Justifying Training with Performance Improvement[1]

by John Schuyler and Timothy Burke

Harry was excited as he entered his boss' office.

"Sally, the university is offering a course in variance analysis," he said. "Here is the brochure. From the description, it looks like just the thing we were talking about to strengthen my skills in this area."

"That's great, Harry," Sally replied. "Let's see ... the topic outline does seem to fit. I see that the course has a $2,000 tuition and lasts one week. The tuition should be our only out-of-pocket cost, since the course is offered locally. Let me quickly check something."

Sally turned aside to her personal computer and did some fast calculations. "Based on the cost of the course and your time away from the job, we'll need to see a permanent improvement about 0.8% or more in your performance as a result of taking this course. Do you think this training will improve your performance at least that much?"

Is this science fiction? Only a manager from outer space would impose a predetermined rate of performance improvement on an employee as a condition of enrolling in a training program. But under what circumstances are training decisions made? How do managers really justify the cost of training?

Managers looking for training benefits usually seek changes in *SKA*: improved Skill, greater Knowledge, and enlightened Attitude. Some targeted changes in SKA are simple to measure, such as improvement in computer skills or mechanical ability. But changes in complex behaviors, such as management performance, are difficult to assess quantitatively and directly link to specific training programs.

A simple and meaningful decision approach is to base the training evaluation upon value to the organization. The value of this training is Harry's value *after* the course minus Harry's value *before* the course. If the course is economically beneficial then this value of training exceeds the cost of training. Let's assume the organization is a for-profit corporation where value is measured in dollars. By applying a few principles of economics, managers can reasonably calculate the minimum performance improvement needed to justify an employee's training program.

Employee's Base Cost

Part of the training cost is Harry's time. Let's assume his salary is $40,000 per year for a 240-day work year. Harry's overhead and fringe benefits are 45% of salary.

So, a Base Cost for Harry's time (salary plus benefits) during the 5-day course period is:

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[1] Rewrite of a column in the American Association for Training and Development Denver chapter's newsletter, 1993.

$$\text{Base Cost} = \frac{\left(\begin{matrix}\text{Annual}\\ \text{Salary}\end{matrix}\right)\left(1+\begin{matrix}\text{Benefits}\\ \text{Ratio}\end{matrix}\right)\left(\begin{matrix}\text{Course}\\ \text{Period}\end{matrix}\right)}{\text{Annual Work Days}} = \frac{\$40,000(1.45)(5)}{240} = \$1,208$$

Note: the 240 = 52 x 5 – 20 days vacation and holidays.

Present Value

The company spends money across time to employ a person. Present value (PV) discounting is the generally accepted way to recognize the time value of money.

$$PV = \frac{\text{Cashflow at time } t}{(1+i)^t}$$

where *t* is the time (years) from the analysis as-of date to when the cashflow is realized. and *i* is the annual PV discount rate representing time value of money. The discount rate typically is the companies opportunity cost of capital, like an interest rate. This formula translates cashflow amounts in the future into equivalent cash amounts today, that is, present value.

Sally estimates that Harry will stay with the company another seven years after the training. Similar professionals see a 2% per year increase in professional capabilities. This plus about 4% per year inflation will be matched with salary increases. So, Harry's salary is expected to increase approximately 6% per year. The company uses a 10% per year pre-tax discount rate for investment decisions. With a simple cost projection in a spreadsheet program, Sally finds that the PV of seven years of Harry's salary plus overhead and benefits is PV Cost = $358,519. The spreadsheet that follows shows the assumptions and calculations:

0.02	Performance escalation per year	
0.04	Inflation per year	
$40,000	Current salary	
0.10	PV discount rate	

Year	Salary	0.45 Benefits	Tot Cost	PV
1	$41,198	$18,539	$59,737	$56,957
2	43,703	19,666	63,369	54,927
3	46,360	20,862	67,222	52,970
4	49,179	22,130	71,309	51,082
5	52,169	23,476	75,645	49,262
6	55,341	24,903	80,244	47,506
7	58,705	26,417	85,123	45,813
Totals	$346,655	$155,995	$502,649	$358,519

Employee's Value Ratio

An employee's work should add economic value to the company in excess of his or her salary. For this example, let's assume Sally judges Harry's Value Ratio to be about 1.10. That is, she feels Harry contributes about 10% more to the company than he costs.

Harry will be unavailable to be productive during the time he is at training. That is, the company will not receive the benefit of Harry’s employment during that period. This is an opportunity cost and is calculated:

$$\begin{matrix}\text{Opportunity}\\ \text{Cost}\end{matrix} = \begin{matrix}\text{Base}\\ \text{Cost}\end{matrix} \times \begin{matrix}\text{Value}\\ \text{Ratio}\end{matrix} - \begin{matrix}\text{Base}\\ \text{Cost}\end{matrix} = \$1,208 \times (1.1 - 1) = \$121$$

This is the average value Harry adds to the company per week of employment, assuming he would normally be productive during each work day.

Putting It Together

For the training to add value to his company, the value of Harry’s performance improvement must exceed the total costs for his training.

$$\begin{matrix}\text{Value}\\ \text{Improvement}\end{matrix} = \left(\text{Improvement}\right)\begin{pmatrix}\text{PV}\\ \text{Cost}\end{pmatrix}\begin{pmatrix}\text{Value}\\ \text{Ratio}\end{pmatrix} = \left(\text{Improvement}\right)\left(\$358,519\right)\left(1.1\right)$$

$$= \left(\text{Improvement}\right)\left(\$394,371\right) \quad \text{...(1)}$$

Tht total cost for this training is:

$$\begin{matrix}\text{Total}\\ \text{Training}\\ \text{Cost}\end{matrix} = \left(\text{Tuition}\right) + \begin{pmatrix}\text{Base}\\ \text{Cost}\end{pmatrix} + \begin{pmatrix}\text{Opportunity}\\ \text{Cost}\end{pmatrix}$$

$$= \$2,000 + 1,208 + 121 = \$3,329 \quad \text{..(2)}$$

The training breakeven point is when:

$$\begin{matrix}\text{Value}\\ \text{Improvement}\end{matrix} = \begin{matrix}\text{Total}\\ \text{Training}\\ \text{Cost}\end{matrix} \quad \text{...(3)}$$

Substituting equations (1) and (2) into equation (3) yields:

$$\left(\text{Improvement}\right)\left(\$394,371\right) = \$3,329$$

And solving,

$$\begin{matrix}\text{Improvement}\\ \text{Needed}\end{matrix} = \frac{\$3,329}{\$394,371} = .0084 = 0.84\%$$

Thus, Sally should approve Harry's request for the course if she feels that Harry's permanent productivity improvement will exceed 0.84%.

This example illustrates how managers can make more-informed training decisions by applying economic evaluation. Training programs often promise that they will produce in improved performance. But what is the economic value? This method illustrates a way of performing a cost/benefits analysis for a candidate training program.

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