painstaking and hair-splitting evaluation involving tools such as focus groups, follow-up questionnaires, trend-line analyses and "controlled" studies, where employees are split into two groups, but only one receives training so the results can be compared.

The crucial point comes before any final calculation, when the impact of learning has to be isolated from gains in revenue, performance or productivity that might have accrued because of outside circumstances--seasonal sales variation, for instance. Phillips has established a set of guidelines (Table 2) so that results are standardised. These

include a rule that only the most conservative data can be included in the formulas. Phillips's formulas have taken root in thousands of private and public-sector organisations in 40 countries.

Table 2: Phillips Guidelines

Phillips Guiding Principles

1. When a higher level evaluation is conducted, data must be collected at lower levels.
2. When an evaluation is planned for a higher level, the previous level of evaluation does not have to be comprehensive.
3. When collecting and analyzing data, use only the most credible sources.
4. When analyzing data, select the most conservative alternative for calculations.
5. At least one method must be used to isolate the effects of the solution/project.
6. If no improvement data are available for a population or from a specific source, it is assumed that little or no improvement has occurred.
7. Estimates of improvements should be adjusted for the potential error of the estimate.
8. Extreme data items and unsupported claims should not be used in ROI calculations.
9. Only the first year of benefits (annual) should be used in the ROI analysis of short term solutions.
10. Costs of a solution, project, or program should be fully loaded for ROI analysis
11. Intangible measures are defined as measures that are purposely not converted to monetary values.
12. The results from the ROI methodology must be communicated to all key stakeholders.

Irish Case Studies

The case studies in this book emerged from a pilot project which was funded by Skillnets Ltd in 2004. 15 companies took part and by the end of 2005 twelve of these had completed full ROI studies of training programmes all of which are contained in this volume. All but one of the companies opted to publish the case studies anonymously for commercial reasons. All of them provide excellent examples of how the model can be used in the Irish business and cultural milieu.

Thanks

The editor was responsible for the management of the Skillnets pilot project and was assisted by Eoghan O'Grady of the Dublin Institute of Technology and Sean O'Sullivan of Sean O'Sullivan Associates, 156 Hillside, Greystones, Co Wicklow. All three were involved in the implementation and in the preparation and drafting of the case studies. Sincere thanks is expressed to Maire Hunt and Alan Nuzum of Skillnets and the Skillnets Working Group (Niall Saul, John Dunne, Sean Heading) for the foresight to undertake the project; to the companies and the staff involved: Berna Ward, Evelyn O'Toole, Michael Ryan, Kevin Harte, Emer Fennel, Triona Brangan, Michelle Whelehan, Jennifer Ryan, Joanne Mulvey, Willie Herlihy, Mick McHugh, Brendan Farrell, Declan Harrison, Karma Farrell, and Mark Culleton, for the hard work and the courage to take it on; to Jack and Patti Phillips for their constant support and encouragement; and to Samantha Plant and the Impact Measurement Skillnet for their determination to ensure that the work benefited a wider audience.

Gerry Doyle
EDITOR

The Case Studies

Evaluation of a Language Training Programme

Abstract

Responding to labour shortages by employing non-national migrant workers provides a range of challenges for both workers and companies. This study examines a language training programme which, apart from the monetary benefits, has produced significant intangible benefits that make it stand out as a positive investment. It highlights the need for a stronger focus on business benefits in *learning* needs analysis. It points to the difficulties of evaluating a basic skills programme up to level 5 – ROI – due to problems in identifying and separating data for higher level evaluation.

Company Background

The company is engaged in meat processing in the Irish midlands which due to labour shortages has employed large numbers of migrant workers. The company has developed a policy for migrant worker support. English Language training was driven by this policy in order to enable integration of these new recruits into the workforce and into Irish society once the need was highlighted on arrival of the first group.

Training Programme

The English language training programme was offered to 40 employees and 32 accepted. The programme ran for 12 evening sessions (one each for 3 separate groups, although some attended more than one evening a week). Of these 32, 11 successfully completed the Further Education & Training Awards Council (FETAC) Certification assessment. Others learners improved their language skills to varying degrees.

The main business objectives for this Language Learning Programme were:

- Improved communications
- Efficiency in production
- Efficiency in service functions
- Improved pig throughput
- Improved Recruitment and retention
- Support for workers in line with company migrant worker policy
- Integration of these new recruits into the workforce (and into Irish society).

Evaluation of Programme

The data to be collected *and* the targets to be achieved were identified in consultation with relevant supervisors and Managers in the company and the trainers delivering the programme. Data collection was then planned according to ***the Data Collection Plan*** contained in the appendix.

The instruments to be used were facilitated questionnaires for evaluation levels one, two and three. The use of facilitation was deemed necessary given the language competency level of the participants. The use of structured interviews (on the basis of the questionnaires) with the participant Supervisors ensured further qualitative data could be gathered which contributed to evaluation level 4 (and 5). More open interviews with other Company Managers identified other level 4 data and intangible benefits, which in the context of this programme, were expected to outweigh tangible benefits.

The 14 questions at level 1 centred on an understanding of the objectives, their achievement, the delivery methodology and the content and how all of these were received. The target average of 4.5 out of 5 was high but, given the planning, expectations were also high for this level of evaluation.

There were two Questionnaires at levels 2/3. One was directed at participants and the other at their immediate Supervisor. They were also intended as a source for level 4 (and 5) data. The target average of 3.5 was still high but the data being more objective at higher levels this was felt to be a reasonable target.

Finally, open interviews and reference to internal records whether formal or informal were made through the HR Manager to function and strategic managers.

Results

Level 1 – Reaction
The data collected here measured participant reaction and satisfaction with the programme and their intent to use their learning. The target of an average of 4.5 was exceeded at 4.58. This shows that participants felt that the course was well organised and its presentation met their needs.

Level 2 – Learning
The data collected here measured the degree of learning that took place such that participants could immediately apply new Knowledge Skills and attitudes. The results show an average of 3.42-participant; and 3.53 –Supervisor; giving overall average of 3.48, slightly below the target of 3.5. Of the 32 who started, 11 successfully completed the FETAC assessment and will be awarded Certificates.

Participants benefited in the following areas:
- Written & Spoken Communication
- Record keeping
- Work Relationships

Level 3 – Behaviour
The data collected here measured the degree to which the new Knowledge skills and attitude were applied on the job in order to influence business measures. The result of 3.45 was just short of the target of an average of 3.5.

Positive changes in behaviour in the following work areas were noted by participants:
- Production
- Health and Safety matters
- Food Safety and Hygiene

Level 4 – Impact on the organisation
The data collected here measured the change in business measures as a result of the application of new Knowledge skills and attitude learned. Learning English allowed the learners to acquire further information and knowledge that contributed to their improved performance and effectiveness at work.

Four areas were identified where monetary savings could be reliably measured. Areas for production increase were identified but due to an industry anomaly, of limited product availability for processing, and the culture of paying piece-work rather than time on the job, this increase was not fully realised. These savings are quantified as plant running cost savings. Value added processing was achieved by the skill-set of the migrant workers which allowed specialist product production, previously unavailable.

1. One participant is now carrying out a routine task (in addition to her own duties) that used to take up one tenth of QC Supervisor's time. Savings here are calculated on the basis of 1/10 the difference in annual salaries.

2. Recruitment cost per person has been identified; these 11 (and more) have renewed their contract making a saving to the company 50% of which is attributed to the training. The other 50% is attributed to the better lifestyle and earnings available in Ireland in relation to the country of origin. Future recruitment has further been effected with approaches from the larger Hungarian community both in Ireland and in Hungary.

3. Typical cost of an accident is €10K. There has been a reduction in accidents of 3 in 2004 and 10% of this reduction is attributed to the training by the HR Manager. The other 90% is attributed to accident prevention strategies employed by the company.

4. A further saving was realised from earlier plant shut down time due to the following time savings annualised[1]:

(a) Time spent on communicating (such as on H&S and other production matters) have been reduced. This has been reduced by an average of 90 minutes for the boning hall staff. Applied to the sample group of 11 workers this results in an annual saving of 756.8 hrs and the freeing up of Supervisors time for higher level work. The times used as a benchmark are taken from the period prior to the arrival of the migrant workers who have additional skills to the indigenous workers.

(b) A 50% improvement was noted in the kill line for one participant (spends half his working week here) of which the Supervisor felt 75% could be attributed directly to the language training. The other 25% he felt was due to proficiency being developed in the use of the company tools. He was 50% confident in his estimate. This resulted in an annual time saving of 165 hrs for this worker.

(c) One participant has reduced the time needed to reach his daily quota by a fifth in the boning hall which reduced his working time by 176 hours a year. The supervisor felt this was due 50% to the language training which speeded up communications. The other 50% he attributed to familiarity with The company tools.

Isolating the Effects of Training

For ROI level evaluation it is necessary to isolate the effects of the training programme. i.e. one needs to list the other factors that may have contributed to performance improvement and justify any percentage allocation of benefits to the training programme. Estimates incorporating confidence level and concurrence of appropriate supervisor or manager was the main tool used to isolate the effects of training as detailed in 4 above. The table provides a summary.

ROI Measure	Authority
Saving of QC's time	Supervisor
Recruitment & retention	HR Manager
Accident prevention	Supervisor
Meetings time savings	Supervisor
Plant down time	HR Manager

Other factors identified which might have had an effect on changes were:

- the Hawthorne effect, whereby a sample group under study might behave differently because they are under scrutiny.
- additional commitment from the learners given the unique nature of their situation of being in a country where a different language was spoken.
- personalities/individuals supporting individual learners above normal expectations
- streamlining of practices and procedures at Company (minimal)
- continual customer demands which filter down to operator level.

Return on Investment

Taking the identified tangible data from level 4 and applying Phillips © ROI formula

Training Costs:	***In full***
Trainers fee	6,700
Additional fee for trainers for evaluation data gathering	450
Cost of Evaluation report	1,050
Release or replacement staff	0
	8,200

[1] The number of weeks actually worked is taken as 44 per year. Any estimates or value judgements have been rounded down to ensure the most conservative result.

Benefits:	
Up-skilling savings	1,000
Recruitment retention savings	3,300
Accident savings	3,000
Lower running costs	5,918
Total	**€13,218**

BCR (Benefit to Cost Ratio)

13,218/ 8,200 = 1.61

ROI

$$\frac{13,218 - 8,200}{8,200} \times 100 = \mathbf{61\%}$$

Plus the identified time savings for higher level work and other intangible benefits identified in the context of this report and listed in the level 4 evaluation section. The time savings have not facilitated additional production, however they have resulted in savings by allowing the plant to be cleaned and shut down earlier.

Intangible Benefits

As well as the measurable benefits listed above there have been numerous benefits that could not have a monetary value attributed to them at this time.

- Confidence of employees leading to greater contentment and productivity. Employees have been empowered to go about their business in a more fulfilling way. This has had a noticeable effect on their work output.
- Citizen development for employees, driven by the Company HR policies.
- Profile of Company as a modern responsible employer. This has presented a positive image of the company in Ireland.
- Knock-on effect for recruitment of other non-indigenous employees. An example of this has been demonstrated in approaches by the wider Hungarian community both in Ireland and in Hungary for employment in the company.
- Retention of employees. Existing employees have been strongly influenced in their decision to stay by the investment in their development.
- Career development potential. Employees who have undertaken this training are better able to progress in the company through promotion and further development.
- Reduced accident risks. Employees are better aware of risks due to their ability to understand written and verbal warnings and some accidents have already been prevented as identified in the ROI.
- Improved hygiene awareness. Employees are better aware of hygiene requirements and customers are influenced by the fact that cleaning staff have been trained in English language. Evidence for this is cited from inspection reports from USDA auditors.
- Value added benefits from new skills (such as product preparation) brought to Company which can now be communicated in a meaningful way and lead to the increased knowledge and skill capacity of the organisation.

Barriers

The factors that have restricted this impact study were:

- There was no specific resource allocation for evaluation; as historical practice allowed only lower level evaluation (levels 1 & 2) and its typical 1% cost.
- There is a lack of confidence in the evaluation of training in general.

- There is a lack of awareness in the ROI model of evaluation and its ability to measure monetary return in real terms.
- The strategy driven four stage training cycle of identify need, plan, deliver and evaluate is inappropriately applied with resources targeted at the delivery to the detriment of the other three stages.

Enablers

The factors that have helped to make this impact study a success were:

- The Individual(s) commitment to training and support for workers, shown by the Company HR Department and the HR manager in particular.
- The participant(s) personal commitment to learning which was in part driven by a desire to integrate socially into the community and the workplace.
- The positive corporate action demonstrated by the company organisation in the development of appropriate and timely policies.
- The additional (and personal touch) input by the two trainers which bridged further the gap to socialisation, and the success of formal recognition both in achievement and in the presenting of awards.
- The FETAC Certification procedures focussed the programme on achievable learning objectives which might otherwise have been vague.
- The Skillnets input of driving this model of evaluation by the support of resource and personnel helped overcome some of the barriers above.

Conclusions

- The Return On Investment on this programme was 61%
- Apart from the monetary benefits, there have been significant intangible benefits in this programme that make it stand out as a positive investment.
- This evaluation has highlighted a need for a stronger focus on business benefits in Company *learning* needs analysis. Such a focus may reduce the need for precise reports such as this.
- Equally important to the measured impact of this programme are the processes used in measuring it. Impact of training and learning needs to be embedded over time in other Company processes and strategies.
- Full evaluation of a basic skills programme is difficult because of the problems in identifying and separating data for higher level evaluation.

Appendix
Data Collection Plan
Programme: FETAC English for migrant workers Responsibility: Mick McHugh (for company)

	Objective(s)	Measures/Data	Data Collection Method	Data Sources	Timing	Responsibilities
1	**Reaction/Satisfaction** Satisfaction with objectives and format of programme and an environment conducive to learning	Achievement of 4.5 average score on 14 questions	Skillnets level 1 evaluation form: Facilitated "happy" sheet 5 point scale	Trainers 100% of Participants	June	Trainers/ participants
2	**Learning** Achievement of FETAC Certificate Change in Knowledge Skills and Attitude (KSA)	FETAC Assessment Achievement of 3.5 in KSA self assessment by Participant & Supervisor	FETAC Assessment Facilitated Skillnets level 2/3 evaluation form Questionnaire	Participants	July	Trainers/ participants
3	**Application/Implementation** More productive workers as a result of cultural integration	Achievement of 3.5 application self assessment by Participant & Supervisor	Facilitated Skillnets level 2/3 evaluation form Questionnaire Interview with Supervisors/ managers	Supervisors	August	Network Manager Supervisors
4	**Business Impact** More time for production Production savings Recruitment savings	Documented & anecdotal 1.Upskilling 2.Retention 3.Accident reduction 4.Production costs Isolation of other factors	Interview with Supervisors/ managers	e.g. Contract renewal Records Costs	August	Glanbia record keepers
5	**ROI**	**Comments:** It is important to isolate any/all factors, other than the training, that might account for improvements identified If reliable data can be collected to level 4, then the ROI level is easily achievable. There is a lot of work to do to identify, develop and implement this data collection.				

Measuring the Impact of a Technician Training Programme

Abstract

This study evaluated the impact of a training programme which was designed and delivered by in-house personnel to upskill technicians (craft workers) and enable them to carry out a more extensive range of repairs on machines in the field. Even though the size of the training programme was relatively limited the results show how a full ROI study can be implemented and, in particular, show how effective a control group arrangement can be in isolating the impact of training from other factors.

Company Background

The company is involved in the energy sector and operates on a decentralised basis through subsidiary companies. It has strong skills in resource management and development, manufacturing, distribution, science, engineering and human resource development. It employs approximately 1650 people plus a large number of seasonal workers, and operates out of 30 localities mainly in Ireland, but also in the United Kingdom and eastern United States. It has a turnover of nearly €200 million.

Training Programme

The company manufactured its own custom designed equipment to lay rails to transport material across open country between 1994- 2004. Nineteen of these machines are currently in operation. The cost of one machine is in the region of€160,000. These are an advanced, modern prime mover with a low ground bearing pressure, microprocessor controlled, hydrostatic track drive, fitted with a slewing crane for rail-laying. Special features include vehicle monitoring system, load sensing and engine speed control. They contain advanced electrical components as well as mechanical and hydraulic systems. Due to constant operation in adverse conditions (both winter and summer) the machines can breakdown. The machine operator then calls the Workshop Foreman for a technician (either a fitter (mechanic) or electrician or both) to come on site to carry out repairs. Because of restructuring some existing technicians are not fully conversant with all aspects of the machine operation. In addition demarcation lines between electricians and fitters have meant that more than one person may be called out to effect repairs. It was hoped that this issue could have been helped by an agreement to pay additional remuneration for cross-skilling among craft workers.

Objectives of the Training Programme

The company identified the aims of the training course in summary as "cost reduction and improved operational efficiency".

Specifically, the company wished to see:

- reduction in the number of times fitters make requests for advice and support by engineering design and technical staff
- problems with machines on site solved faster
- one man not 2-3 being required to solve problems
- realise real benefits of paying for cross-skilling

The company had based the need for the programme on feedback from Maintenance Managers, Workshop Foremen and discussions with craft workers.

The Training Programme was delivered over a three day period in-house. A total of 40 technicians were trained over a six month period in small groups of 6-9. The groups were based on the company's regional structure. The content of the programme can be summarised as:

Day 1 – Introduction and familiarisation with the machine – Mechanical Elements
Day 2 – Electrical Components
Day 3 – Test, Fault and Fix

A mixture of classroom instruction and practical demonstration and practice using a machine in the company's workshop was used. The instructors were both staff members.

The curriculum aimed to improve the skills of the technicians in the following main areas:

- how to diagnose problems with the machine from the use of indicator dials and data in the control panel
- how to use schematic drawings, hydraulic symbols
- understand the working of all mechanical and electrical systems, circuits and machine operating systems
- dismantle and assemble key machine components
- removing and replacing components
- fault finding and the use of fault-cause-remedy charts

Foremen also received this training so they could better identify the type of problem and tools and materials needed from the phone conversation with the operators and before dispatching a technician to the site.

It was also recommended that Machine Driver Instructors attend this training course to incorporate key aspects relating to problem diagnosis to driver-operators so they could better describe why the machine wasn't working. Decals were also attached to driver cabs to facilitate this.

Anticipated Results of the Training

The anticipated benefit from the training related to the number of times a trainee was subsequently called out to repair this particular machine, how long the repair took, whether a second person was called out to assist and whether telephone back-up support was required.

The specific desired outcomes of the training were:

- diagnosing problems quicker and more accurately (by using indicators in the vehicle monitoring system instead of immediately 'getting out the tool box')
- be able to tackle any repair problem (not just those within their own area of technical expertise)
- not requiring phone or off-site back-up or support to complete repairs
- being able to complete all repairs alone (without a second technician) and in one visit

These then were translated into the following clear business results so that the impact on the operation of the company could be assessed:

- improved operating time of machines leading to continuous flow of production
- less machine down time
- reduced cost of technicians on machine repairs freeing them up for other duties
- reduced cost of engineering/technical staff being required for back-up freeing them up for other duties
- value for expenditure on additional pay for cross-skilling agreement

Evaluation Process

Planning of the evaluation process began shortly after the first group had finished training (the Data Collection Plan prepared is attached as an Appendix). Nonetheless, it was decided to invite them to complete a 'smile' sheet (level 1) evaluation and in fact all the participants subsequently returned the questionnaire. The following tools were used to conduct the evaluation:

Level 1 – The reaction to the training was assessed by a Questionnaire which was completed by all trainees at the end of the training.

Level 2 – The learning obtained by the participants was assessed by a Questionnaire at the end of the training and observation by the instructors based on both a check list which was completed in respect of each participant and observation of a structured skill/confidence-building exercise.
The trainees were also tested on

- How to diagnose problems from the use of indicators on the control panel.
- How to read schematic diagrams.
- Understand Electrical & Mechanical Systems.

Level 3 – Two to three months after the training the trainee's supervisors (Foremen) completed a detailed questionnaire in order to assess whether the trainees were using the skills acquired during training on the job. The

Foremen and the Instructors, who were also engaged in operation duties which brought them into contact with the trainees, also observed application on the job (reported on a standard form).

Level 4 – In measuring business impact it was planned to focus on:
- Machine Down time - monitor any changes;
- Call-out times pre and post-training
- Reduced material and labour cost
- Value for additional payments for cross-skilling

Evaluation Results

The analysis of questionnaires at the end of training showed an average satisfaction level of 4.7 out of 5.0 against a target of 4.0 which displayed a very high level of satisfaction with the training. Comments provided by the trainees showed that they found the training very worthwhile, practical and directly job related. Some had been a bit reluctant about it prior to training but were happy they had done the training. All were willing to use the skills learned.

Both the trainees' questionnaire at the end of training and observation by the instructors confirmed that all the trainees had learned most of what had been taught on the course. In the skill/confidence-building exercise (on a scale of 1 – 5) 86% recorded an average of 4.

The Data Collection Plan had set a target of 4 (out of a max of 5) in terms of application of the skills on the job as determined by the Foremen in written questionnaires. The actual results were in a range from 3.8 to 4.2 in terms of application. It should be noted that the opportunities for application were relatively limited since the learning could only be applied when one of these machines broke down and the frequency of this varied by region and by season.

Determining Business Impact

The original plan for determining business impact was to obtain data under the following headings:

Reduced machine down-time.
It was intended that this should be calculated from the machine operating logs but these proved to be inadequate and since there was no other reliable data this measure was not used.

Call-out times
Because the amount of time spent by technicians on repairs to these particular machines had not previously been isolated from the time they spent on general duties during a working shift it was decided to develop call-out time data by requested a selected group of Foremen to complete a pre-training Call-out Log of call-out times and a post-training Call-out Log of call-out times. This was diligently completed by the Foremen in question but the data obtained - the number of call-outs for machine repairs - in the period during which the evaluation was conducted was deemed too low for comparison with the pre-training call-out times. This was due to the seasonal variation involved. Most of the training took place in the spring which meant that the call-out times post training were for the summer period and the available data for pre-training related to the previous winter period. It was decided therefore, not to use this data.

Reduced Material and Labour Cost
Management personnel in the workshop, engineering department and stores completed a special impact interview with the in-company evaluator to determine reduced time for (a) the number of times that engineering staff were called upon to provide technical support to technicians in the field, and (b) the reduced quantity of spare parts for this particular type of machine being drawn out of the stores, which turned out to be 10% reduction.

Value for expenditure on cross-skilling
It was not possible to determine a precise return related to cross-skilling expenditure but it is possible to list this as a clear intangible benefit of the training.

Control Group
As the training was being carried out and further fine tuning of the evaluation process was being put in place it became clear that the use of a control group, which had not been originally contemplated, could be implemented. This was

made possible due to the fact that the training was being delivered on a phased basis by region. The first round of training had been conducted in the Western Region and no training had been carried out in the Eastern Region. The group chosen as the control group were situated in the Eastern region. They were geographically distant from the trained group (50 miles) and had no regular contact with them. The craft workers were of similar age and had undergone the same basic training on joining the company as those in the trained group.

The Foremen's logs for the call-out times and data provided by the engineering department in relation to the requirement for technical support over the telephone provided tangible numbers on which to base a calculation for the impact of the training.

The following table shows the comparative figures for the two groups -

Item	Target	Control Group	Trained Group	% Difference
No of times extra technician required to complete repairs	10%	25%	12%	52%
No of times telephone support sought to complete repairs	10%	25%	0%	100%
Time taken to solve problem	3 hrs	3.5 hrs	3.1 hrs	13%

With the involvement of the wages department it was calculated that the combined benefit accruing from:- (1) the 52% saving in technician time, (2) the release of the engineers from having to provide telephone support, (3) the 24 minute reduction in the average time taken to solve a machine repair problem, and (4) the 10% reduction in the use of spare parts, amounted to €14,700. This is an annualised sum for the purposes of the ROI calculation.

Isolating the Effect of the Training
The control group provided a very effective method for isolating the impact of the training. However, a back-up was provided through the impact interviews carried out by the in-house evaluator. These interviews revealed that two power stations came out of service in the summer of 2004. While this might have had an impact on the machine down-time data this did not effect the final calculation as machine down-time was not, in the final event, taken into the equation. Weather conditions in certain months may have a bearing on the length of time taken to complete repairs but, in general, conditions were good during the monitoring period during which the control group arrangement was in place.

Cost of the training

Training Needs Analysis	€300.00
Development, Design,	€1,370.00
Delivery.	€11,380.00
Evaluation.	€650.00
Total.	€13,700.00
Less Grants.	€3,000.00
Total Cost.	**€10,700.00**

Calculating Return on Investment

Based on the above figures the following calculations were arrived at-

$$BCR. = \frac{€14,700}{€10,700} = 1.37$$

$$ROI \quad \frac{€4,000}{€10,700} \times 100 = 37\%$$

Intangible Benefits

The following intangible benefits of the training were identified:

- Greater level of confidence among craft workers.
- Improved Teamwork.
- Greater level of cross-skilling and greater value for investment in cross-skilling

Appendix
Data Collection Plan

Level	Objectives	Measures Data.	Data Collection	Data Sources	Timing	Responsible
1	Positive Reaction Team Building	Scale 1-5 Average 4 Result 4.7	Reaction Questionnaire	Participants	3rd Day of Course	K Harte.
2	Crosskilling Hydraulic & Electrical Diagnose Problems	Scale 1-5 Satisfactory 4 80% to 3. Result 86% reached 4	Observation. Skill Confidence Building exercise.	Instructors	During Training Course.	K Harte.
3	Use of Skills Frequency No. of Craft involved	Reported freq Is skill applied Result 4.2 / 3.8 foremen.	Questionnaire.	Participants Foremen	2 Months after Training.	K Harte.
4	Maintenance cost reduction Less machine down time.	Reduced Material & Labour cost. 25% / 10%	Performance Monitoring Control Group.	Management + Foremen.	Pre and Post Training.	K Harte.
5	ROI. Estimated 25%	Actual 37.38%				

ROI of a Problem Solving Training Programme

Abstract

Developing effective multifunctional teams and enabling employees to engage directly in problem solving are desired objectives of many training interventions. In this case study a pilot training programme to achieve these aims was conducted with a group of employees in one section and evaluated up to the full Return on Investment level. The study used a trend line analysis to arrive at a figure for the savings obtained which were substantial.

Company Background

This manufacturing company has been operating in Ireland since 1974 and employs over 1,000 people in Ireland at two sites. The company prides itself on its state of the art manufacturing facility, superior product quality and design and on its highly efficient workforce. The manufacturing facility, where this study took place, produces a wide range of products for world-wide markets. Product & technical innovation, speed to market and teamwork are key contributors to the success of the plant as are continuous improvement initiatives which are reinforced in an ongoing commitment to education, training and career development.

Concept behind the Training Programme

Operations at the plant followed the typical hierarchical structure in departments such as Engineering, Production, Toolroom, Quality Assurance, HR and so on. The company had been concerned that on a day to day basis and at mid to lower levels there was little appreciation of the functions and challenges facing other departments. There was also a realisation that not all employees fully understood the business strategy.

To counteract this trend the company has for some time been moving toward organising work and projects on the shop floor within teams. In general this has been accomplished on a somewhat informal basis and the company has been looking for opportunities to move to a more formal introduction of multi functional teams.

Multifunctional teams are expected to positively effect the plants Key Performance Indicators (KPIs) through cross fertilisation of ideas, improved understanding of business needs at all levels, improved employee engagement, and overall a more efficient workforce through empowerment and involvement. Ultimately, this will have a positive overriding effect on response to change and facilitate new product allocation for the plant from corporate headquarters.

At the same time the HR department at the plant had been aiming to standardise the approach to "problem solving" on the shop floor. It was therefore, decided to develop a pilot project which would, so to speak, help 'kill two birds with the one stone' by providing training in problem solving techniques to a multifunctional team. This team was set up as a Pilot team assigned to the thermoforming area on the factory floor. The team consists of members from the following departments: QA, Engineering, Supply Chain, Manufacturing, Toolroom and HR.

Training Programme

The manufacturing section chosen for the pilot study was the Lens Filter area. This section uses a thermoforming and packaging process of a medical device attachment for electronic thermometers. It operates on a 24/7 basis and has 30 employees associated with it (18 Direct and 12 Indirect). It has an output volume in excess of 10m units per week and its key challenges are maintaining its KPIs, improving efficiency, machine utilisation, quality assurance, material usage, waste reduction and continuous improvement.

The training programme supported a multifunctional approach to operational issues. Problem solving was addressed at factory floor level with emphasis on resolving problems locally thus resulting in speedy resolutions at front line level. Emphasis was also placed on effective management of meetings, empowerment of staff, facilitation of cross fertilisation of ideas, and engagement of the technical group directly in achieving the KPIs.

The Training programme took place over five and a half days and was delivered by an external Training company. The course was delivered in two parts; 7 STEP PROBLEM SOLVING AND MANAGING FOR MOTIVATION. The training was delivered on-site in a classroom format during April-May 2004. For the purpose of the pilot study 8 people were trained.

The programme objectives from the company's perspective were focused specifically on Material Usage Variance (MUV) savings and on achievement of KPIs.

In terms of outcomes for the trainees it was hoped that they would gain:

- Ownership and understanding of KPIs and business needs
- Enhanced engagement / involvement
- Increased commitment
- Appreciation of Departmental functions
- Cross fertilisation of ideas
- Understanding Business needs and the 'bigger picture'
- Improved employee relations
- Problem Solving skills
- Conduct effective meetings

Evaluation Results

The evaluation was carried out primarily using questionnaires for levels 1 and 2 completed by the trainees at the end of the training. This was followed up by observing the actual practice of running meetings, problem solving on a day to day basis and the operation of the multi-functional team. The main data used for identifying a business result was the reported material usage variance.

The results of the evaluation are summarised below:

Level 1: The training was very well received by the participants who scored it at 4.0 or higher on a 1 - 5 scale. The competence and approach of the consultant was considered to have been impressive. The techniques taught were practical and directly related to the job. Overall the reaction to the training was very good.

Level 2: Exercises administered during the training showed that the participants learned new knowledge and skills in problem solving and ability to manage meetings more effectively.
The style of the course was highly interactive with plenty of opportunity for all participants to practice the skills taught. Also, feedback from the tutor was very positive, noting full participation from all trainees.

Level 3: In terms of applying what had been learned to the work situation, a number of tangible and intangible developments provided credible indicators. The multifunctional team was established and working to a project assigned by a steering group. Meetings were being run effectively in line with what had been taught during training. Feedback from Questionnaires and Observations reflect that problem solving skills were being practiced on the job as part of the multifunctional team.

In addition, very significant PMT (Junior Technician) engagement was observed. In particular the PMTs developed an innovative recording system far superior to any recommended by the machine manufacturer. Toolroom involvement and experience was broadened. Team members were more knowledgeable of material systems, scrap issues, etc. The supervisor was able to adopt a different role, acting more as a leader/facilitator. For the first time there was direct involvement in the team by HR staff which all sides found beneficial.

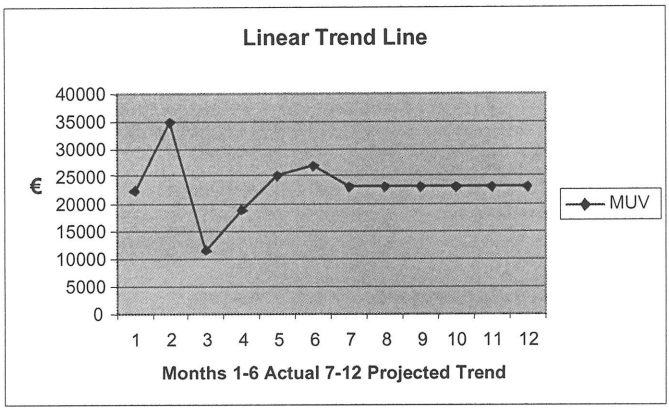
Level 4: Contributors of loss to the material usage variances were identified. Scrap levels have been reduced throughout the process. New systems have been introduced by the team to streamline the recording of scrap and stocktaking.

Calculating the Return on Investment

The analysis presented a number of data items that could be used for conversion to a monetary value in order to arrive at an estimated return on investment. The one that was chosen was material variance levels since credible data was readily available in respect of this item.

In the six months immediately preceding the training the value of the material variance levels averaged €23,243 per month. In the five months following training this figure averaged €3,103 or an average saving of €20,141 per month. If projected over the full twelve month period this would give an overall annual saving of €241,686. Interviews with management established that no other factor in the period, apart from the training, could have influenced the change.

Another means of arriving at the saving is to carry out a trend line analysis. This is used only in cases where there are no factors apart from the training which could have influenced the change, as in this case. From the Linear Trend Line chart below it can be seen that in the six months preceding the training there were some major fluctuations in the material variance level trend but if the trend is projected for a further six months the average monthly loss would be €23,027. When this is compared to the actual average monthly value for that projected period of €3,103, a monthly saving of €19,924 is shown to have been realised (which translates to an annual saving of €239,088).



The total cost of the training was €30,060. In line with the standards established by Dr Jack Phillips the most conservative or lowest of the two figures - €239,088 - is used to apply the savings and in calculating the ROI, as follows:

$$\text{BCR.} = \frac{€239,088}{€30,060} = 7.95$$

$$\text{ROI} \quad \frac{€209,028}{€30,060} \times 100 = 695\%$$

Intangible Benefits

A number of benefits have been identified which have not been used in the ROI calculation and these include:

- Multifunctional team established
- Meetings being run effectively
- Problem solving skills being practiced on the job as part of the multifunctional team.
- Very significant employee engagement observed.

- Toolroom involvement and experience broadened.
- Team members more knowledgeable of material systems, scrap issues, etc.
- Supervisor able to adopt a different role, acting more as a leader/coach.
- HR staff involved with multifunctional team
- New sorting and scrap recording systems introduced.

Evaluation of a Call Centre Training Programme

Abstract

A training programme for call centre staff of a major nationwide hotel chain shows a significant return on investment. A particular feature of the programme is the detailed planning of the training in advance, the establishment of baseline skill levels for the trainees and the use of a 'mystery caller' as one of the means of assessing whether the training was applied on the job.

Company Information

The company is one of the largest Hotel chains operating in Ireland. It now employs in excess of 1,500 employees and manages in excess of 30 Hotels in Ireland.

Training Programme

The group targeted for training was the 'Book Now' team based in the central call centre. They are a team of call handling agents allocated a specific percentage of each Hotel's room sales each month to sell. Rates are agreed in advance with each hotel. The book now team take bookings and update the reservation system of each hotel. The Book Now team consists of five agents.

Training Providers

The training was delivered by two external providers. "A" the first training provider was particularly strong in carrying out the mystery calls, where the second training provider, "B", was particularly strong in terms of the delivery of the training event and also had a good understanding of the industry and the challenges the Book Now team were facing. Training Provider A is a UK based firm that deals with companies from around the world. Part of their business focuses on carrying out mystery calls. Part of the training involved setting the call standards which the book now team would use when handling calls. Prior to the training it was necessary to devise temporary call standards so that calls could be audited against an agreed set of criteria. The criteria were agreed and calls commenced two months prior to the training event taking place. The calls were made by A to the Book Now agents. The book now agents were unaware that the calls were being made to them and audited against a set of standards. It was important that the calls were audited prior to the training without the agents knowledge so that the effectiveness of the training could be measured impartially.

To maximise the benefit of the mystery calls it was also decided to get the company to benchmark the call centre against that of four main competitors. The same call standards criteria were used to measure competitors so that we could compare like with like.

Training provider B was selected as one of their key areas of specialisation was call centres. Although they were not a specialist in the hotel sector they had been involved in delivering call centre training to a hotel chain in Ireland and therefore had an understanding of the business and the types of call being handled. A large part of the training event involved motivating the Book Now team and facilitating the agreement of call standards which they would then be audited against. The training provider chosen was particularly strong on interpersonal and communicative skills but was also very focused on achieving the aims of the training and the post training follow up.

Training Objectives

The objectives of the training were established following a needs analysis. The contributor to the needs analysis comprised:

- The overall business plan for the Book Now team demanded that certain skills knowledge and behaviours be changed.

- Discussions with managers which involved reviewing current skill levels, key areas for improvement and identifying areas where the training could facilitate improvement e.g. 'Benefits Sheets'.
- Each of the Book Now team were also asked to submit ideas which they felt the training should focus on.
- The results of the first two months mystery calls were also analysed to see if there were any specific areas which might dictate the objectives.
- Training provider B was also consulted for specialist knowledge.

Training Delivery

The training was delivered at the same premises where the book now team are also based. A meeting room in the building was used over a one and half day period to deliver the full training programme. The entire Book Now team were in attendance as well as their manager. The training was delivered using LCD power point, flip chart, group work, taped role plays and feedback and one to one work. The tone of the training event itself was both relaxed and interactive.

Pre-Training Benchmarking

(i) Nomination Form
Data was collected in the form of 'Nomination Form' prior to running the training event to gauge participant and manager commitment to the training programme. The nomination forms gauge the participants understanding of why they are attending the course and how it will impact on their job role afterwards. It also questions why the manager has chosen to send the participant on the training programme, whether the training need has been identified in advance, their perception of how the course would impact on the business, and how they felt they could measure effectiveness of the training event.

(ii) Skills Check
A skills check sheet was used to gauge participant self assessment of their own skill level prior to attending the training event. It contained 11 statements and the participant had to tick their skill level from a choice of 5 levels of knowledge/skills. Each of the statements was closely linked to and derived from the course objectives. Analysis of the data collected shows that the participants average self assessment of their skill level was 62% prior to the training event

Evaluation of the Programme

Level 1 - Reaction
(i) Evaluation Form
Reaction data was collected at the end of the training event using a standard evaluation form. This focused on issues such as presentation of the training event, delivery method, course content and trainer skills. It also asked how participants felt they were going to apply what they had learnt back in their department. Overall learner perception is reflected in the analysis of these scores, which showed a 95% average satisfaction rating.

Level 2 – Learning
(i) Skill Check
The skill check sheet used prior to the training event was revisited to try to capture the participants own assessment of whether their skill level had changed if at all following the training event. The results of the analysis of the skill check sheets post training showed an average self assessment of 86% i.e. the participants felt their skill levels had increased by 24%.

(ii) Call Standards
Part of the training required the participants to devise their own call standards based on the theory of best practice call standards. The standards suggested by the participants were considered appropriate by the training provider. This indicates a good level of learning. Indeed this might be considered an in-course test as their ability to devise such standards was a function of the extent to which they had learnt during the training event. These would form the

template of how each call should be handled. These standards would also form the basis of how each 'Mystery call' is measured / audited.

Level 3 - Application/Implementation
(i) Mystery Call Audit
To determine whether the call handling standards had changed following the training 'mystery calls' were carried out by A. These calls were conducted for a two month period prior to the training event against a set of call standards which were very similar to those devised by the participants during the training programme. 20 calls were made in total each month and results were given by agent and against each call standard. Points were allocated and % results were given against a variety of criteria. The mystery calls were continued following the training event for a further 5 months. The agents were made aware of the mystery calls during the training event and were aware that the mystery calls would continue for the following 5 months. Each agent was given their own password and access code to A's web site so they could view the results at any time. The reports were structured in such a way that it was possible to individualise each call result, this also provided a useful tool to facilitate retraining and to assess ongoing agent training needs. The standards used by A to audit the calls were those which the agents had devised during the training event. This was a very important point as it was necessary that the agents took ownership and full responsibility to ensure the standards could be met. The results of the mystery calls also contributed to the measurement of the effectiveness of the training event. This analysis showed an 11% increase in scores from May to June.

(ii) Observation
Agents were observed by their immediate line manager both prior to and after the training event. However, these observations were not linked to set criteria nor formally recorded. This would have involved additional effort and it was felt that application / implementation measures were sufficiently rigorous without this formal assessment.

(iii) Questionnaire
To determine whether the participants felt they had applied the knowledge and skills learned a questionnaire was used. It was completed 12 weeks after the training event. This two page questionnaire covered the following areas:

- Job impact
- Application of learned skills and knowledge
- Barriers to implementation
- Enablers for implementation
- Estimated improvements to job performance
- Estimation of both positive and negative impact on the business
- Reaction on value for money

(iv) Performance Review
Eight weeks after the training event had taken place one to one reviews were conducted with each agent by the line manager. These focused around the results of the mystery calls and agents performance in the pervious eight weeks. In those areas where the individual's performance had not improved or improvement had not been sufficient, the relevant aspect of the training programme was referred to and the participant was asked to revise their knowledge of it. A significant 're-improvement' in the application of best call-handling practice by the team was observed after these reviews.

Level 4 – Business Impact
(i) Call handling performance
The participants identified on average a 67% improvement in their performance with 73% of this attributed to the training with a confidence level of 62%. The line manager identified an 80% improvement in the Book Now Team's performance with 100% of this improvement attributed to the training with a confidence level of 100%.

(ii) Call Conversion Rate
The call conversion rate i.e. the percentage of potential customer enquiries that were converted to sales increased from an average of 48.5% for the April to May period to 57.5% for the June to August period.

(ii) Increase in revenue

The June to August monthly average revenue increased by 150.5% over the April to May monthly average.

Isolating the Effects of the Training

To isolate the effects of the training the participants and the manager were given a questionnaire with a list of potential contributing factors to the improvement in revenue, which included the training. These included seasonality factors, differing rates charged by Book Now to Hotels from one period to the next, an increase in the number of calls redirected from the hotels to the call centre, a different type of team supervision, and increased advertising / promotion activity. Only one factor additional to the training was identified i.e. the opening of a new Hotel in July 2004. The participants estimated that 45.5% of the increase in revenue could be attributed to the training and they were on average 63% confident in this response. The manager estimated that the training contributed 25% to the increase in revenue and she was 75% confident of this response.

The average impact of the training across all six respondents i.e. five training participants and the supervisor, amended for confidence, was 23.95%. The impact of the training amended for confidence of the manager was 19.25%. For the purposes of the ROI calculation (see below) and in line with the Philips approach, the more conservative figure i.e. 19.25% was used.

Return on Investment

The total increase in revenue (projected for a 12 month period) was €376,082. However, when calculating sales figures to determine ROI only the marginal profit of the sales may be used. Different hotels in the group operate different margins and indeed within hotels different rooms have different margins. However, after consulting with the accounts department an average marginal profit was agreed at 18.34%. The total training costs amounted to €7,800.

Therefore the ROI is calculated as follows:

19.25% of €376,082 = €72,396;
18.34% of €72,396 = €13,277
€13,277 minus €7,800 = €5,477;
€5,477 divided by €7,800 x 100 = 70%

ROI = 70%

Intangible Benefits

The three highest ranked intangible benefits according to the participants were:

- Increased commitment to the company
- Improved teamwork
- Increased job satisfaction
- Increased agent confidence

ROI of Implementing a Food Safety Training Programme

Abstract

This case study confirms the view that all training programmes can indeed be evaluated to level 5 and that although some 'attributes / features' of a training programme may be problematic when it comes to ROI calculation, other attributes may facilitate ROI evaluation. This Food Safety Training Programme was thoroughly evaluated 15 months after it was completed and a credible ROI calculation was arrived at.

Company Information

This laboratory systems company was established in 1994 and is based in the west of Ireland. There are 13 people employed full-time and 7 part-time. The company has grown with industry demand for high quality laboratory testing and is equipped with dedicated technologies along with highly qualified microbiologists, chemists, technicians and environmental science experts. Its reputation for customer service, quality, and technical ability has established the company as the preferred laboratory for both industry and regulators. From initial contact through to sample collection, and eventual report turn around time the company is committed to meeting and surpassing the commitment it makes to its clients.

Training Programme

The identified main challenges for the company going forward were logistics (the effects of being located in a remote part of the country), competition (the increased entry of contract laboratory service providers into the industry) and costs (the increased costs associated with providing such services). The company was concerned with developing its staff so as to be able to provide an additional service (Gold Programme) i.e. food safety auditing to clients (existing and potential). Under legislation / regulatory requirements, staff must be certified to a standard level of competence in food safety audits in order to be able to carry out governing authority recognised audits. Providing food safety audits is also a potentially more lucrative service i.e. the returns / fees are greater.

The training was seen as a response in particular to the second challenge - increased competition. It was therefore decided to deliver a 'Food Safety Programme' during the period February to December 2002. The training provider was a recognised and certified food safety audit training provider.

The needs were arrived at as part of the development of the company's strategic plan under a sub section called Strategic Product and Development focusing on food services. Discussion at management level identified the need and a training provider was contracted to develop a programme to respond to these needs. The company was assured by the training provider that the programme offered would benefit the group leaders and further refine their needs at individual and team level and provide responses to those needs.

The general objective of the programme was to enable the implementation of 'a proactive food safety programme to members of the Hotel, Restaurant and Hospitality industry'. The programme covered the following areas: food sampling, analysis, reporting methods, evaluation of cleansing systems and auditing.

Audit training was carried out to I.S.340 (1994) standard. More specifically staff were trained in the following aspects of auditing: scheduling, preparation / information gathering, on-site behaviours, audit conduction, audit follow-up e.g. identified corrective actions.

The training was a mix of traditional classroom type teaching and practical exercises during three visits to working kitchens where on site live audit training took place.

Three general results were expected: 1) the company attain certification as food safety audit providers, 2) that staff become skilled in carrying out such audits, 3) on foot of above that the company would begin to win such food safety audit contracts.

Five key staff (the Quality Manager, the Technical Manager and three Lab Technicians) involved in sampling, analysis and reporting participated in the 'Food Safety Programme'.

Evaluation of the Programme

The evaluation of this programme was carried out as part of the Skillnets ROI Impact Project initiative during 2004. The company decided to attempt to evaluate the Food Safety Training Programme even though it had been completed at the end of 2002, fifteen months previously. This decision was based on a number of considerations including: the significant investment in the training for a small company of this size, the lengthy period over which the training had been carried out, the fact that all the key players in the company had been involved, and, the potential impact on the strategic development and expansion of the company arising from the training programme.

Furthermore, the programme had many other attributes which facilitated ROI measurement, not least the relative ease with which pre and post programme financial data was available and could be compared. Critically, all those staff that participated in the training programme were still employed in 2004 and therefore could contribute to the impact measurement study.

Level 1 *Reaction / Satisfaction*
A significant challenge at Levels 1 and 2 was that the analysis had to be completed retrospectively. Since all Trainees were still employed it was possible to have 100% complete a 'Smile Sheet'. The training delivery encompassing location, time, materials etc. was deemed professional and competent and overall the training was beneficial to the trainees. There appears to be some gap between the identified objectives of the training and those actually delivered. This appears, based on the additional comments provided in response to the open ended question, to be due to the facilitation of less practical application and more theory than had been anticipated. The overall reaction / satisfaction rating was 73%.

Level 2 *Learning*
The trainees clearly learned new knowledge and skills. The relatively low score for ability to retain the information is a function of the absence of opportunity, in the period immediately after the training, to apply what was learnt as indicated in the additional comments provided. The average score for that learnt during the course, gathered via a participant questionnaire which incorporated reflection on practical exercises carried out during the training programme, was 72%.

Level 3 *Application*
Trainees and Supervisors had completed an 'Impact Study Course Evaluation' some time after the training programme. Supervisors completed an additional Impact Study Course Evaluation with a 100% response rate. The key finding was that less than half what was learned was applied to the job which may be accounted for by the fact that the contents was not all directly job-related. Notably the three lab technicians scored the application of skills learnt especially low i.e. 20 and 30 percent respectively whereas the quality manager and the technical manager both scored this 70%.

Level 4 *Business Impact*
The Managing Director in consultation with the evaluation consultant identified a number of areas that could be examined to help determine a business impact. A special impact questionnaire covering 1) job impact, 2) application, 3) business results and 4) value for money was completed by 100% of participants.

The business measure used to ascertain the value of this programme was data to do with the acquisition of new contracts. The total for the aggregate sum of entirely new food audit contracts (Gold Programme) and extension of existing contracts (Bronze or Silver Programmes) to Gold Programme (add on sales) during 2003 was €137,000. In 2002 there were no such contracts, as the staff had not been trained to deliver them, while in 2003 there were 83 after the company started to market this service due to the availability of trained personnel.

Isolating the Effects of the Training

The net improvement as a direct result of the training as estimated by the participants was 100% of 48% (the statistical confidence level adjustment) which equals 48%. However, the manager gave a lower estimate of 35% of which she

was 80% confident, and this equals 28% improvement. Taking the average of both estimates we arrive at an improvement of 38%.

It can be argued that as the training was required for certification which was in turn required in order to tender / bid for 'Gold Level' food audit contracts, training could be considered 100% responsible for the increase in contracts. This is due to the nature of this particular training programme and its direct impact on company business i.e. without the certification gained via the training, no gold level contracts could have been 'won'. The responses of the participants and the manager to the business impact questions appear to have considered the latent potential of the skills gained.

Return on Investment

The time lag from programme completion to business impact raised some questions concerning the calculation of an ROI. The ROI formula, from an accounting perspective, relates to benefits obtained against costs incurred in the same financial year or 12 month accounting period. In this case the training was delivered in 2002 but no benefit could occur, nor did it occur, until 2003. In such exceptional cases, according to Dr Jack Phillips, it is acceptable to make the calculation with the costs for the first period compared to the benefits in the second period as no benefits could possibly have arisen in the first period.

Increased Sales (new contracts) in 2003 = €137,000. The profit margin on sales is 12% which gives a total annual benefit of €16,440.

The average estimate of the net benefits attributable to the training was 38% of €16,440 which is €6,247.20.

The total cost of the training was €32,460.

$$ROI = \frac{\text{Net Programme Benefits [Benefits – Costs]}}{\text{Programme Costs}}$$

$$\frac{6,247 - 32,460}{32,460} \times 100$$

ROI = 81%

However if one accepts the argument that training was 100% responsible for this €137,000 increase in turnover as without this training, no such increase could have occurred given the regulatory framework, the relevant figures are:

$$\frac{16,440 - 32,460}{32,460} \times 100$$

ROI = 49%

Whichever figures are used, the negative ROI is not unexpected. It had been anticipated that there would be a time delay between attaining the certification and the winning of Food Safety Audit contracts. The company could not market themselves as Food Safety Auditors until they attained this certification. If food safety contacts won in the 2004 period were factored into the ROI the result would be positive.

Intangible Benefits

The Food Safety Auditing has had a positive impact on

- Improving food safety programme image
- Increasing job satisfaction
- Improved teamwork
- Improved customer service
- Improved customer loyalty

ROI of an SME Project Management Training Programme

Abstract

This is a very comprehensive study of a project management training programme delivered in a small company and evaluated to exacting standards. The study shows the value in very careful and thorough planning of both the training and the evaluation and how it is possible to achieve significant benefits training organised and delivered as part of a collaborative venture among a group of companies.

Company Background

Constructive Solutions has been in operation for 25 years providing Building Defect Solutions and Conservation Craft Skills to customers based all over Ireland. Projects range between €5,000 and €1,000,000, and customers range between owners of listed buildings obliged to restore and maintain them sensitively, owners of original sash windows and institutions with whom maintenance contracts are in place.

There are currently 11 employed in the company including 2 directors. Key challenges are the increasing size and scope of contracts being secured, which the company currently finds difficult to manage and deliver within agreed timeframes while maintaining the targeted return rates.

Business Need

The primary business need identified was the achievement of consistency in recovery rates per hour to no more than 10% below the targeted recovery rates for all jobs.

To enable this to happen the training programme must deliver the following:

- Improved planning of jobs and contracts generally.
- Project planning processes developed and implemented.
- Team leaders to be self-directed in running projects and compiling reports.
- Business standards being set and applied to all projects and contracts.
- Timeframe management being put in place and measured on all contracts.
- Daily information from all sites being received and acted upon, resulting in improved efficiency in invoicing, impacting as cash flow benefits.
- Improved planning of contracts and projects leading to increasing awareness of all parameters involved and thus reduced waste time and inefficiencies.

Training Programme

The purpose of the training programme was:

- To give team leaders improved skills and tools for planning and delivery of projects and contracts with budget and agreed timeframes.
- To give the owner manager and project manager increased skills and capacity re. pricing, planning and managing the delivery of all construction projects.
- To improve communications within the team by providing an opportunity for the identification and solving of problems currently being experienced in the effective management and delivery of profitable, efficient projects and contracts.
- Overall to deliver on the improvements detailed above under business needs.

4 team leaders and 3 project managers (including the owner-manager) were trained.

The expected benefits of the training for:

(i) The Company were

- Improved planning and pricing of projects and contracts going forward.
- Improved return rates per hour achieved on contracts.
- Improved record in delivering contracts within the agreed timeframe.
- Increased and improved delegation of key tasks from Owner-Manager to Team Leaders, leading to improved strategic focus on the business by the owner-manager.
- Improved site-office communications.

(ii) The Participants were

- Improved understanding of the requirements for ensuring delivery on jobs within agreed timeframes.
- Greater ease in delivery of contracts through the resolution of key problems and difficulties currently being faced in the workplace.
- Procedures developed and implemented for managing risk and contingencies relating to contract management and delivery.
- Skills developed for more effective management of contracts and projects.
- Tools provided and developed for more effective management of contracts.

The training was delivered by a series of 5 x ½ day Group workshop sessions under the Skillnets Training Networks Programme, as a collaborative venture with a group of small companies. Participants and owner-managers and key staff were drawn from all the businesses involved in the network. There was also a number (3-4) Business Specific half day clinics held with participants from Constructive Solutions. Training delivery began on 24th March 2004 and ran until end July 2004. The training was delivered by an external training provider outside company premises at a central location.

Considerable effort went into designing the training programme. Trainees completed a participant profile prior to commencement, identifying their own learning objectives and particular areas of interest. Responses from these were used in the ongoing development of the training programme. The owner-manager worked with the trainer and other owner managers involved in the programme to set out the content and to determine the training delivery mechanisms to be used. The programme was continually developed and improved on a session-by-session basis, based on the feedback of the participants and their specific requirements and issues. Clinic sessions were business specific and fully led and dictated by the participants.

Evaluation Planning

The overall purpose of the evaluation was to measure the return on investment to the business from key staff undertaking the project management programme.

As part of this process the evaluation was designed to:

- Determine (on an ongoing basis) the extent to which the training programme is meeting the needs of the participants and helping to improve their ability to fulfil their role in the business.
- This evaluation material will be fed into the continuing training development process to ensure that the programme changes and improves to better meet the needs of participants as it proceeds.
- To determine to what extent the participants are actually learning and to what extent this learning is relevant to their jobs.
- To determine to what extent participants are implementing what they are learning and to assess what further supports and assistance are required to help them to implement this learning in the workplace.
- To determine the benefit of the training to the participants and the business in general and assess to what extent the investment in training has yielded returns (both tangible and intangible) to the business.

The following targets were established for each of the four evaluation levels:

Level 1

- Reaction sheets for each Group Workshop Session, average rating 4 out of 5.
- Reaction sheets for clinic sessions as a whole, average rating 4 out of 5.
- Agreed individual planned actions undertaken at each group session, by at least 80% of participants.

- Planned action discussed and agreed action at clinic sessions by the group as a whole.

Data Collection Tools for Level 1:
- Reaction sheets for each Group workshop session, by each participant.
- Reaction sheets for clinic sessions as a whole, by each participant.
- Agreed individual planned actions undertaken at each group session, by each participant.
- Planned action discussed and agreed at clinic sessions, for the group of participants. This will culminate in an 'issues list' where issues raised are noted, and action to be taken agreed and reviewed at subsequent sessions.

Level 2
- Questionnaires completed by all participants
- Participants have the knowledge, skills and tools necessary for effective and efficient project/contract management and delivery. (learning section of questionnaire)
- Issues and problems raised have been discussed and solutions and approaches agreed upon.
- Relevant and useful templates have been developed by participants.

Data Collection Tools for Level 2:
- Questionnaires completed by participants on completion of the programme.

Level 3
- Questionnaires completed by all participants.
- Questionnaires completed by supervisors for all participants.
- Interviews with staff to identify progress and implementation in specified areas. >
- Improved planning of jobs and contracts generally. Q
- To-do's being completed by participants generally. Q
- Project planning processes being implemented by participants generally. Q
- Participants self-directed in running projects. Q
- Participants compiling relevant reports. Q
- Business standards are established and being applied to all contracts/projects. Q
- Timeframe management is in place and being measured on all projects.

Data Collection Tools for Level 3:
- Questionnaires completed by participants between 2 and 4 weeks after completion of the programme.
- Questionnaires completed by supervisor between 2 and 4 weeks after completion of the programme.
- Interviews conducted by project managers 1 month after the end of the programme.
- Trainer and supervisors to confirm that agreed planned actions and clinic session to-do's are being completed by participants during and on completion of the programme (through review of the 'issues list' being developed.)
- Review of the achievement of programme objectives on completion of the programme.

Level 4
- Increase in recovery rates being achieved per hour, to not less than 10% below the targeted recover rate on all jobs.
- Daily information from sites being received and resulting in improved efficiency in invoicing, impacting as cash flow benefits.
- Improvement in working within timeframes.
- Improved planning of contracts and projects leading to increased awareness of all parameters involved and thus reduced waste time and inefficiencies. Q
- A questionnaire will be used (sub-element of level 3 questionnaire) to isolate the intangible benefits of the programme.

Data Collection Tools for Level 4:
- Performance monitoring and review of financial and other relevant project/contract data on completion of and 2 months after the end of the programme.
- Interviews with owner manager re. performance review.
- Review of achievement of business and financial objectives 2 months after completion of the programme.

- Review of issues list, progress made in implementing solutions and resulting impact on the business 2 months after completion of the programme.

Baseline Data

The company collected baseline data relating to the Skills and Knowledge of the participants prior to the commencement of training by use of a skills audit sheet. This revealed the following skill levels specific to the training proposed:

- Assessing and making plans for dealing with risk on projects – Avg. 38%
- Communication requirements for projects & communication behaviour – Avg. 50%
- Planning, organising & managing work on projects – Avg. 40%
- Key principles of project management – Avg. 29%
- Setting milestones & targets for projects – Avg. 26%
- Working in a project team – Avg. 52%
- Managing & dealing with issues arising on projects – Avg.67%
- Estimating and pricing for projects – Avg. 29%
- Tracking & managing progress on project – Avg. 36%
- Establishing project management processes – Avg. 31%

The company also made a pre-training assessment of the extent to which the above competencies were actually being applied by the trainees – prior to the training. The following was the result:

- Assessing and making plans for dealing with risk on projects – Avg. 29%
- Communication requirements for projects & communication behaviour – Avg. 33%
- Planning, organising & managing work on projects – Avg. 33%
- Key principles of project management – Avg. 21%
- Setting milestones & targets for projects – Avg. 21%
- Working in a project team – Avg. 48%
- Managing & dealing with issues arising on projects – Avg. 71%
- Estimating and pricing for projects – Avg. 29%
- Tracking & managing progress on project –Avg. 24%
- Establishing project management processes – Avg. 26%

In terms of pre-training business performance the company established that the:

- The current rate for the weighted average nett profit per man-hour on 5 contracts before the training.[2]
- Comparison of promised v's actual delivery dates on 5 contracts completed prior to training. Prior to the training there was no effective management of promised v's delivery dates. There was a practice in place of not clarifying expected delivery dates with the customer as it was extremely difficult to ensure that promised delivery dates would be met.
- Business standards developed and understood by staff before the training programme. Prior to the training programme, business standards for project management were not recorded or structure and were not effectively communicated to staff.
- Processes in place for managing projects. There were no standard processes in place across the business for managing projects prior to the training programme.

Evaluation Results

Level 1

- Reaction sheets for workshop sessions were completed by 90% of participants and show yielded an average score of 4.5 out of 5.
- Reaction sheets for clinic sessions were completed by 90% of participants and yielded an average score of 4.7 out of 5.

[2] Average recovery rate per hour on 5 contracts completed prior to training. (weighted average hours - for all 5 contracts to get more realistic picture of overall impact)

- Agreed individual planned actions were undertaken at each group session, by an average of 70% of participants. Of these planned actions 70% of actions have been undertaken to date.
- Planned actions were discussed and agreed at clinic sessions, for the group of participants. These culminated in an issues list in which issues were noted and actions taken accordingly.

Level 2

Questionnaires completed by participants and supervisors on completion of the programme yielded the following results:

Learning in key areas:

- Assessing and making plans for dealing with risk on projects – Avg. Improvement of 39%
- Communication requirements for projects & communication behaviour – Avg. Improvement of 29%
- Planning, organising & managing work on projects – Avg. Improvement of 38%
- Key principles of project management – Avg. Improvement of 49%
- Setting milestones & targets for projects – Avg. Improvement of 51%
- Working in a project team – Avg. Improvement of 34%
- Managing & dealing with issues arising on projects – Avg. Improvement of 17%
- Estimating and pricing for projects – Avg. Improvement of 29%
- Tracking & managing progress on project – Avg. Improvement of 42%
- Establishing project management processes – Avg. Improvement of 48%

- Participants have the knowledge, skills & Tools necessary for effective contract / project management and delivery. – Avg. Improvement of 38%

- Participant can use what s/he has learned in their work – 93%

- The skills learned were relevant to participants needs and work – 91%

Level 3

Questionnaires completed by the participants and the supervisor after completion of the programme yielded the following results:

Implementation in key areas:

- Assessing and making plans for dealing with risk on projects – Avg. Improvement of 46%
- Communication requirements for projects & communication behaviour – Avg. Improvement of 41%
- Planning, organising & managing work on projects – Avg. Improvement of 40%
- Key principles of project management – Avg. Improvement of 33%
- Setting milestones & targets for projects – Avg. Improvement of 33%
- Working in a project team – Avg. Improvement of 28%
- Managing & dealing with issues arising on projects – Avg. Improvement of 11%
- Estimating and pricing for projects – Avg. Improvement of 12%
- Tracking & managing progress on project – Avg. Improvement of 35%
- Establishing project management processes – Avg. Improvement of 34%

- Participants are using what the learned in their work – 76%

- Participants are completing project management reports developed on the programme – 62%

Other implementation improvements:

- 70% of planned actions have been completed to date, work is currently being carried out on the remaining 30%.

- The primary objectives from the programme was the achievement of consistency in recovery rates per hour to no more than 10% below the targeted recovery rates for all jobs. This has been achieved on all new jobs. To enable this to happen the training programme was to deliver the following:
    - Improved planning of jobs and contracts generally.
      - Achieved 100%

- Project planning processes developed and implemented.
  - Achieved 100%
- Team leaders to be self-directed in running projects and compiling reports.
  - Achieved 40%
- Business standards being set and applied to all projects and contracts.
  - Achieved – 67%
- Timeframe management being put in place and measured on all contracts.
  - Achieved – 67%
- Daily information from all sites being received and acted upon, resulting in improved efficiency in invoicing, impacting as cash flow benefits.
  - Achieved – 33%
- Improved planning of contracts and projects leading to increasing awareness of all parameters involved and thus reduced waste time and inefficiencies.
  - Achieved – 67%

- To give team leaders improved skills and tools for planning and delivery of projects and contracts with budget and agreed timeframes.
  - Achieved – 75%

- To give the owner manager and project manager increased skills and capacity re. pricing, planning and managing the delivery of all construction projects.
  - Achieved – 85%

- To improve communications within the team by providing an opportunity for the identification and solving of problems currently being experienced in the effective management and delivery of profitable, efficient projects and contracts.
  - Achieved 100%

Level 4

Questionnaires completed by the participants and the supervisor after completion of the programme yielded the following results:

- The training has improved the work effectiveness and productivity of participants – 76%
- The training has had an overall benefit on the participants work – 80%
- Improvements in planning of contracts has made participants more aware of all the issue involved – 80%
- These improvements have reduced waste time and made participants more efficient at managing and dealing with issues on projects – 77%
- There have been improvements in job planning, briefing and health and safety management since the beginning of the training programme – 87.5%
- There have been improvements in response times, information flow and back up support since the training began – 71%
- Average improvements in work performance since the beginning of the training programme, as a direct result of the programme (adjusted for confidence levels) – 69%

Business Standards Developed

Greater standardisation around administration and management of projects and contracts generally including:

Templates – 6 standard templates developed including

- Issue sheets
- Job issue log
- Profit & loss sheet
- Folder index template
- Invoice template
- Pricing templates

Processes and procedures have been developed around the following:

- Issue Sheets use and implementation
- Project issues list use and implementation
- Job scheduling
- 'Tickler' everyday file
- Folder set-up and organisational system
- Project and office bibles
- Enquiry sheets and folders
- Resource hours reporting
- Project numbering and recording

Financial Results

Average recovery rate per hour on 5 contracts completed since training, (with weighted averaging on hours to get a realistic picture) shows that the weighted Average nett profit per man hour increased by €19.37.

The main factors that contributed to the performance improvement were:

- Participation in the training programme by a large number of the company staff.
- Shared understanding of the need for the training among staff.
- Flexibility in the development and implementation of the training programme, the ability to continuously adapt the programme to meet the emerging needs of the participant group.
- Clear understanding of the objectives / expected outcomes from the training programme, by participants and the trainer.
- Implementation assistance from the trainer at the clinic training sessions.
- Implementation of the various processes and procedures discussed and agreed during the training programme.
- Owner manager has been an active driver in the process.
- There has been a high level of prioritisation around the implementation of the learning by both the staff and the owner-manager.

The owner-manager assessed that 75% (with 85% confidence, thus giving an overall of 64%) of the improvement was due exclusively to the Training programme. The only other input into improving management and tracking on contracts has been input from a management accountant into developing better financial systems in the business. There have been no other factors that are considered to have impacted on the benefits identified. It was estimated by the owner manager that the inputs from the management accountant may account for up to 25% of the benefits that have been experienced.

Cost of Training Programme

Group Sessions - 5 Sessions x €120 = €600
Clinic Sessions – 4 Sessions x €330 = €1320
Training development time 1.5 hours = €150
Cost of Participation (cost of recovery)
5 days = 40 hours = €4,000
5 days = 40 hours = €1,800
5 days = 40 hours x 5 = 200 hours = €13,000
Mileage for participants = €300
Cost of the Evaluation process = €1,160
Cost of organisation / admin = €135

Total cost of programme = €22,465

Return on Investment

The nett benefit (nett profit per man hour) was €19.37. The benefit attributed to the training programme = 75% at 85% confidence = 64%. Therefore the improvement in nett profit per man hour attributed to training programme = €12.40.

Man hours available per year = 9,293 (after holiday, sick days, training time and general down time allowance). Estimated (conservative) fully chargeable hours = 9,293 x 75% = 6,970 hours (allowance of 25% for other down time and wastage).

Total improvement = €12.40 x 6,970hours = €86,428 nett profit

$$ROI = \frac{€86,428 - €22,465}{€22,465} \times 100\%$$

ROI = 285%

Intangible Benefits

The intangible benefits of the programme were:

- Improvements in communications generally.
- Reductions in stress levels for owner manager and staff due to improved information flow and processes and less time wasting.
- Improved communication between office and site and greater understanding of the roles of others in the business has led to reduction in 'them & us' feelings between office and site and thus greater team working generally.
- Staff have greater focus on their work and what they have achieve on an ongoing basis.
- There is a much greater level of sharing of knowledge in the business.
- Job satisfaction for employees due to greater delegation, better communications, better briefing and planning and confidence in their work.
- Site staff have greater sense of achievement in their work due to improved planning, delegation and task assignment.
- Staff have improved assertiveness and communication skills and thus have greater sense of self worth and find their work easier.
- Improved ownership by staff of their work and role generally.

Enablers and Barriers

The main enablers encountered in the programme evaluation were:

- Project manager and sponsor working together.
- Full buy in and support from the owner-manager.
- Interest in the process by the owner manager.
- Support from and work undertaken by sponsor.
- Buy-in gained from 'clinic' training approach which enables greater participation and improved communication of the objectives of the programme and the evaluation approach.
- Input on questionnaires from owner-manager and staff to ensure that they will be fully understood by all participants.
- Great support, guidance and assistance from the project consultant.

The main barriers encountered in the programme evaluation were:

- Significant amount of time required to complete the entire evaluation process.
- Newness of the approach for the company and company staff.
- A level of resistance to form filling by staff.
- Difficulty in getting site staff to complete forms.
- Time required by project manager and owner-manager in compiling data etc.
- Unavailability of some of the necessary data in the level of detail necessary for compiling the ROI and assessing financial benefits.

Communications

The company and Skillnets network co-ordinator were keen throughout the project that the main stakeholders were kept informed of progress. This involved:

(i) Participants
- Ongoing telephone contact between project managers.
- General updates of whole team at project management clinic sessions.
- Monthly issues list to be discussed at project management clinic sessions.
- Ongoing telephone contact between Mark and Team leaders

(ii) Company management
- Regular progress meetings between project managers and project sponsor.
- Regular meetings with Consultant, sponsor and project managers.
- Project Manager (Mark) to update sponsor on a regular bi-weekly basis.

iii) Skillnets Network
Network co-ordinator met with Project Manager and regularly update overall network at monthly meetings and bi-monthly project updates by email.

Authors

This study was conducted by Karma Farrell (Skillnets Network Manager) and Mark Culleton (Project Manager at Constructive Solutions) assisted by Sean O'Sullivan, consultant to the Skillnets Pilot Project.

ROI of a Cross-Skilling Initiative

Abstract

This study evaluates the impact of a large Cross Skilling Programme carried out as part of a major change initiative moving a manufacturing plant from a single skill operative to a multi skilled team-based process. As well as recording a significant ROI the programme evaluation also recognises that non financial measures can be as important as financial ones and points to the importance of the linkage between the need to improve business performance and the design, delivery and evaluation of training programmes.

Company Background

The company operates a brewery in Ireland which employs 278 employees and which competes with other plants in the group. By 2001 it realised that its cost of production was too high and in order to remain competitive it had to:

- improve existing productivity and production levels
- improve its performance in costs, quality, customer service and flexibility.

It therefore set out on a major change programme in order to improve its production, packaging and distribution processes. It planned to

- introduce shift working over 24 hours per day
- outsource utilities and other services
- rationalise the number of people working in production and packaging

The challenge was to carry out these changes without loss of production or quality. A partnership approach to work through the business challenges in order to grow the Brewery's business was agreed with unions and staff. The vision was to exceed customer expectations by realising each worker's potential to achieve the highest standards. In practical terms this meant moving from a single skill operative (either mechanical, electrical or operative) to a multi skilled team-based process technician. This would involve extensive retraining and the development of a cohesive and supportive culture within the new teams.

The Cross Skill Training Programme for operatives was therefore one of the key improvement levers and its success was critical for achieving the business targets. A "train the trainers" approach was adopted in order to customise training delivery to new work process and organisation needs, and to the needs of the overall change programme.

Training Needs Assessment

Benefits to participants
The training programme was designed to

- Enable the development of new, flexible team structures having the required skills to carry out tasks competently and successfully.
- Cross skill individual team members to multi-skilled process technicians in the areas of mechanical, electrical, process and laboratory skills / knowledge.
- Enable members of each teams to operate on the basis of a "no demarcation" ethos and in a supportive culture

A detailed skills gap analysis was prepared with individual team members and their supervisors. Ninety one team members would be trained and forty five people were selected for "train the trainers" programme.

Benefits to Company
The training programme would enable improved productivity, efficiency and flexibility in the brewing plant without compromising quality.

Training Programme Content and Organisation

Content
There were three elements to the cross skill programme:

(i) Train the Trainers
As well as selecting and training the 45 people in teaching and instruction methods the trainers also had to deliver cross-skill modules to team members and assess the learning and competency level achieved by each individual. They also had to facilitate the bedding down of team working with a supportive team culture. The goal was to instill a 'what has to be done' attitude rather than 'whose job is it'.

(ii) Train individual Team Members
The goal here was to develop multi skilled process technicians with competence in mechanical, electrical, process and laboratory skills among all team members.

(iii) Implement Cross Skilling in the Work Place.
All training was competency based and each participant was assessed as part of the evaluation

Organisation
The programme and training was organised and delivered by the brewery's Training and Development Manager, technical training co-ordinator and trainers.

- An external Training Company was engaged to train the trainers.
- The trainers designed and delivered the course materials and competency test.
- Team member cross-skill training was delivered in-house by eight trained trainers / assessors. They covered mechanical, electrical, laboratory and process skills areas in the Brewing and Packaging areas
- There were rostered training days for all teams.
- Release from shift work was facilitated by having an "extra" shift team.
- A facilitation team released team members for training in both the Brewing and Packaging plants.

Of the 45 people who underwent the "train the trainers" programme eight were finally chosen to deliver the cross skill training.

The cross skill programme was carried out during 2003 and was attended by 91 team members and 32 Group Leaders (Supervisors) across different departments. The programme was organised over a nine month period into nine separate rostered training days for each team, with practice and assessment post training.

Programme Evaluation

The programme was evaluated using Phillips ROI evaluation process as part of the Skillnets ROI pilot project. This process is outlined in the Appendix – Data Collection Plan.

The Phillips methodology is rigorous and data intensive. It depends for its success on the availability of data at each of the five levels. The evaluation uses performance data before the training programme takes place (baseline data) and compares this to performance data after the programme has taken place (impact data). The improvement attributed to the training programme is converted to a monetary value and used to calculate the return on investment. Only improvements made within 12 months from conclusion of the training programme are normally taken into account when calculating the return on investment.

Evaluation Tools
The evaluations tools to be used at each level were:

Level 1 Feedback forms immediately after training and planned actions to practice new skills in workplace

Level 2

Performance demonstration and competency assessment for skills attained.

Level3
Questionnaire for trainees and shift managers

Level 4
- Site Yield percentage
- Headcount reduction
- Conformance to Planned Maintenance

Results of Evaluation
Baseline and impact data were obtained for levels 1, 2 and 3. Business impact data were more problematic. It was not possible to measure the business benefits arising from improvements at individual or team level. Baseline or operational data were not available at these levels. It was therefore decided to measure the benefit at overall production and packaging process level.

It was also decided to focus on cost reduction as the main tangible business benefit. This is a conservative approach and will be discussed again in the conclusions section of this study.

Level 1
- The Training met participants learning needs with an overall satisfaction rating of 81%
- Each team member planned to practice skills post training and before practical assessment and sign-off.

Level 2
- All participants passed the written assessment
- All participants practised individual tasks and achieved sign-off with assessors on practical demonstration

Level 3
- Cross-skilling occurred within each team. However, greater cross skilling occurred in the Packaging Dept. because of increased opportunity to use skills
- Team members would like more time and opportunity to practice the new skills they acquired
- Fitters and electricians are now working as one unit for problem solving
- There is greater mutual support within teams,
- There are no barriers to helping other team members in any activity

Level 4[3]
- Headcount (number of employees) reduced by 63
- Site yield increased from 61.05% to 70.83%
- Conformance to planned maintenance levels improved:
  Packaging: from 58% to 86%
  Brewing: from: 14% to 59.5%

The results are summarised in the impact table:

[3] These figures are based on only two months comparative data (September and October 04).

Table 1: Impact of Cross Skill Programme

Level	Objective(s)	Measures/Target	Outcomes
1	**Reaction/Satisfaction** • Outcome of course met participants learning needs • Plan to practice skills post training.	• Greater than 80% overall satisfaction rating with training programme. •	• Training met participants learning needs o 81% overall satisfaction rating • Plan to practice skills post training, before practical assessment and sign-off.
2	**Learning and knowledge of** multi-skilled tasks to facilitate working in the role of Process Technician.	Assessment: • Health & Safety 100% • Knowledge and understanding of specific modules in the following areas 60%, Mechanical, Electrical, Process, Laboratory. • Sign-off skills practice on individuals development plan	• All participants passed written assessment • All participants practised individual tasks and achieved sign-off with assessors on practical demonstration
3	**Application/Implementation** Perform multi-skilled tasks in a process team environment	1. Cross-skill into other roles e.g. Fitters doing electrical work • Electricians doing mechanical work • Operators doing laboratory work • Lab analysts doing process work 2. Joint problem solving e.g. by fitters and electricians 3. Improved teamwork	▪ Cross-skilling is occurring within teams, greater in Packaging Dept. because of increased opportunity to use skills. 32% of time now spent outside of core role • Time and opportunity to use new skills is a significant barrier to practice • Fitters and electricians are now working as one unit for problem solving • 85% increase in joint problem solving • There is greater support within teams, there are no barriers for helping other team members in any activity • 78% improvement in team work
4	**Business Impact** Improvement in productivity in Brewing and Packaging	• Headcount from 278 to 215 • Site yield maintained at 61.05% • Cost Reduction • Reactive and planned maintenance efficiency	• Headcount number reduced by 63 • Site yield increased by 9.78% points • Conformance to planned maintenance levels increased (Packaging by 28% points; Brewing 45.5% points) (only two months comparative data)
5	ROI	Target ROI: 25%	121% (methodology and calculation follow)

Return on Investment

Financial Benefit of Cross Skill Programme

This involves putting a monetary value on the impact data. Because operational data were not available at individual or team levels it was decided in this evaluation to use data at overall process level. The table above shows the

performance improvements at level 4 in four areas: headcount reduction, site yield, cost reduction and reactive and planned maintenance efficiency. Normally, in an evaluation, the operational improvements in these areas would be converted to monetary value.

However, in this evaluation the forecasted labour cost reduction over a 12 month period was used. This amounted to €4,705,000; of which 32.26% was attributed to the training programme (the ROI calculation below explains how the effects of the training programme were isolated and the 32.26% figure derived)

Therefore the financial benefit of the Cross Skill programme was: **€1,517,833**

Costs of Training Programme (€)
The main cost elements of the cross skill programme are summarised below

Cost of trainees' time (fully loaded):	168,502
Back filling for Trainers:	400,000
Cost of time for Technical Co-ordinator:	37,500
Cost of Train the Trainer programmes:	42,058
Cost of external support:	39,125
Cost of materials / facilities:	500
Total =	**687,685**

Return on Investment Calculation

$$\text{ROI \%} \quad \frac{1{,}517{,}833 - 687{,}685}{687{,}685} = 121\%$$

$$\text{Benefit to Cost Ratio} = \frac{1{,}517{,}833}{687{,}685} = 2.21$$

Isolating the Effects of the Training

The cross skill programme was a key enabler for improving the business performance and for the cost reduction that was achieved. However there were also several other factors that contributed to the improvement. These are the main ones:

1. Cross-skill programme enabling a
   - 'no demarcation' ethos
   - better team working through a greater understanding among team members of
   - joint problem solving on plant issues e.g. mechanical and electrical
   - Enhanced skills of process staff
   - Increased motivation through development and up skilling for all team members
2. New organisational structure with integrated team system that has a single roster for all team roles.
3. Focus on continuous improvement, individual and team development with performance reviews with all staff.
4. Better team working through:
   - clarity on roles and responsibilities
   - better communication through shift meetings, interactive team workshops, team events
5. 24 hour continuous racking in Keg Plant.
6. Redundancy programme

In order to determine the contribution of the training programme to the overall improvement the participants, supervisors and their heads of departments were asked for their assessment. Questionnaires were used for the first two groups, while a focus group approach was used with the heads of department. The results of these assessments are given in table 2.

Table 2: Assessment of cross skill training to overall improvement

Assessment by	Estimate of contribution (%)
1 Participants	47
Confidence level	68.6
Probable contribution	32.26
2 Supervisors	45.5
Confidence level	81.75
Probable contribution	37.2
3 Heads of Department	45
Confidence level	73.3
Probable contribution	33

As the overall improvement programme was wide ranging and complex the degree of conformity between the three groups separate assessments is of particular interest.

For the purpose of calculating the return on investment the lowest assessment of 32.26% was applied to the cost reduction figure.

Intangible Benefits

The return on investment of 121% means that the investment in cross skill training made a significant contribution to improved business performance. In acknowledging this contribution senior management also referred to intangible benefits that were perhaps even more important. They referred to

(i) success of people working in the brewery in adapting to more competitive business conditions – no demarcation, increased flexibility
(ii) enhanced reputation of the brewery within the Group for its ability to improve productivity, quality and flexibility
(iii) positive, supportive culture that has developed within teams and departments
(iv) learning embedded in individuals and teams would contribute to the brewery's continued success.
(v) potential exploitation of surplus capacity in the Keg Plant

Conclusion

The main benefits of participating in this evaluation project were:

- Confirmation of cross skill training's positive contribution to brewery's business success (forecast ROI:121% as well as the intangible benefits)
- Recognition that non financial measures can be as important as financial ones
- Development of an evaluation capability: (i) process of evaluation (ii) understanding 5 levels of evaluation (iii) data collection needs and tools and (iv) an understanding of how the Phillips evaluation process enables improved business performance.
- Recognition of the importance of the linkage between the need to improve business performance and the design, delivery and evaluation of training programmes.

- For evaluation at level 4 there is a need to collect baseline performance data before the training programme begins and performance data (using the same measures) after the programme concludes.
- The feedback received from participants on the extent of cross skilling and team effectiveness will lead to further performance improvements in the work place.

Appendix - Data Collection Plan

	Objective(s)	Measures/Data/Target	Data Collection Method	Data Sources	Timing	Responsible
1	**Reaction/Satisfaction** Outcome of course met participants learning needs Plan to practice Skills post training.	• Greater than 80% overall satisfaction rating with training programme. • Development Plan -	Questionnaire Discussion group De-brief post training	Reaction sheets Developmen t Plan	On the day	Assessors Declan Harrison
2	**Learning and** knowledge of multi-skilled tasks to facilitate working in the role of Process Technician.	Assessment: • Health & Safety: 100% • Knowledge and understanding of specific modules in the following areas: 60% o Mechanical o Electrical o Process o Laboratory • Sign off skills practice on individuals development plan	Assessment of ability to carry out tasks safely Short answer questions: 20% (questionnaire) Skills demonstration: 80% (observation)	Assessment results	Within 2 months of training	Assessors Declan Harrison
3	**Application/ Implementation** Perform multi-skilled tasks in a process team environment	1. Cross-skill into other roles e.g.: • Fitters doing electrical work • Electricians doing mechanical work • Operators doing laboratory work • Lab analysts doing process work 2. Joint problem solving e.g. by fitters and electricians *3. Improved teamwork*	For 1 and 2: Feedback from participants Validation from shift managers For 3 Team effectiveness survey	Questionnair e and survey with (i) Shift Managers (ii) Participants	August	Brendan Farrell
4	**Business Impact** Improvement in productivity in Brewing and Packaging	• Headcount from 278 to 215 • Site yield maintained at 61.05% • Profit margin contribution increased • Reactive and planned maintenance efficiency	Analysis of business performance data and KPI figures	HR/Finance Corporate reporting	30/10/4	Brendan Farrell
5	**ROI** Target return on investment for training programme is 25%	Costs of training programme and intangible benefits will be available Main challenge will be to isolate the effects of training. Estimates will be obtained from participants, supervisors and division managers				

ROI of a Health and Safety Training Programme

Abstract

In this study a health and safety awareness programme for managers recorded a positive ROI but the company was equally pleased with the intangible benefits identified in the evaluation. The exercise points up the need to plan early for evaluation and ensure the collection of baseline and level1-3 data. The company applied conservative criteria to arrive at a credible figure for the return on investment.

Company Background

This Dublin Hotel has 189 bedrooms, a restaurant, bar and conference and banqueting facilities and is part of an international chain. The hotel attract business and leisure guests and tour groups primarily from Europe, the USA as well as a loyal Irish clientele. The Hotel devotes a lot of attention to monitoring customer service through guest comment cards in bedrooms, guest relations manager and a guest relations book where guests can write comments about there visit to the hotel and GSTS reports.

Quality is monitored through mystery guest reports quarterly and test calls in reservations, Conference & Banqueting which happen on a monthly basis. The organisation is continually looking for sales-leads to increase sales and business. The four core values are customers, quality, people and profit. The mission is to optimise the Hotels' return on capital employed.

Training Programme

The programme evaluated was a health and safety programme. The programme was geared towards supervisory and management staff. 10 staff took part, including managers, chefs and HR department staff.

The objectives of the programme were to:

- Enable the participants to demonstrate an understanding of the main safety legislation affecting the hotel.
- Enable participants to motivate their team players in maintaining and progressing the various legal compliance documentation.

The company had identified a need for health and safety (H&S) training for managers to ensure that they could oversee H&S issues in the hotel, guarantee a high standard of health and safety for the protection and safety of guests and staff and ensure that H&S standards at the hotel are maintained to the highest levels.

The programme was delivered over two days by an external training provider and through classroom style learning and a test at the end.

The company identified the following new skills, procedures, tasks which the trainees would be able to perform as a result of taking part in the training:

- Awareness of all the do's and don'ts in health & safety.
- Ability to identify health and safety risks at work.
- Enable staff to maintain health & safety file standards and provide up to date practices on a monthly basis.
- Ability to train these standards to all staff within the manager's area of responsibility.
- Understand how health & safety procedures lead to a more efficient and an organised work place.

The company specified a number of indicators that should be evident in the performance of the managers post training, as follows:

- Know how to comply with health & safety standards
- Motivate employees on how they can work together as a team to improve health & safety in our company
- Increase employee awareness of health & safety issues

In terms of business impact the company wished to see the following changes as a result of the completion of this programme:

- Improved Health & safety standards throughout the hotel
- Increased score on the health & safety audit
- Increased score in health & safety on the balance scorecard
- Excellent standards in place to meet the requirements of any environmental officer inspection

Evaluation Tools and Results

Level 1 – A standard Reaction Questionnaire was completed by all trainees at the end of the training. This showed an – overall satisfaction rating level of 4.5 out of 5. The target was 4 out of 5.

Level 2 – Measured by use of a test administered by the facilitators at the end of the course. All participants passed.

Level 3 – The following records were monitored for one month after the training and the level of completion of reports and other activities indicated a significant use of the skills learned being applied on the job:

- Accident reporting
- Ladder checks
- PEAR checks
- Contractors sign in/out
- Safe systems of work
- VDU form completion
- Reporting of near misses
- Risk assessment form completion
- Letters for young person at work

Level 4 – Monitoring of Performance Records was used to collect data. This showed the following key performance changes:

Reduction in Reported Accidents.
Reduction from 6 accidents in March, to 1 in April (immediately post training), 5 in May and 4 in August.

Reduced rate of repairs to equipment.
On average there were 8 less equipment repairs required in each of the three months since the training was completed.

Isolating the Effects of the Training

During the evaluation time frame, the only other factor (other than the programme) which could have influenced a change in the business measures outlined above was a Health and Safety Audit which would have had an influence on reaching improved standards with or without the training.

Since there was only one other factor that could have influenced the improved performance (the H&S Audit) the Managers were asked to allocate a percentage to each factor. This resulted, after adjusting for the confidence error of the estimate, in attributing 80% of the impact to the training course.

Level 5 - Return on Investment

Cost of Training
The cost of the training was:

Trainee Salaries	€1,600
Food cost	€ 700
Trainers Flights/Accom/Meals	€ 780
Total.	€3,080

Benefits

Even though two business impact data items were available for conversion to monetary value (reduced accidents and reduced repairs to equipment) it was decided to use only one in order to show the most conservative estimate of improvement. This was the reduced repairs. The reduction in accidents, which had been quite noticeable in the month immediately following the training – down to just one – had since fluctuated considerably and was therefore not considered reliable enough as an indicator of overall business impact. The average reduction of 8 less repairs per month was projected for a full year and costed using a standard average value for repairs provided by the accounts department. This gave a total annual saving of €9,598.

Thus the following calculations were arrived at-

$$\text{BCR.} = \frac{€9598}{€3080} = 3.11:1$$

$$\text{ROI} = \frac{€6518}{€3080} \times 100 = 211\%$$

Intangible Benefits

- Less Accidents at work
- Increase feeling of safety and security at work
- More motivated at my work practices
- More confident in my job
- Improved quality of work
- Improved confidence in explaining things to staff

Conclusion

Even though the overall cost and financial impact of the training programme were quite modest the exercise provided a valuable capacity building exercise for the internal evaluator which continues to be available to the company. The company places considerable importance on the intangible benefits of the training and believes that the return on expectation and the improvements in morale and motivation will have far more valuable returns in the long-term than the mere financial return.

ROI of a Company Self-Insurance Initiative

Abstract

This case study examines a major health and safety initiative implemented in conjunction with a company deciding to become self-insured. The case study shows how a control group can be implemented - even on the same site - and also shows the use of trend line analysis where no other factors influence the outcomes from the training. Both these are compared with actual performance data and estimates of training impact provided by trainees and management to provide a very comprehensive and credible analysis.

Company Background

The company was established in Ireland in 1974 and is a subsidiary of a multinational corporation. It is engaged in high precision manufacturing for the automotive and 'white goods' sector. There are presently 248 employees at the plant. In 2002 due to escalating insurance premiums, an executive decision was taken to set up a Self Insurance System whereby the comnpany decided to insure itself against Employers' Liability claims and a specific fund was set aside to deal with any potential claims.

Training Programme

For a Self Insurance System to operate efficiently and effectively it was imperative that the proper foundation stones be put in place. This included management commitment, pro-active safety management strategies such as safe place strategies, safe person strategies, and a positive safety culture and climate. Another key foundation stone was that of inclusivity of all the key stakeholders which are the Employees, Management, Training Department, Occupational Health Unit and the Safety Committee.

The training and development of Safety Committee members was seen as crucial to setting and sustaining high standards on the factory floor in the prevention of accidents.

The role of the Safety Committee is:

- To review unsafe work practices and conditions
- To make suggestions on methods of improving Health and Safety Performance
- To assist in the formation of Health and Safety policies, procedures and rules
- To promote all aspects of Health and Safety
- To assist in carrying out Occupational Health and Safety Programmes

The purpose of the training intervention was to develop the core competencies among the Safety Committee members to a level where they could exercise their activities in a competent and value added manner to the organisation. This in turn was designed to assist in reducing accidents through prevention, with a consequent reduction in the overall cost of accidents, and promoting a positive safety culture and climate within the organisation.

Safety Committee
Training Intervention Programme

Day	Times	Location	Theme
1	9 – 4	Learning Centre	Health and Safety Theory
2	9 – 4	On the Job	Practical Orientation
3	9 – 4	Learning Centre	Health and Safety Theory
4	9 – 4	On the Job	Practical orientation
5	9 – 4	On the Job	Simulation/Theory

The Learning Centre contact days concentrated on transfer of theoretical knowledge. Practical Orientation contact days concentrated on development of knowledge, skills and attitude.

The Training Objectives were as follows:

- Raise the level of knowledge, skills and attitudes of the safety committee with regard to Health and Safety.
- Utilise the safety committee as a key driver in Accident Reduction through presentation within the company - Target of 25% reduction in reportable accidents.
- Safety Committee Members to be competent to carry out safety inspections within their own departments.

Trainee Profile

The trainees were on Shift A - Ten Safety Committee Members.
A Control Group which did not receive the training were identified on Shift B – also Ten Safety Committee Members:

Table 1: Breakdown of Areas

	Shift A	Shift B
Tool Room	10	10

Table 2: Demographic Breakdown

			Age Profile			
Group	Male	Female	20 - 29	30 - 39	40 - 49	50 – 59
Trained	10	0	0	0	4	6
Control	10	0	0	0	5	5

Table 3: Years of Service with the Company

Trained Group	
Employee	No. of Years of Service
1	18
2	18
3	20
4	22
5	23
6	25
7	25
8	28
9	30
10	30
Average	24

Control Group	
Employee	No. of Years of Service
1	16
2	19
3	19
4	20
5	20
6	22
7	22
8	23
9	25
10	27
Average	21

Evaluation of the Training Programme

The following were the methods and associated results for the evaluation of the effectiveness of the training programme:

Baseline Data
Baseline data already existed in the company records for accidents which were to be used as the main business impact variable to asses the outcome of the programme.

In addition to this it was decided to try to establish a baseline for the existing level of skill and knowledge of the participants relating to the areas being trained. This was effected by a Pre-Training Intervention Questionnaire which was distributed to the trainees before the training commenced. This included 26 questions covering areas such as – definition of health and safety terms, understanding of responsibilities, preventability of accidents, role of safety committee members, accident investigation techniques, accident statistics on site, safety inspection procedures, legislation, health and fitness.

Participants were asked to rate themselves on a 1-5 scale regarding safety standards in their own department, their own knowledge of Health and Safety Standards, and the level of communication on Health and Safety for their department. They were also asked to identify how to improve Health and Safety Standards in their Department.

Level 1 – Reaction and Planned Action
At the end of the training programme participants completed a questionnaire which examined their reaction to the training, understanding of the course objectives, whether these objectives were met, and matters to do with the delivery of the training, competence of the trainer, the training environment and relevance of the content.

There was a 100% response to the questionnaire since it was collected at the end of the course. The results showed a high level of satisfaction with the training with an overall rating of 4.0 out 5.0. All trainees stated their intention of using what they had learned on the course.

Level 2 – Learning
A number of methods were used to determine if the trainees had actually learned what had been taught on the course. These included observations by the safety officer, a written test, self reports and an evaluation of reports submitted by participants in relation to safety activities and incidents. All of these verified that there was a satisfactory level of learning. In the test an average score of 4.2 out of 5.0 was achieved relating to the acquisition of knowledge/skills.

Level 3 – Application on the Job
The primary method for determining application on the job was monitoring the use of Safety Inspection Reports (SIRs) along with observation of the activities of the trainees and the operation of the safety committee. Analysis of the SIRs showed that problem areas identified were being acted upon quicker and rectified within a shorter period of time. It also showed a greater awareness by the participants of risk areas and an increased willingness to identify these.

The five Team Leaders, when asked to rate the percentage increase in the Health and Safety of the trainees gave an average rating of 74%.

When asked if the trainees had been willing to use those skills and knowledge learned on the course the average response received was 4.0 out of 5.0 for strongly agreeing that the skills and knowledge were being utilised by the trainees. When asked if the training was good value for the company the average rating was 4.3 out of 5.0 for strongly agreeing that it was good value for the company.

Barriers and Enablers to Application
Participants were given a separate questionnaire to identify barriers and enablers to implementation. Six of the ten trainees identified the main factor as not having enough time to apply the skills.

100% of trainees stated that the main enabler was the support of the HSE department. Seven respondents indicated regular refresher training on safety inspections as the key way to continue improvements obtained from the training.

Level 4 – Business Results
The business results were determined from an analysis of the number of lots days due to accidents in the period before and after training. The company found that it could use a control group process both to identify the impact of the training and also to isolate that impact from other factors.

(a) Control Group:
These groups were composed as identically as possible (Table 4) – all were safety committee members, had similar service with the company and carried out identical duties. Both groups were subject to the same environmental

influences i.e. location, equipment, work practices. Since the two groups worked on separate shifts there was virtually no communication or contact between them.

Table 4: Composition of the Two Groups

Two Groups	
Group A	Group B
Training Group	Control Group – did not attend training
10 Employees	10 Employees
Average years of service = 21	Average years of service = 24
Nature of work - Tool Making	Nature of work - Tool Making

The following tables show the data relating to days lost due to accidents for each of the groups both before and after the training:

Table 5: 2003 Time lost Accidents, Group A (the trained group)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
6	8	9	17	18	14	5	8	6	4	7	9	111
12 Month Average for Accidents							9.25					

Table 6: 2003 Time lost Accidents, Group B (the control group)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2	6	4	3	2	4	9	10	7	6	10	11	74
12 Month Average for Accidents							6.16					

Table 7: 2003 Total Lost Time Accidents for Both Groups

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
8	14	13	20	20	18	14	18	13	10	17	20	185

Table 8: 2004 Accidents recorded after training of Group A

Number of Accidents							
Month	April	May	June	July	August	September	Average
Group A	2	3	3	2	2	2	2.33
Group B	4	9	13	6	4	8	7.33

Table 9: Comparison of Accidents Group A and Group B

Accident Comparison	April 2003 to September 2003	April 2004 to September 2004
Group A	68	14
Group B	35	44

In 2004, between April and September, after the training was complete, a total of 14 accidents were reported for Group A at a total cost of €22,400 (see standard value below). In the same period in 2004 a total of 44 accidents were reported for the control group – Group B at a total cost of €70,400. This gives a saving of €48,000 all of which can be attributed to the training of group A as there were no other influencing factors that might have impacted on the change.

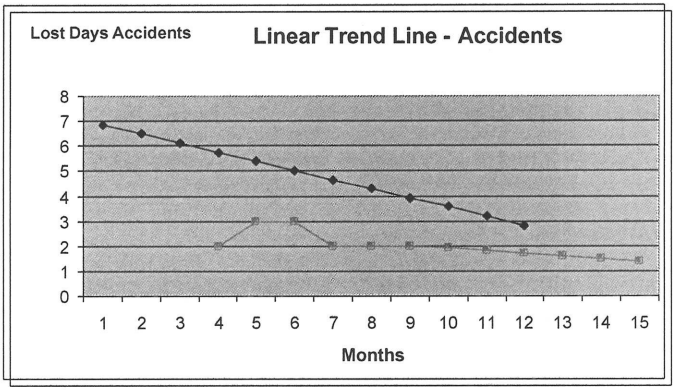
Isolating the Effects of Training

The primary method for isolating the effects of the training was the use of a control group (see above). In addition, it was also considered desirable to apply a trend line analysis (see above) to cross-check the results of the control group technique for fear that there may have been some contamination of the control group. In both cases it was established that no other factors had a bearing on the end result apart from the training carried out and the procedures implemented as a result of the training. Finally, participant estimates were used as a further exercise. These showed (see below) that, after applying for confidence level in the estimate, 65% of the *improvement in their performance* was due to the training.

(a) Trend Line Analysis

Based on the data in Tables 5 and 8 we can identify the trend in respect of accidents for the trained group. The total of accidents for this group in 2003 was 111 but as can be seen from Table 5 the accident trend had been steadily decreasing during the second half of 2003. Projecting the 2003 trend (using a standard linear trend line formula) throughout the whole of 2004 Group A would have recorded a total of 58 accidents in that year. However, as the trend

line analysis in Fig 1 shows the actual number of recorded accidents, following training, of Group during the six month period April-September 2004 (Table 8) was 14. Taking that 6 month trend and projecting it for a further 6 months we obtain a projected 12 month total of accidents for Group A, after training, of 24 – a reduction of 34 accidents. Translated to monetary terms this would return savings of €54,795 in a full year based on the company's standard value for lost time due to accidents.



Diamond dotted Line: Group A Lost time accidents projected for all of 2004 based on actual for 2003. Square dotted Line: Group A 6 months actual figures 2004 (Apr-Sep) - after training - projected for a further six months. Month No 1 = January 2004.

(b) Participant and Management Estimates
In addition, it was decided, for the benefit of the exercise, to also use participant and Team Leader estimates of impact. Overall rating for whether the training improved job safety performance and Department Safety Record was 4.4 out of 5.0. Participants estimated that their job performance and productivity had improved by an average of 72% since they completed the training. Participants estimated that, on average, 79.5% of this improvement was due to the training and they expressed themselves, on average, 82% confident in that answer. 4.5 out of 5.0 stated that the training was a worthwhile investment in their career and 4.2 that the training was a worthwhile investment for the company. This data was not used in the final calculation as more reliable data was available from the control group.

Benefits of the Programme
The total cost of the training was €19,210. This includes the cost of time which participants spent attending the training. The **standard value** which the company applies for the average total cost per accident is €1,600.

In arriving at data to calculate an ROI it was decided to use only the most conservative and credible output from the two techniques applied – the actual savings recorded from the control group technique (see above). This showed that in the six months immediately following the training there were 14 accidents recorded for Group A against 44 for Group B. This was a saving of €48,000 all of which can be attributed to the training of group A as there were no other influencing factors that might have impacted on the change. When this figure is projected to an annual amount the total benefit comes to €96,000.

This gives an ROI as follows:

BCR = $\frac{€96,000}{€19,210}$ = 5:1

Return on Investment = $\frac{(96,000-19,210) = €76,788}{€19,210}$ x 100 = 499%

Appendix

Data Collection Plan

Program: Safety Awareness **Responsibility: Michael Ryan** **Date: 01/05/04**

Level	Objectives(s)	Measures / Data	Data Collection Method	Data Source	Timing
1	Reaction / Satisfaction/Planned Action Measure participants' satisfaction with programme	Average Scoring from Questionnaires 4.0 out of 5.0 on usefulness	Reaction Questionnaires	Participants, Facilitators	End of each Training Session
2	Learning Acquisition of skills/ Knowledge	Average Scoring form Questionnaires, 4.2 out of 5.0 for learning acquisition, checklist By Facilitators, Self Reports and Observations, Reports	Questionnaire Tests, Case Studies, Quiz results	Participants Facilitators	During programme
3	Application / Implementation Use of skills Frequency of skill use Identify barriers and behaviour change	Observations Corrective Actions Scoring from Questionnaires	Safety Inspections Follow up sessions Supervisor Questionnaires Self Questionnaires	Participants HSE Department Team Leaders and Supervisors	After each Inspection and communication and Again after 4 weeks
4	Business Impact Accident Reduction by 20 %	Accident Statistics Accident Costs	Follow up Sessions Safety Inspections Accident Investigations Accident Records Control Group	Follow up Questionnaires Accident Records HR Dept Finance Dept Participants	3 Month and 6 Month
5	ROI 25%				

ROI of a Management and Supervisory Skills Programme

Abstract

This study of a management and supervisory skills training programme in a software localisation and testing company shows that it is possible to calculate a return on investment in the absence of baseline data. There are examples of innovative approaches to data collection including the use of checklists relating to application of training on the job. Completion of the study has built capacity to carry out full level 5 evaluations within the company and the North Mayo Skillnet.

Company Profile

The company is a provider of globalization and testing services and combines global onshore, near-shore and offshore resources with proven program management methodologies to serve as an outsource partner throughout a client's product and content lifecycle - from development to globalization, testing and maintenance. Global organizations in all industries rely on its services to increase international market share, speed adoption of global products and content, and enhance their return on enterprise applications and IT system investments. Headquartered in the USA the company maintains 20 solution centres in 10 countries. This evaluation study was based at the company's centre in the west of Ireland.

Business Needs Addressed by Training Programme

As the business grows and closer contact is needed between the functional execution of projects and the interaction level with teams and customers, expertise is needed at the Software Test Engineer level to supervise and manage the day to day tasks of the projects. With this in mind the key objectives were:

1. To equip Software Test Engineers with the Management and Supervisory knowledge and skills necessary to support their Business Unit in the day to day managing of projects, project teams and customer interactions.
2. To increase customer confidence on projects where these individuals have worked through increasing project ratings.
3. To invest into identified individuals who are key to the successfully execution of customer projects.

TRAINING PROGRAMME

The Management and Supervisory Skills program was designed to enable supervisors and managers who may have had no formal management education, or may be new to the discipline of managing people, to formally develop their confidence and competence. Using the FETAC Vocational Awards framework allowed participants to gain knowledge and practice in supervisory and management techniques whilst gaining a national qualification for their efforts.

Built into the programme was a great deal of flexibility allowing the participants to determine the module(s) they wished to undertake. In this way they were able to select the modules which closely related to their development needs. The programme used a combination of tutored workshops followed by, internally assessed, work-based practical experience.

The learning modules were selected with regard to the appropriateness of their content and their alignment with each other. They independently provided a rich source of learning but when woven together provided a systemic learning experience for line-managers. Each learning module enabled the participant to take a step-by-step approach towards their own development goals, thereby allowing each of them to build their competence and confidence on an ongoing basis.

Therefore, the Foundation Programme consisting of all three learning modules provided participants with a unique learning experience which provided them with the knowledge and skills to manage people and resources more effectively and efficiently in today's business environment. However, the programme was also designed to enable

participants to undertake one or two of the modules. This was particularly practical for line-managers who have attended similar training courses in the past.

The Three Core-learning Modules were:

1. The Role and Function of First-line Management leading to FETAC Level 3 in Business Management (1 award)
2. Communication Skills leading to FETAC Level 3 In Communication Skills (1 award)
3. Managing People and Resources leading to FETAC in Supervisory / Management Skills (1 award)

The programme objectives were to:

- **Level 1**: Critically examining the individuals own style of supervision and management and identify areas for change / improvement so that we can measure improvement through the training.
- **Level 2:** Examine the implications of organisational structure and culture in organisations so that they will have the exposure to different organisational structures
- **Level 2:** Explore new theories in relation to the application of supervisory and management skills in today's context, so that we can equip the trainees to handle situations they will find themselves in.
- **Level 3:** Enhance communication skills to support and guide staff in a responsible manner so that they can communicate effectively with their teams and clients.
- **Level 3:** Implement learning at and apply knowledge to work situations so that they can be more effective in their roles.
- **Level 4 & 5:** Reduce the current level of support needed from their Project Managers by 25% by acquiring tools and techniques in diagnosing and implementing supervisory and management solutions to problems and issues

A combination of five individuals from a Software Test Engineer or Software Engineer level from 3 different Business Units took part in the programme.

Expected Benefits of the Programme

To the Company:

- Increased ability to manage the day to day activity of projects
  - Impact: Increased productivity.
- Less supervision needed from a Project Manager
  - Impact : Increased Planning effectiveness from Project Managers
- Increased interaction and communication with peer customers or peer customer representatives
  - Impact: Raised profile with customer
- More motivated and valuable employees
  - Impact: Better working environment

To the Trainees:

- Increase in their skill level and ability to handle management situations resulting in more opportunities for the trainees.
- Enhanced opportunity for different types of work and or travel to customer or other Company sites.
- FETAC (NCVA) Certification at Level 3.
- Understanding of the complexities in making management decisions resulting in less support time being required from Project Managers.
- Increase in their skill set levels, leading to improved opportunities for promotion and advancement.

Programme delivery was carried out (by an external training provider) in a new and challenging manner enabling delegates to gain deeper insights and awareness into the area of supervision and management than could be accomplished with traditional education. Participants were encouraged to "learn to learn" through facilitated workshops, projects and observed application in the workplace. This format encouraged participants to question and reflect upon their learning both and make personal changes in their supervisory/management style.

The programme consisted of 16 days of learning workshops, appropriate Observation and feedback by internal assessor.

EVALUATION OF THE TRAINING

The purpose of this evaluation was to determine what the Return On Investment was on this particular programme and from this to decide if it was beneficial to continue with a second programme of this type for others in the organisation.

Evaluation Tools and Measures

Level 1

- Post Course Evaluation Sheet average rating of 4 out of 5 across the participants
- Post Course Rating Sheet of the Participants from the Training Provider

Objective: 80% Attendance Level at Training days

Level 2

- Certification from FETAC (NCVA) Level 3 overall Grade of 75% or higher.
- Completion of all assignments, projects and checklists, items include; these will be evaluated by either the Course Tutor and/or an Internal Assessor (Line Manager/Training Manager) and an External FETAC Assessor

  Module 1- Role & Function of a Manager
  - Assignment
  - Project
  - Checklist

  Module 2 – Communication Skills
  - CV
  - CV Interview
  - Video CV
  - Formal Letter
  - Group Interaction
  - Development Plan
  - Critique
  - Case Study
  - Oral Presentation
  - Oral Exercise
  - Technical Presentation
  - Checklist

  Module 3 - Managing People & Resources
  - Assignment
  - Checklist

  Objective: Completion of all relevant documents, video and audio tapes.

Level 3

- Sign off of completed Checklists by respective Managers
- Evaluation form completed by the Manager on the level of the participants change of behaviour in areas of Understanding different Styles of Management, Communication and Managing Resources
- Take on leading roles in projects which they are involved.

- Volunteer for travel (assignment at other The Company locations) and customer experience opportunities.

Level 4

- Increased Customer satisfaction through Customer Ratings on projects where the participants have a key role.
- Decreased cost in hiring, agency fees etc.
- Increase in the participant's team ranking.

DATA COLLECTION

Level 1

- Data was collected after programme completion but before final assessment of the participants work by the FETAC (NCVA) external assessor.
- Data was collected from the participants and from the Training Provider.
- The data was collected by means of course evaluation forms, attendance records and ratings forms please see the section on "Evaluation of the Training Programme" level 1.

Level 2

- Data was collected during and after the programme as each activity is completed, submitted and graded by the training provider and/or the internal assessors.
- Data came from the Training provider and the Internal Assessors in the form of a grade for each activity completed which will be rolled into an overall grade.
- Data was collected by means of assessment by the Course Tutor and/or an Internal Assessor within The Company (Line Manager/Training Manager) and an External FETAC Assessor.

Level 3

- Data was collected during and after the programme
- Data came from the participants supervisors/managers, the training manager, training provider and accrediting body, in this case FETAC (NCVA)
- Data was collected by means of signed of checklists, evaluation forms completed by the Manager on the level of the participants change of behaviour in areas of Understanding different Styles of Management, Communication and Managing Resources and FETAC (NCVA) grades.

Level 4

- Data was collected during and after the programme
- Data came from Customers, participants direct and Business Unit Managers and the Human Resources Office.
- Participants completed Training Assessment questionnaire.
- Data was collected in the form of Customer Ratings Forms, Team Ranking Matrix and from Performance Review Forms.

Baseline Data

Due to the fact that the programme had already begun before the assessment started, no conclusive baseline data was collected. In order to gain some evidence of the increase in performance gained from the training a questionnaire was distributed to the individuals involved. 4 of the 5 individuals completed and returned the questionnaires; the remaining individual had since left the company to work for a customer.

IMPACT OF THE TRAINING

Level 1: The Training Itself

The overall rating for the training when averaged out over the 4 attendees from whom data was collected was 5.15 out of a possible 6. The objective at the start of the program was to gain an average rating of 4 out of 5 which would translates to 4.8 out of 6. This outcome surpassed the objective hoped for at level 1 evaluation.

Level 2: After the Training

The overall rating for knowledge learned from training which was then remembered and used after the training when averaged out over the 4 attendees from whom data was collected was 5 out of a possible 6.

Level 3: Job Impact

The overall rating for the impact on the individual's job was averaged at 4.5 and participants returned an average of 4.75 in relation to being more effective in their job since the training. Participants overall were using 52.5% of the learning on the job.

As part of the analysis of the impact of the training on the participants role, a checklist was developed and signed off by each participants manager, outlining there abilities on the skills which needed to be demonstrated in an on the job context. Each module had a checklist which had to be completed by the participants stating how they were able to apply the learning, this was then verified by their direct manager and signed off.

Level 4: Business Impact

The data collection plan presented during initial stages of the evaluation outlined the intention to measure business impact by:

- Increased Customer satisfaction through Customer Ratings on projects where the participants have a key role.
- Decreased cost in hiring, agency fees etc.
- Increase in the participant's team ranking.
- Decrease in project manager's support hours of 15%

However, the absence of verifiable performance data meant that a different approach was used for ROI purposes. This involved obtaining an overall rating for the impact of the training on the individual's performance through a questionnaire. Based on the response, which included the application of a statistical confidence level variant, the average increase in productivity was assessed by the participants at 18%. Managers' estimate of the improvement was 10%. Due to the lack of insufficient metrics to further qualify this increase in productivity the 10% figure was used in the ROI calculation.

Intangible Benefits form Training Programme

- Increase in the respect level of the team towards the participants
- Increased trust in the participants ability from their managers, promotion, status within team etc.
- Better customer responsiveness
- Increased participant's motivation based on company's investment in his development
- Increased ability to handle internal/external management situations
- Higher profile of Training and Development throughout The Company

RETURN ON INVESTMENT

***Monetary Value of Training Programme* (3 individuals)**
The method of calculating ROI was based on the value added by the participants to the Company. As a minimum each participant adds a monetary amount equivalent to his fully loaded salary to the Company. The increase in their competence, as a result of the training course, can increase this contribution. Although the participant feedback led to an estimated 18% increase in (productivity) value added due to the training, the participant's managers, due to the lack of baseline data, were not convinced that this was the case. In order to continue with the ROI calculation it was agreed that an increase in (production) productivity of 10% was acceptable based on the increase in skills attested to by the participants managers documented in the checklists. It was calculated that this amounted to €17,797 over a 12 month period.

***Costs of Training Programme* (5 individuals)**

Course Design & Development	€450.00*
Sub. Total	€450.00
Participants Salary	€7,272.72
Course Tutor	€3,279.67*
Materials	€142.00
Administration	€90.00
Facilities	€120.00
Sub. Total	€10,904.39
Evaluators Salary	€1,960.00
Materials & Supplies	€100.00
Administration	€50.00
Sub. Total	€2,110.00
Total	**€13,464.39**

**These costs already take account of the training grant received from Skillnets*

Return on Investment Calculation

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

$$ROI = \frac{€17,797 - €13,464}{€13,464} \times 100\%$$

ROI = 32%

CONCLUSIONS

The main conclusions are as follows:

1. Clear objectives and measurement metrics and levels need to be identified and agreed before training commences.
2. Each participant on a programme or course should have their knowledge and experience documented and agreed in line with these metrics before training.
3. A system must be put in place to collect the relevant metric data before, during and after the training.

The evaluation of this programme has been hampered by the lack of baseline data for the participants. ROI calculation is not a difficult concept to grasp but the application of the ROI model has to be in line with relevant systems to collect the data required, especially in areas where the training concentrates on skills which are support based rather than production based.

Appendix – Data Collection Plan

Programme: Mgt + Supervisory Skills. **Responsibility:** Jimmy Nolan **Date:** 28th May 2004

	Objective(s)	Measures/Data	Data Collection Method	Data Sources	Timing	Responsible
1	**Reaction Satisfaction** Positive Reaction Recommended Improvements Comments	Average rating of 4.0 or higher from a scale of 1 -5.	Ratings Sheet	Participants on the training Course	End of Course. After external exam	Training Manager
2	**Learning** Demonstration of Skills in controlled environment	75% or better overall score for each participant from FETAC	Assignments Projects Portfolio of Evidence	Participants Internal/External Assessors Facilitator	During and at end	Training Manager Facilitator
3	**Application Implementation** Demonstrated Use of skills within their teams Level of use of Skill	70% of activities covered in the course descriptor can be demonstrated and signed off on by the participants manager.	Checklists which have been completed by the participants and signed by the participants manager	Participants Managers	At the end of each module	Training Manager Managers Facilitators
4	**Business Impact** (Project Mgt time saving) Increased productivity on projects, customer care and recruitment	- Increased Customer satisfaction through Customer Ratings on projects where the participants have a key role. - Decreased cost in hiring, agency fees. - Increase in the participant's team ranking. - Decrease in project manager's support hours of 15%	Questionnaire Feedback	Participants, Participants Managers	At the end of the Program	Training Manager Project Managers Finance
5	**ROI** Target 25%	**Comments:** Increase in participants value added will be used for ROI calculation **Baseline performance or productivity data is not available** **Objectives were not set clearly enough before training started** **Concrete performance data of impact was difficult to attain**				

ROI of Financial Awareness Training

Abstract

Apart from the skills obtained, the measurable impact of a programme such as this one, to raise the awareness and understanding of staff so that they can see the impact of their actions and those of their teams in financial terms, can be quite difficult to identify. This case study shows how a meticulous approach in the planning and execution of both the programme and the evaluation study can deliver the required results.

Company Background

The company is one of Ireland's leading and largest corporate and event caterer. It has a proud history of providing a quality food and beverage service to the country's leading corporate, cultural and sporting events since the company's incorporation in 1989. The business objective at the outset was to establish a quality food and beverage catering company dedicated to providing a quality product and service to clients. This market has grown quickly since the inception of the Company, as the concept of client entertainment at sporting and cultural events grew, which led to the development of the corporate catering sector in addition to the traditional public catering requirement. The corporate and event catering market is valued in excess of €40 million, of which the Company has a 50% market share.

Training Programme

The training programme was developed as part of the Hospitality Management Skillnet and was titled the 'Hospitality Management Competency Model' and encompassed nine courses in the nine key competencies required for effective management: teamwork, leading for results, effective communication, customer service focus, planning and organizing, problem solving, strategic thinking, enthusiasm and financial awareness. During July 2004, staff participated in the Financial Awareness training course. The aims of the training course were 'to increase awareness of the financial impact of one's actions and the actions of the team; to help managers meet targets, control costs, find effective ways of managing the business, plan and assign budgets and targets and forecast future demands and service levels'.

The training objectives were:

- Understand the principles of accountancy and how to apply them through learning to interpret in a meaningful way the balance sheet, profit and loss statement and cash flow statement
- Apply, monitor and respond to the key performance indicators necessary to effectively manage the business in terms of Profitability, Liquidity and Efficiency
- Understand stock control issues and why both positive and negative variances need to be investigated
- Understand the link between profitability and costs and the controls required to ensure budgets and forecasts are adhered to.
- Learn how to break down finances for others, establish monthly targets and communicate performance and the necessary actions required
- Learn how to identify the work processes in the participant's work area and how to find a quantifiable way to measure each of them
- Learn how to take the initiative to find out how profits could be improved and how to act on this.
- Understand the principles of evaluating expenditure and investment appraisal
- Effectively carry out financial budgets and forecasts.

The course content comprised:

- The Profit & Loss Statement
- Accounts as a Management Tool
- Feasibility Measurement

- Pricing
- Managing Costs
- Analysing Accounts

The programme was delivered over a two day period using a combination of classroom type lectures and practical demonstrations and exercises. There was a one week period between each session during which the participants were required to carry out particular tasks including the application of various procedures taught during Day 1.

Training Needs

Training Needs Analysis
A document was circulated by the **Hospitality Management Skillnet** to the participants prior to the programme which invited them to identify 1) what types of financial statements they used most in their job; 2) what aspects of financial management did they feel needed training in; and 3) any additional comments that might help with the customization of the training to the participant.

Skills Check
A skills check sheet was used to gauge participant self assessment of their own skill level prior to attending the training event. It contained 9 statements and the participant had to tick their skill level from a choice of 5 levels of knowledge/skills. Each of the statements was closely linked to and derived from the course objectives. Analysis of the data collected shows that the participants average self assessment of their skill level was 50% prior to the training event. The participant's supervisors were also asked to complete this skill sheet i.e. state their view on the participant's level of awareness. Interestingly the supervisors considered the participants to have an average skill level of 38% prior to the training.

Level 1 Reaction / Satisfaction

(i) Evaluation Form
Reaction data was collected at the end of the training event using a standard evaluation form. This focused on issues such as presentation of the training event, delivery method, course content and relevance and trainer skills. Overall the trainee's reaction was very positive which is reflected in the analysis of these scores, which showed an 71% average composite satisfaction rating.

Level 2 Learning

(i) Skill Check
The skill check sheet used prior to the training event was revisited to try to capture the participants own assessment of whether their skill level had changed if at all following the training event. The results of the analysis of the skill check sheets post training showed an average self assessment of 70% i.e. the participants felt their skill levels had increased by 20%. The supervisors also completed the post training skill check form on the participants. They considered the participant's average skill level post course to be 50% - an increase of 12% which is considered disappointing and has prompted careful consideration as to whether this training programme should be maintained / continued in its current format.

(ii) Estimation of the Knowledge Acquisition and Retention
A level 2 questionnaire measured knowledge acquisition and retention. The average score across the six participants in relation to knowledge acquisition was 67%. This appears to contradict the score above in relation to improvement in skill levels i.e. 20%. This is not contradictory and in fact serves to illustrate the distinction between skill and knowledge! There is clearly a distinction between conceptual awareness and technical skills. With regard to retention of that learnt, the participants felt on average that they had retained 61% of that taught. Ideally this should have been measured via a post course assessment rather than via participant estimation. This will be incorporated into future Level 2 analyses.

Level 3 Application/Implementation

(i) Participant Questionnaire

To determine whether the participants felt they had applied the knowledge and skills learned a questionnaire was used. It was completed 12 weeks after the training event. This questionnaire enquired regarding the extent to which they had been able to apply what they had learnt to their job. The average composite score was 29%. This is a disappointing figure and clearly identifies the importance of more careful customization of the training and / or provision of ability to apply that learnt.

This low figure had been anticipated and therefore an additional question was included i.e. the participants were asked to identify in order of importance those barriers to the implementation of that learnt. Three of the six participants said the fact that the course was not directly relevant to their job was the main barrier. Two of the six identified 'not enough interest from their work colleagues and one participant identified 'not enough support from my superior'. Closer analysis of the responses to this question clearly illustrates that the barriers and their relative importance varied from across locations and job descriptions. This is worthy of much closer consideration by The Company ahead of delivery of any future programmes.

(ii) Supervisor Questionnaire
Staff were observed by their department supervisor both prior to and after the training event and the supervisors were then asked the same question as above i.e. 'to what extent has the new knowledge and skills been applied by the participants to their job. The average composite score was 24%. This figure confirms the viewpoint of the participants and strengthens the case for more careful consideration of the training programme.

Level 4 Business Impact

(i) Performance Improvement – participant's view
This was ascertained via one key question i.e. 'estimate how much your job performance and productivity has improved since you completed this training?' The average composite score was 25%.

(ii) Performance Improvement – supervisor's view
This was ascertained via one key question i.e. 'estimate how much the job performance and productivity of the participants has improved since they completed this training?' The average composite score was 17%.

(iii) Business Impact Measure
For the purposes of this ROI evaluation a decision was made to focus on just one business impact measure i.e. number of invoice errors. This is a very appropriate business impact measure for two reasons: first the training programme was closely concerned with facilitating a reduction in such errors; and such errors represent a significant yet avoidable cost to the Company – in terms of reputation, customer goodwill, time, delayed payment and monetary compensation. The latter three costs were considered for the purposes of this ROI. In the three month period prior to the training (April, May and June) the number of invoicing errors was 16 out of a total of 1148 invoices issued or 1.4% which equates to an average monthly error rate pre-training of 0.43%. For the three month period after the training (July. August and September) the number of invoicing errors was 12 out of a total of 1607 or 0.75% which equates to an average monthly error rate post-training of 0.25%.

Level 5 ROI

(i) Isolating the Effects of the Training
This was ascertained via one question asked of the participants and their supervisors; i.e. 'to what extent is the improvement a direct result of the training? The average composite response of the participants was 31%. The average composite response of the supervisors was 43%. The respective confidence levels were 77% (participants) and 60% (supervisors) respectively.

(ii) Costs of the Training
The cost of the training (fully loaded) was €13,340.

(iii) Cost of an Invoicing Error
The average cost of an invoicing error is calculated at €57. This was arrived through discussion with supervisors and managers and with key input from the financial controller. It is the aggregate cost of accounts, sales and operations time + stationary and postage + cost of delayed payment based on current interest rates.

(iv) Reduction in Invoice Error Costs

To arrive at an accurate annual figure for the saving we must factor in the total number of invoices processed in each year. Table 1 shows the figures for the pre and post training analysis based on the error rates outlined in Business Impact Measure above. This shows a total projected annual saving of €5,573.

Table 1: Reduction in Invoice Error Costs

	Average Monthly Error Rate %	Annual Error Rate %	Annual Invoices Processed	Total Number of Errors	Cost of One Error €	Annual Cost of Errors €	Annual Value of Saving €	Attributed to Training %	Amount Attributed to Training €
Pre-Training	0.47	5.64	4735	267	57	15222			
Post-Training	0.25	3	6895	207	57	11790	3432	24	824

The net contribution of the training to the reduction in errors as estimated by the participants was 77% of 31% (the statistical confidence level adjustment) which equals 24%. The supervisors gave a higher estimate of 43% of which they were 60% confident, and this equals a 26% contribution from training. The figure used in the ROI calculation is 24% - the most conservative estimate.

Therefore the ROI is calculated as follows:

24% of €3,432 = €824;
€824 minus €13340 = € 12,516;
€12,516 divided by 13,340 x 100 = 94%

ROI = 94%

ROI of a Leadership Development Programme

Abstract
This case study points up the difficulties of conducting a full ROI evaluation of a management training programme in a pharmaceutical company some months after the programme was completed and in the absence of an effective needs analysis or adequate baseline data.

Background
The company is a multi-national corporation manufacturing active ingredients and final drug substances for a wide variety of products. The plant which implemented the training programme is situated within a cluster of pharmaceutical companies in southern Ireland and employs 480. The key challenges facing the company are increasing its market share and maintaining competitiveness in a very competitive marketplace. The Irish manufacturing plant faces increased competitive pressures from other plants owned by the corporation overseas.

Training Programme
Senior company management had identified a number areas where the performance of Group Leaders could be improved. These Group Leaders (GLs) are first-line managers who play a key role in the effective operation of the plant through leading teams in across all departments. All these GLs are promoted 'from the ranks' and while some have long service with the company the majority are in their late twenties, early thirties and are more recently promoted. Management had identified that the GLs needed to take more ownership of their jobs, exercise responsibility and be better at making decisions rather than passing problems up the line, lead change rather than respond to it, manage people better, and, improve both their personal and team motivation levels.

The plant was under increasing work pressure and management felt that an urgent response by way of training was necessary. Discussion at management level achieved a needs definition and the HR department went about identifying a training provider to develop a programme to respond to these needs. The company was assured by the training provider who was eventually chosen that the programme offered would work with the Group Leaders, both to further refine their needs at individual and team level and then to provide an effective training response to those needs. The training provider had a high level of credibility in providing this type of leadership programme and the company decided to go ahead

The programme was carried out from the end of 2001 to the end of 2002 and was attended by 32 Group Leaders across different departments. The three phase programme was delivered as a package by the external trainer and covered a wide range of supervisor/team leader competencies. The initial classroom training was followed-up with one-to-one coaching sessions with some of the Group Leaders - this was left to the discretion of the participants.

The programme outlined a range of skill levels it hoped the participants would achieve. However, there was no structured system for monitoring the achievement of these targets, apart from self-reporting by the participants and observation by the trainer during the subsequent follow-up one-to-one coaching sessions (where these took place). In addition the skills identified were generic such as: "approaching things more proactively – looking ahead and outside my own area" and were not linked to company-specific job performance or team performance targets. No business measures were identified which would be impacted by the programme.

Evaluation Planning
The decision to undertake an evaluation of this programme was taken some time after it had been completed. The catalyst for this decision came from Skillnets – an Irish government-industry led body dedicated to increasing the range, scope and quality of training in Irish enterprises. Skillnets had identified the need for better training evaluation among Irish companies and initiated a pilot project to test the Phillips ROI methodology in Irish firms. It commissioned the Impact Measurement Centre (IMC) to deliver the pilot. Led by its managing partner, Gerry Doyle, IMC identified 18 companies who would test the Phillips model. One of these was the subject of this case study.

Even though the training programme had ended the company was keen to have it evaluated because (a) it had entailed significant cost, (b) it had been targeted at a crucial segment of the workforce and its success should have had a major impact on the company's strategic objectives, and (c) it had a high visibility in the plant and had become

something of a talking point. Another factor was the need to know how well the programme had worked in light of a proposal to run similar programmes in the future.

Evaluation Process
One of the major challenges of conducting an ex-post facto evaluation is the availability of credible baseline data. Also, a comprehensive needs analysis is a vital feature of any programme that is intended to be evaluated to Level 5 ROI. In this case neither of these was adequate. Nonetheless, due to a pressing need on the part of company management to find out if this programme had been worth the expense, especially since other similar programmes were contemplated, it was decided to make an attempt at a full ROI evaluation.

Evaluation Tools
Since no data had been collected at level 1 and 2 during programme delivery it was decided to issue a comprehensive anonymous questionnaire to all participants to collect data at levels 1, 2 and 3, and 4 together. Considerable efforts were made by the company's training officer to gather in the questionnaires and he succeeded in getting 84% returned.

At Level 4 it was first decided to request senior management to identify the areas that might usefully be examined to determine a business impact resulting from the training. These included data on absenteeism, loss time due to accidents, turnover, unit productivity, etc. A Focus Group of Managers was held to complete a detailed review of the programme impact and, in addition, the trainees were asked certain questions relating to business results in the questionnaire.

Reaction to the Training
Obviously it was difficult to assess reaction/satisfaction levels such a long period of time after the training and it was decided to confine questions to three areas: was the training at the right level for the skills and knowledge for the trainees, was it delivered in a professional and competent manner, were the objectives clear to the trainees beforehand and overall was the training considered by the trainees to have been beneficial. The results showed that while the training was delivered in a professional and competent manner, was at the right level for them, and overall the training was seen by them as beneficial, there was a lack of clarity as to training objectives beforehand. This finding was to have important implications later.

Learning
Assessing learning after the event was equally challenging and again it was decided to focus on two specific areas of the training curriculum and ask the trainees to rate to what extent the training had helped them to build self-esteem and develop a personal vision and goals. The rating of 3.5 and 3.6 respectively was not as high as might have been hoped for but an additional general statement "I learned new knowledge and skills from the training" received an average rating of 4.0 which was sufficient to conclude that a reasonable level of learning had occurred.

Application on the Job
Assessment of application of the training on the job was carried out in three ways. Firstly, the participants were asked to rate the following statements (average results in brackets):
- I have been able to apply what I learned on the training to my job (3.9)
- I have been able to retain most of the skills/knowledge that I learned on the course (3.8)
- I have been willing to use most of the skills/knowledge that I learned on the course (4.4)

In addition those who availed of the follow-up coaching and mentoring reported an average of 4.2 beneficial rating.

Second, the trainees were given a list of competencies which were extrapolated from the training programme curriculum and asked to rate the extent to which they were using these skills since the training (average rating in brackets):
- Since the training, I am consistently achieving targets (3.9)
- Since the training, I am better at anticipating and preventing problems (3.9)
- Since the training, I approach things more proactively – looking ahead and outside my own area (4.2)
- Since the training, the people I lead need less monitoring and direction (3.7)
- Since the training, there is much more teamwork among supervisors/managers (3.1)
- Since the training, I take more initiatives to improve performance in my area (4.0)
- Since the training, I see our customers as being directly impacted by my performance (3.9)

- Since the training, I have a strong sense of personal responsibility for making things happen and leading change/performance improvement. (4.3)

The participants were also asked what percent of new knowledge and skills learned from the training did they estimate to have directly applied to their job and the average result was 47%.

Trainees reported a strong sense of personal responsibility and other improvements in their approach to the job, as an impact of the training but equally reported a low level of improved teamwork. Less than half what was learned was applied to the job. In answers to open-ended questions the participants indicated that this could be accounted for by the fact that the contents were not all directly job-related.

Third, the managers were asked in a focus group to estimate the percentage increase in knowledge/skills resulting from the training and the managers gave an average estimate of 24% - half that of the trainees.

Business Results

Both the participants (by way of questionnaires) and the managers in a focus group were asked to estimate how much job performance and productivity had improved since the training. The participants gave a 37% improvement while the managers estimated an 11% improvement. They were then asked to estimate how much of the improvement was a direct result of the and this time the participants estimate was significantly less than that of the managers at 11%, while the managers said that 17% was due to the training. Both were asked to apply a level of confidence in their answers – the participants, on average, were 85% confident while the managers were 60% confident. This allowed the company to estimate the net improvement as a direct result of the training, as estimated by the participants to be 9% and by the managers as 10%.

In reaching their estimate of the impact of the training on increased productivity, the managers identified the following factors that influenced productivity changes during the same period:

- Transparency – Feedback systems on performance levels.
- Site supervisor meetings.
- Better cohesion between departments/shifts.
- Focus on performance management.
- Additional support to supervisors.
- Personnel changes at department level (could work both ways during change over period).
- Competition in the QA department.
- Increased production pressures.

However, after considering the impact of each of these factors the managers were satisfied to remain with their original estimate of the impact of training.

The training officer then began the process of identifying financial data which could be used to arrive at a figure for return on investment. Three data items were identified: lost time due to accidents, out of specification and out of expectation data. Since there was only an indirect correlation between accidents and the training this data item was dispensed with.

During complex manufacturing operations involving production of regulated products, such as in the case of pharmaceuticals, there are occasional deviations from the validated process. These "variances" may influence the quality and composition of product test samples sent to the quality control laboratory, resulting in sample failures or "Out of Specification (OOS)" incidents. Thus variance and OOS are closely related phenomena, and must be reported, documented in detail, and archived for audits per FDA regulations. This is an expensive process and any reduction in OOS will result in major savings. In the twelve month period immediately following the training the costs associated with OOS incidents dropped by €684,829. In the same period costs associated with investigation of Out of Expectation incidents (a similar aberrant data result) reduced by €21,555. This gave total savings in the period of €706,384.

Costs of Training

The following is a table of the fully loaded costs of the training:

Trainer (External)	€100,000
Training Room rental in Hotel	€495.00
Equipment Rental	€510
Lunch/Coffee	€1,940.00
Group Leaders fully loaded cost for three days	€6,272.00
Total:	€ 109,217

ROI

The company decided to accept the lowest average estimate of the net benefits attributable to the training (the participants estimate) of 9% of €706,384 = €63,575.

BCR:= $\frac{€63,575}{€109,217}$ = 0.6:1

ROI: = $\frac{€63,575 - €109,217}{€109,217.00}$ = 42%

Non Financial Benefits

Despite the negative ROI the evaluation process identified a number of areas where the training had a positive impact though these were not converted to monetary values: increased morale, increased customer satisfaction, decreased production times and, increase quality.

Furthermore the participants gave an average rating of 4.1 to the statement that the training was a worthwhile investment in their career development. 86% of the participants felt the training was a worthwhile investment for the company while 76% of managers felt it had been worthwhile.

Communicating the Results

The evaluation study was initially presented to the head of the human relations department and later to all department heads. The challenges for such a study at such a remove from the training delivery were noted and the company has tended to view the study more by way of an exploration of what a comprehensive ROI analysis can reveal rather than especially important in its own right.

Conclusions

The negative ROI supported the general view within the company that the training had not realised the potential which it had to bring about the expected change, but not for the reason supposed – that the training itself had been poorly delivered. By collecting data at all levels it was possible to find out why the training had not delivered on its promise.

The level 1 and 2 data (though gathered some time after the training) pointed to a generally satisfactory training exercise in which the participants had learned new skills and knowledge. In addition the follow-up coaching had been very beneficial to those who had availed of it. The level 3 data showed that only between a quarter or less than half of what had been learned had been applied on the job. This seems to have resulted from a number of factors including: poor linking of job related needs to training, lack of support to implement new skills, and lack of opportunity to implement new skills. It was clear from the Focus Group of managers that they did not feel part of the process and they admitted that they had not been as supportive as they could have been in the implementation stage.

This information allowed management to proceed with implementing further leadership focused training for Group Leaders. However, the process has now been strengthened following a managerial review based on this ROI analysis and a number of improvements have been implemented at the design and delivery stage of future programmes, including –

- Comprehensive needs analysis.
- Training linked to actual job situation.
- Better buy-in by trainees and their superiors.
- Support follow-up systems in place.

- Impact to be determined before training.
- Training to have clear and measurable ROI targets.
- Trainees to have personal performance targets linked to training.
- Managers to be involved at all stages of training design, implementation and follow-up.

Despite the negative ROI there was agreement that

- Most trainees obtained benefit from their participation.
- The training was well conducted.
- The coaching was particularly helpful for those who used it.

There were a number of important intangible benefits the effect of which should not be underestimated.

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Editor

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Dr. Jack J. Phillips, PhD is chairman of the ROI Institute. Through the Institute, Phillips provides consulting services for Fortune 500 companies and workshops for major conference providers throughout the world and is also the author or editor of more than 30 books and more than 100 articles. His expertise in measurement and evaluation is based on more than twenty-seven years of corporate experience in five industries (aerospace, textiles, metals, construction materials, and banking). Jack has served as training and development manager at two Fortune 500 firms, senior HR officer at two firms, president of a regional federal savings bank, and management professor at a major state university. He has undergraduate degrees in electrical engineering, physics, and mathematics from Southern Polytechnic State University and Oglethorpe University, a master's degree in decision sciences from Georgia State University, and a Ph.D. in human resource management from the University of Alabama.

Jack is the author, co-author, or editor of more than 30 books and more than 100 articles. His most recent books are *Return on Investment (ROI) Basics* (ASTD 2005), *Proving the Value of HR: How and Why to Measure ROI* (SHRM 2005), *Investing in Your Company's Human Capital: Strategies to Avoid Spending Too Much or Too Little* AMACOM 2005), *ROI at Work: Best-Practice Case Studies from the Real World* (ASTD Press 2005), *Return on Investment in Training and Performance Improvement Programs*, 2nd Edition (Butterworth-Heinemann, 2003), and *The Human Resources Scorecard: Measuring the Return on Investment* (Butterworth-Heinemann, 2001).

Patti Phillips, PhD – President and CEO of the ROI Institute, Inc, Patti earned her doctoral degree in International Development and her Master's Degree in Public and Private Management. Early in her professional career, Patti was a corporate manager who observed performance improvement initiatives from the client perspective and knew that results were imperative. As manager of a market planning and research organization for a large electric utility, she and her team were responsible for the development of electric utility rate programs for residential and commercial customers. In this role, she played an integral part in establishing Marketing University, a learning environment that supported the needs of new sales and marketing representatives. Internationally known as an accountability, measurement, and evaluation expert, Patti facilitates workshops all over the world and consults with USA and international organizations – public, private, non-profit, and educational – on implementing the ROI Methodology.

Patti is the author of *Return on Investment (ROI) Basics* (ASTD 2006) and *The Bottomline on ROI* (CEP Press 2002), which won the 2003 ISPI Award of Excellence. She is editor or co-author of *ROI at Work: Best-Practice Case Studies from the Real World* (ASTD Press 2005), *Proving the Value of HR: How and Why to Measure ROI* (SHRM 2005), *The Human Resources Scorecard: Measuring the Return on Investment* (Butterworth-Heinemann, 2001), and *Measuring ROI in the Public Sector* (ASTD 2002).

Notes:

MEASURING RETURN ON INVESTMENT

Real World Case Studies Using the ROI Methodology in Ireland

Twelve real world case studies showing how Irish companies have used the ROI methodology to measure the return on investment in their training programmes. Each case shows the best (and sometime the not-so-best) practice which every trainer and HRD professional can learn from.

This book is presented by the Impact Measurement Skillnet, in association with the ROI Institute and the Impact Measurement Centre. The aim is to assist in the promotion of the ROI methodology as a means to build competence and application of the method so as to improve accountability for training and HRD programmes and thus enhance the status and credibility of these vital business functions.

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PUBLISHER
Impact Measurement Skillnet

Price: €35
Copies of this book may be purchased from the Impact Measurement Skillnet
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