

# Deep in Budget Restraints – Return on Investment (ROI)

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## ABSTRACT

The University of Missouri–Columbia’s Information and Access Technology (IAT) Services division’s InfoTech Training department measures IT training using the return on investment (ROI) methodology. The ROI measurement estimates a campus-wide financial return in staff productivity through more efficient use of software features. In fiscal year 2002 (July 1, 2001 to June 30, 2002), InfoTech Training’s program calculated a 218% ROI.

Senior IT management uses ROI methodology in part for resource allocation decisions. ROI measurement is particularly crucial during tight budget times and can help justify the investment in training staff, hardware, software, classroom maintenance, and instructional materials.

The InfoTech training manager uses ROI to identify inefficient programs in need of redesign or elimination, and identify successful programs in need of expansion.

This paper explores the challenges of:

- Collecting and Analyzing Data
- Determining a Return on Investment

## Categories and Subject Descriptors

K.3.m [Computer and Education]

## General Terms

Management, Measurement, Documentation, Performance

## Keywords

ROI, Kirkpatrick's Four Levels of Evaluation, Training

## 1. INTRODUCTION

There is the temptation to view training as an expense item and hope that it pans out in greater productivity. In a more positive light, training can also be viewed as an investment in human capital. In any case, senior decision makers need simple, powerful metrics to evaluate the impact of training on the bottom line. The Return on Investment (ROI) metric has been traditionally used in the business world to measure the

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effectiveness of a given investment. Although “bottom line” oriented, ROI can be adapted to provide a measure of technical training effectiveness in the higher education environment.

Commercial case studies of training ROI methodologies suggest analysis need not be complex [1]. Additionally, the ROI may also be merged with measures beyond standard productivity—employee satisfaction, speed-to-competency, quality of customer service, reduced re-work, reduced cycle times, customer loyalty, less downtime, and employee retention. Retention is of particular importance. There are definite cost savings by retaining employees, both from the cost of replacement and training of new employees.

The formula below adapts a standard business ROI to training:

$$\left( \frac{PB - PC}{PC} \right) * 100 = ROI\%$$

Where PB = Program Benefits and PC = Program Costs

The literature [1] provides a step-by-step methodology that closely follows the one we used, thus confirming we were on the right track in our ROI initiative.

## 2. DATA COLLECTION

Data used in calculating InfoTech Training’s ROI included:

- Attendance data (2.1)
- Total cost of the IT training program (2.2)
- Numeric comparison of participant and supervisor evaluations of productivity increases (2.3)
- Average salary of university staff who attend IT training (2.4)

### 2.1 Attendance Data

Our online registration system provided faculty and staff attendance data. We did not include student attendance data, as they are not employees. For FY02 (July 1, 2001 to June 30, 2002), there were 2,716 unique faculty and/or staff attending courses.

### 2.2 Cost Data

Internal budgeting reports supplied program cost data, which included instructor salaries and benefits, course materials, and classroom maintenance. The total cost of our training program for FY2002 was \$528,187.

## 2.3 Training Evaluation Survey Data

InfoTech Training evaluates courses using Web-based online forms immediately after a training event (Kirkpatrick Level 1) as described in References [2] and [3]. A few weeks after the training event, we also send an email to both the participant and his/her supervisor pointing them to an online Web survey for a Kirkpatrick Level 3 evaluation.

The surveys are based on Reference [4] benchmarking questions grouped by the following categories:

- Use of Skills
- Confidence in the Ability to Perform
- Barriers and Enablers of Transfer
- Impact Measures

The first eight questions offer radio buttons in a scale from one to five with five being “To a Very Great Extent” and one being “Not at All or Never/Rarely”. There was also a “Not Applicable” (N/A) radio button. The final two questions ask for a percentage in a text box. Listed below are the survey questions.

### 2.3.1 Participant Survey

#### Use of Skills

To what extent did you use the knowledge and/or skills prior to attending this course?

To what extent have you had the opportunity to use the knowledge and/or skills presented in this course?

To what extent have you actually used the knowledge and/or skills presented in this course after completing the course?

#### Confidence in Ability to Perform

To what extent has your confidence in using the knowledge and/or skills increased as a result of this course?

#### Barriers and Enablers of Transfer

To what extent did you receive the assistance necessary in preparing you for this course?

To what extent has the content of this course accurately reflected what happens on the job?

To what extent have you had access to the necessary resources (e.g., equipment and information) to apply the knowledge and/or skills on the job?

To what extent have you received help, through coaching and/or feedback, with applying the knowledge and/or skills on the job?

#### Impact Measures

As a result of this course, my performance on the course objectives has changed by \_\_\_\_\_ percent.

As a result of this course, my overall job performance has changed by \_\_\_\_\_ percent.

### 2.3.2 Supervisor Survey

#### Use of Skills

To what extent did s/he use the knowledge and/or skills prior to attending this course?

To what extent has s/he had the opportunity to use the knowledge and/or skills presented in this course?

To what extent has s/he actually used the knowledge and/or skills presented in this course after completing the course?

#### Confidence in Ability to Perform

To what extent has her/his confidence in using the knowledge and/or skills increased as a result of this course?

#### Barriers and Enablers of Transfer

To what extent did s/he receive the assistance necessary in preparing for this course?

To what extent has the content of this course accurately reflected what happens on the job?

To what extent has s/he had access to the necessary job related resources (e.g. equipment and information) to apply the newly acquired skills and knowledge?

To what extent has s/he received on-the-job help (coaching/feedback) in applying the newly acquired skills and knowledge?

#### Impact Measures

As a result of this course, her/his performance on the course objectives has changed by \_\_\_\_\_ percent.

As a result of this course, her/his overall job performance has changed by \_\_\_\_\_ percent.

### 2.3.3 Survey Results

The Level 3 evaluation surveys were sent to all faculty and staff participants in FY02. While 2,716 participants attended courses, there were 3,977 surveys completed. This is due to the fact that participants take more than one course in any fiscal year. However, to maintain the most conservative ROI calculation, we made the assumption that they only attended one class/year.

## 2.4 Participant Salary Data

During the 2002 fiscal year, the average annual salary among all faculty and staff was \$24,772, which translated into approximately \$11.91 based on the standard 2,080 FTE hours per year.

## 3. ROI Calculation

By employing the ROI methodology, we wanted to prove that the “investment” in our training program paid for itself through greater participant productivity. In doing so, we made two very conservative assumptions listed below:

- An estimate of possible time saved through more efficient use of software.
- Of the time saved estimate above, an estimate of time wasted through unproductive activities.

The surveys showed a 56% improvement in job performance according to the participant and 43% according to the supervisor. We used the smaller, more conservative percentage to gauge performance and productivity increases for the purpose of ROI analysis.

We then assumed the participant would save at least an hour per day for 50 weeks a year, or 250 hours. Multiplying by the supervisor’s more conservative estimate of performance improvement (43%) by the 250 hours (less classroom time) resulted in an annual staff time savings of 104 hours. Being even

more conservative, we discounted that figure by 50% assuming that saved staff time would be used in non-productive ways. That left us with 52 hours of greater productivity from technical skills training.

We then multiplied the 52 hours by the average salary per hour (\$11.91) and number of participants (2,716) to obtain a dollar savings figure of \$1,682,019. (Note: For simplicity, we lumped all types of employees together because staff attendees predominate. You can certainly separate participants by type, determine average salary by type, and weight your figures to get a more precise average salary number.) When you consider our costs at \$528,187, this translates to a return on investment of 218%.

**Table 1. ROI Calculation**

<b>FY02 Trainee Data</b>	
Total Number of FY02 Projected Faculty/Staff Trainees	2,716
Average Annual Salary of Trainees	\$24,772
Average Hourly Salary of Trainees	\$11.91
<b>Kirkpatrick Level III Training Survey Results</b>	
<b>Estimated Percentage Performance Increase Based on Course Objectives</b>	
According to Supervisor	43.0%
According to Employee	56.0%
<b>Assumption:</b>	
Hours Working with Software One Hour/Day for 50 Weeks/Year	250
<b>ROI Calculation</b>	
Multiply by Lower (Supervisor) Percentage	43.0%
Performance Increase in Hours	107.5
Less: Time Lost in Class	3.5
Adjusted Performance Increase in Hours	104
Less: Time Lost In Non-Productive Activities	50%
Final Performance Savings in Hours	52.00
Final Performance Savings in Dollars	\$1,682,019
Less: Cost of Training Program	\$528,187
Total Savings to Campus	\$1,153,832
<b>Total Return on Investment (ROI)</b>	<b>218%</b>

## 4. Conclusion

Clearly, this is not an airtight methodology. For example, there is no accounting for when someone actually took a course during the fiscal year, thus making the savings less than one fiscal year. Additionally, like the companies studied in Reference [1], we had to make conservative assumptions about annual savings in hours. Even with those caveats, the analysis does show a positive return.

Due to the assumptions, the methodology should not be used as the sole measure of your training program's effectiveness. It does, however, provide another tool to help management understand the value of technical training to the institution's bottom line. With an estimated 218% ROI, we helped prove the value to technical training to the campus as a whole, and justified continued investment into our training program—particularly in our tight budget times.

## 5. ACKNOWLEDGMENTS

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## 6. REFERENCES

- [1] Salois, Gene. "Case Studies in the ROI of Training". Chief Learning Officer, March 2003, pp. 41-3, p. 59, and p. 64. Also, [http://www.clomedia.com/content/templates/clo\\_feature.asp?articleid=132&zoneid=31](http://www.clomedia.com/content/templates/clo_feature.asp?articleid=132&zoneid=31)
- [2] Carliner, Saul, Ph.D. "Demonstrating the Effectiveness and Value of Technical Communication Products and Services: A Four-Level Process". Frederickson Communications website ([www.fredricksoncommunications.com](http://www.fredricksoncommunications.com)), August 2001.
- [3] Kirkpatrick, D.L., Evaluating Training Programs: The Four Levels. San Francisco, CA: Berrett-Koehler Publishers, 1994.
- [4] American Society of Training & Development (ASTD) Training Outcomes Benchmarking Report, Part II-B Follow-Up Evaluation, 2002.