

C E



**Center for
Effective
Organizations**

**ROI AND STRATEGY FOR TEAMS AND
COLLABORATIVE WORK SYSTEMS**

**CEO PUBLICATION
G 02-3 (412)**

ALEC LEVENSON

*Center for Effective Organizations
Marshall School of Business
University of Southern California*

February 2002

ROI and Strategy for Teams and Collaborative Work Systems

Dr. Alec R. Levenson

Center for Effective Organizations
Marshall School of Business
University of Southern California
3670 Trousdale Parkway, BRI-204
Los Angeles, CA 90089-0806
213.821.1095 direct line
213.740.9814 main line
213.740.4354 fax line
alevenson@marshall.usc.edu

Return on investment (ROI) has long been used to evaluate capital spending projects. The underlying principle is straightforward and compelling: use a uniform financial metric for projects and outcomes that otherwise would be difficult to compare. Doing so allows for more objective decision making, which should improve organizational effectiveness.

In this chapter we explore how to use ROI for team performance evaluation and for strategic decision making. The key issues that we focus on are:

- Identifying the benefits
 - Where to draw the line
- Identifying the costs
 - Team members' time
 - Other contributors' time
 - Budgetary & implicit costs
- Valuing the costs and benefits
 - Financial & other metrics
- Accounting for uncertainty
- Backward v. forward looking ROI
 - Performance management
 - Strategy and goal setting

In order to illustrate the potential and pitfalls of ROI, we will consider two different teams. The first case is a work team chartered to increase manufacturing efficiency. The second case is a management team chartered with acquisition decisions

and post-merger integration. Both teams have projects that differ in duration, resources used and potential impact on the bottom line.

These two types of teams were chosen because they have a wide range of tasks representing different degrees of uncertainty, ability to benchmark against previous experience, and interconnectedness with other parts of the organization. We describe the key aspects of the teams' tasks in the tables below. Specific points of importance include:

- *Total time spent on the project.* This is comprised by the duration of the task (first column – “duration start to finish”) and time spent working on the task (second column – “FTE time usage,” expressed as full-time equivalent days of the team members' time per week). Note that we use time per week here, but whatever metric makes the most sense for a particular task is the one to use; what matters is that total time devoted to accomplishing the task be included. We need this figure to calculate the implicit cost to the organization of the team member's time.
- *Resources associated with the team's work* (third and fourth columns – “main team resources” and “other resources involved”). These include both direct budgetary items and indirect resources used throughout the organization.
- *Outcome metrics* (fifth column). Certain outcomes typically associated with teams lend themselves readily to quantifiable metrics; these include cycle time, productivity, cost reductions, quality and customer satisfaction. Other team-related outcomes are much more difficult to quantify, including creativity, innovation, and organizational learning.

➤ *The degree of uncertainty* (sixth column – “chance of achieving the outcome”). This is perhaps the most unusual item for an ROI calculation. But it is critically important when forecasting ROI. And it is important for performance management, too.

Some of the work team’s tasks are detailed in Table 1. Some of the management team’s tasks are detailed in Table 2.

| Table 1. Examples of the work team’s tasks (7 members) | | | | | | |
|---|---------------------------------|-----------------------|---|--|-----------------------------------|--|
| Task | Duration start to finish | FTE time usage | Main team resources | Other resources involved | Outcome metric | Chance of achieving outcome |
| Trouble shoot assembly defects | 7 days | 3.5 days per person | Members’ time; equipment budget | Functional support (various depts.) | Defect rate back to old level | 99% (based on prior track record) |
| Identify maintenance contract vendor | 3 months | 2 weeks per person | Members’ time; support staff time | IT support (new web bidding system) | Uptime improved by 10% | 50% (based on team’s internal assessment) |
| Install new assembly line machinery | 3 months | 4 weeks per person | Members’ & support staff time; equipment; materials | Entire factory idle 7 days until work done | Quicker install; reduced downtime | 99% for small improvement; 50% for large improvement |

Note that the method used to determine the time and resources needed to complete the task, and the reliability of those estimates, can vary significantly for forward-looking versus retrospective ROI calculations. For forward-looking ROI, it is necessary to estimate the time and resources needed; for retrospective ROI the actual amounts used can be tallied with precision. The greater the amount of past experience on similar tasks, the better the estimates will be when calculating forward-looking ROI. Yet no matter how much prior experience can be drawn upon, estimates are always imprecise; the actual numbers invariably come out higher or lower. Thus forward-looking and

retrospective ROI will differ because of the uncertainty involved in estimating the costs ahead of time.

The other key way forward-looking and retrospective ROI differ is in the treatment of the probability of achieving the outcome. Forward-looking ROI needs to account for such uncertainty to provide an accurate estimate that can be compared to the ROI from other prospective tasks. Obviously, after the fact the outcome either happened or it did not. Thus retrospective ROI does not necessarily need to consider the uncertainty the team faced ahead of time in terms of whether the tasks' goals could be achieved, even under ideal circumstances. Yet recognizing that a degree of uncertainty was involved can still be important when using retrospective ROI for performance management.

Table 2. Examples of the management team's tasks (5 members)

| Task | Duration start to finish | FTE time usage | Main team resources | Other resources involved | Outcome metric | Chance of achieving outcome |
|--|---------------------------------|-----------------------|---|---|---------------------------------|--|
| Evaluate and recommend acquisition options | 6 months | 5 weeks per person | Team members' and support staff time | Functional support (various depts.) | Maintain, build market share | 0 – 100% (depends on alternate scenarios) |
| Manage integration of acquired company's IT system | 3 months | 2 weeks per person | Team members' time; new computer system | IT personnel working full-time on project | Bill and pay systems integrated | 95% (with only minimal bugs in the system) |
| Design and implement knowledge management system post-merger | 3 months | 5 weeks per person | Team members' time; new computer system | Cross-functional survey of managers | Best practice sharing | 20 – 80% (hard know when it happens) |

For the cases in the two tables, the estimates of the probability of achieving the task's outcome in the final column represent the team's (or the team's supervisors') best guesses based on past experience wherever possible. Note that it is easier to draw on past

experience for the work team's tasks because they represent repeated aspects of the work that have been done before in similar way. The management teams' tasks, in contrast, are more unique in the sense that any acquisition has characteristics that make it distinctly different from prior acquisitions. That said, a company with a long history of successful acquisitions should be able to more accurately forecast the outcome probabilities for the management team's tasks.

While we list the same categories of items for both the management and work teams, the context is different because the management team's outcome metrics may be harder to implement for forecasting ROI and/or doing performance management.

- It is hard to measure the effectiveness of a knowledge management system. Thus it is difficult to figure out whether it contributes a net benefit to the bottom line.
- It is easy to see whether the company gains or loses market share. But it may be difficult to determine whether a particular acquisition was the key driving force.

These two teams and their six projects provide a hands-on context for discussing the use (and potential abuse) of ROI. We refer to them as we go through the steps needed for an ROI calculation for teams. In many cases we contrast ROI for teams with ROI for capital spending, a more typical ROI application. Anyone seeking a more in-depth discussion of traditional ROI for capital spending and investment should consult a standard text.¹

Return on investment for teams

At its core, return on investment offers a simple comparison between the costs and benefits of undertaking an action. Traditionally, it has been used purely as a financial

metric, comparing the increased cash or monetary value of an investment with the outlays needed to achieve it:

$$\frac{\text{Net income}}{\text{Investment}}$$

In the team context, it is not always possible to make a direct link to impacts on the bottom line. This does not make calculating ROI impossible, just more challenging.

To start, let us consider a more general statement of the ROI formula:

$$\frac{\text{Benefits created by team}}{\text{Costs incurred by team}}$$

Later we take up the challenge of assigning monetary values to the team's benefits and costs, perhaps the most difficult task for a nontraditional ROI analysis. We start with the more manageable task of identifying the relevant benefits and costs first.

Identifying the benefits

Anyone who has work with or studied teams to a great extent is already familiar with the myriad tasks that are assigned to teams.ⁱⁱ A team's primary objectives are the main benefits the organization derives from the team. Specific examples from the work team above include reduced defects, improved uptime, and a shorter time to install new assembly line equipment. Secondary benefits from the team's tasks might include improved cross-function communication, best practice sharing, improved relationships with suppliers (the new maintenance contract vendor may service other business units), and higher customer satisfaction (through quicker rollout of new products). These secondary impacts, in particular, may produce benefits for the company that are harder to measure, occur with much less certainty, and are more difficult to trace directly back to the team's work as the source of improvement.

This raises the issue of which benefits should be considered when calculating ROI. One thing to note is that we can consider ROI for the team as a whole, or ROI for specific projects that the team undertakes. To start, we will focus on calculating ROI for each task separately. The issue of ROI for the team as a whole is taken up below when considering performance management and strategy.

To be practical, only those benefits that can be attributed to the team's tasks should be considered for inclusion in the ROI calculation. Taking the case of the work team's new maintenance contract, the vendor may offer a volume discount to the company for working with multiple business units. If the work team's contract lowers the price to other business units, at least part of the savings for the other business units should be credited back to the team and included in the ROI for the maintenance contract.

But that benefit should only be credited to the team if their contract contributes materially to the lower price for other business units. For example, a rule of thumb might require that the team's contract account for at least one tenth of the vendor's total business with the company in order to qualify for inclusion as a benefit under ROI. In contrast, if the team's contract represents only 1% of the vendor's total business with the company, the team should not be given credit for lowering the price to the other business units. This holds even if the team's contract is the "marginal" one that puts the total volume of business over the threshold needed to trigger the lower price.

This example highlights the first key issue in assigning benefits for an ROI calculation: *only those benefits that can be materially attributed to the team should be included in an ROI calculation.* Any benefit that can be only marginally credited to the team's work should not be included.

A related issue is that *only those outcomes that have a true economic benefit to the company should be considered for ROI*. Take the case of the management team's knowledge management system task. The system *may* have a positive bottom-line impact if well designed and implemented. But it may also be the case that the vast majority of information sharing that takes place through such a system would have occurred anyway through informal communication.ⁱⁱⁱ In this case, the information sharing is the relevant outcome, not the creation of the IT system. The IT system itself may slightly reduce the time it takes to share the information, but the overall benefits from the system may not differ significantly from traditional informal methods of communication.

This brings us to the third key issue: *ROI should be considered relative to the alternative courses of action only*. Best practice sharing across the company may be a key success factor. Thus the management team might claim credit for all best practice sharing that follows implementing the knowledge management system. But if the system doesn't offer any significant improvement over the best practice sharing that would have happened anyway, the best practice sharing should *not* be included in the team's ROI for the knowledge management system. This underscores the subjective nature of figuring out where to draw the line when ascribing bottom-line benefits to a team's actions.

Identifying the costs

Similar issues apply in identifying the costs. Specifically, *only those costs that can be materially attributed to the team should be included in the ROI calculation*. From the examples above, this includes team members' time, the time of dedicated support staff, and budgetary outlays needed to accomplish the team's tasks. It also includes

contributions by non-team members and other functions and business units, but only to the extent that they represent significant amounts of time and/or resources.

For example, the management team's task of evaluating acquisition options requires the use of the IT system for e-mail, document storage, etc. Thus the IT department contributes resources to the team via the existing information technology infrastructure and technical support for day-to-day problems that arise during the course of the team's work. Yet the team's use of the existing infrastructure represents only a tiny fraction of the load on the system, which translates into a miniscule budgetary impact. Thus, for this task, the team's use of IT should not be factored into the cost when calculating ROI.

For a contrast, take the team's tasks of integrating two companies' IT systems and designing a knowledge management system. Both of these tasks require extensive support from the IT department, at a significant resource cost. So for both of these tasks, the IT costs have to be factored in when doing the ROI calculation.

Assigning monetary values to the benefits and costs

Once the benefits and costs have been identified, the next task is assigning monetary values to them. Some benefits readily translate into financial terms:

- All of the work team's metrics fall into this group. Reduced defects translate into greater cost savings per unit of output. Improved uptime/reduced downtime translates into greater output per worker, so lower unit costs. Thus it is relatively straightforward to assign monetary values to the benefits that the work team generates.

- The management team's market share metric also falls into this category, with one caveat. Market share alone is typically not the only metric used when evaluating acquisition targets. The total value proposition of a merger includes a number of metrics for key products (market share, product price, profit margins, etc.). Each element of the total value proposition is readily translatable into financial metrics. But often there is a tradeoff between the elements, notably market share and margins. This does not negate the ability to assign monetary values to the team's metrics; it only makes that task harder.

Other benefits are harder to directly translate into financial terms:

- Integrating the bill and pay systems across two merged companies may lead to cost savings. But the long run savings from reduced IT support time (for not having to support two separate systems) may be more than counterbalanced in the short run by the extra support needed to transition everyone to the new system.
- Integrating the bill and pay systems may lead to increased revenue from those customers who prefer the one-stop shopping that the merged companies offer. But is it the integrated bill and pay system alone that leads to increased revenue? Or is it the integrated product line that draws the customers in? If the latter, then paying for the new system is a necessary expense of integrating the two companies, not a source of competitive advantage in and of itself. In this case, the financial benefits of increased revenue that follow the merger cannot be assigned to the ROI for the bill and pay system. This is similar to the challenge discussed above vis-à-vis identifying which benefits to include in the ROI calculation.

- What is the value of improved cross-functional communication, a key secondary outcome for many teams? The benefits can range widely, from small process improvements that do not measurably impact the bottom line, all the way through breakthrough ideas that create entirely new product lines and greatly boost the bottom line. Whether and how to include these benefits in an ROI calculation depends on both the organizational context and the ease of forecasting them.

Organizational context

The outcomes of a team's efforts typically include impacts on intermediate processes and outcomes that indirectly influence the bottom line. It may be difficult to draw a direct link, as the above examples show. Thus figuring out which intermediate impacts to include in the ROI calculation depends on how they fit into the company's strategy and philosophy. In other words, the organizational context may matter when assigning monetary values. This idea goes against the spirit of ROI, which is supposed to be objective, not subjective. But, in fact, even in the case of capital investment and cash flow, there is significant leeway and debate on how to conduct ROI analysis. Thus it is impossible to have a totally objective, wholly indisputable measure of ROI for capital spending; for teams, even more so.

To illustrate the subjectivity, consider another task for the work team: training. A company that highly values training will look more favorably on individual development as a team outcome. It is difficult to demonstrate a direct link between development and improvements in productivity for every single employee who is trained. But that is not the criteria usually used to evaluate training effectiveness. Rather, so long as a sufficient number of trainees create cost savings and/or boost revenue, their collective individual

impacts on the bottom line can justify the development expenses for all trained employees. Thus the *net impact of training accounting for all employees trained* typically is less than the *net impact of training accounting only for those who make process changes that boost the bottom line.*^{iv}

In the absence of a readily available financial metric, in cases like this there is an alternative for assigning a monetary value to the team's outcomes: ask the person with budgetary authority for the team. The question is, "How much is the team's outcome worth to the company?" One downside is that that person, too, may not have a ready way to translate the outcome into monetary terms. Another is that, even if they have an opinion, they may not be willing to share it with the team members or others involved in calculating the ROI. But if the team is incapable of producing a realistic monetary value, someone higher up with a better perspective on the company's strategy should be more capable of doing so.

Even if it is too difficult to come up with a monetary value for the benefits to the company of the team's work, there is another related approach that may work. In this case the question to the person with budgetary authority for the team is, "How much would the organization be willing to pay to achieve the team's outcome?" This puts the question in cost terms, where the answer should be viewed as the breakeven point at which the team barely meets its performance objectives, assuming they achieve the outcome.^v Any cost savings achieved relative to this number is the ROI for that task.

The same basic principles apply when considering other types of intermediate outcome, such as improved cross-functional communication, best practice sharing, et al. If the organization values these outcomes enough to stress them as part of the culture

and/or strategy, then they are good candidates for inclusion in an ROI calculation. They are also, of course, good candidates for inclusion in a performance management plan.

This brings us to the link between ROI and performance management. But first, a word about the role of uncertainty in calculating ROI.

The role of uncertainty

In many cases we want to know what the ROI of a project will be. But it can be impossible to say for sure whether the team will be successful. Few teams rarely control their own destiny.

- A team seeking to develop a breakthrough product that redefines an industry cannot guarantee success.
- The work team in our first case similarly cannot guarantee success for large improvements in uptime via the new maintenance contract or an improved process for installing new assembly line equipment. Indeed, by their own internal assessment, they expect to be able to achieve significant improvements in uptime in both of these tasks with only a 50 percent probability.
- Likewise, the management team's chances of a successful acquisition or knowledge management system depend on many factors that are too difficult to precisely forecast ahead of time.

Given these uncertainties, should we modify our view of the anticipated ROI? In one respect the answer is no. The ROI figure itself should be the "best estimate" that the team can calculate. However, we should take account of the uncertainty in some fashion. Just like in strategic planning, it is wise to consider a variety of likely scenarios that could impact the team's ROI. Not only may the likelihood of the outcome vary under different

scenarios, but the associated costs may vary as well. This argues for constructing a set of ROI estimates that represent the most likely case, best case, and worst case scenarios, as well as cases inbetween.^{vi}

Consider once again the work team's maintenance contract. Suppose that the annual cost of the contract is expected to average \$100,000 more than doing the work with the in-house maintenance department.^{vii} The team forecasts a minimum 1% better uptime by contracting out for the services. In order to figure out if it is worth it to sign the contract, the improved uptime needs to be converted into a monetary value. After considering all of the potential ways the improved uptime will impact the bottom line, the team determines that the annualized benefit will be \$75,000. Thus the net benefit after accounting for the costs is a negative \$25,000, and the ROI is negative 25 percent.^{viii}

Yet the 1% improved uptime represents only the minimum improvement expected by the team – the worst case scenario. The most likely outcome they forecast is a 3% improvement in uptime, with expected annualized benefits of \$110,000 per year; this translates into a positive \$10,000/year and 10 percent ROI. And should the vendor meet a middle-range target of 2% improved uptime, the team estimates a net benefit of exactly \$100,000; so the company just breaks even on the outsourced maintenance in this case.

Thinking more optimistically, the contract also has formal targets of 10% and 20% improvements in uptime, with financial incentives that the vendor will earn if it meets those targets. Those financial incentives amount to an extra cost to the company of \$10,000 per year should the vendor meet the 10% improvement, and \$25,000 per year if the vendor meets the 20% improvement. But the team also determines that the net benefit to the company in each case will be an additional \$33,000/year and \$52,000/year,

respectively. These in turn translate into a net payoff of \$23,000 and 20.9 percent ROI ($=100*23,000/110,000$) for the 10% uptime improvement; and a net payoff of \$27,000 and 17.8 percent ROI ($=100*27,000/152,000$) for the 20% uptime improvement.

To complete the uncertainty planning, there is one missing piece: the probabilities the team assigns to each of these scenarios. Those numbers, along with the ROI figures, are summarized below.

| Maintenance contract ROI scenarios | | | | | |
|---|-----------------------------|--------------|-------------|--|--|
| Increase in uptime | Annual net monetary benefit | ROI | Probability | Certainty equivalent net monetary benefit (= Annual benefit * Probability) | Certainty equivalent ROI (= ROI * Probability) |
| 1% | - \$25,000 | -25 percent | .05 | - \$1,250 | - 1.25 percent |
| 2% | \$0 | 0 percent | .15 | \$0 | 0 percent |
| 3% | \$10,000 | 10 percent | .40 | \$4,000 | 4 percent |
| 10% | \$23,000 | 20.9 percent | .25 | \$5,750 | 5.23 percent |
| 20% | \$27,000 | 17.8 percent | .15 | \$4,050 | 2.67 percent |
| Probability weighted net monetary benefit (all scenarios): \$12,550 | | | | | |
| Probability weighted ROI (all scenarios): 10.65 percent | | | | | |

Note that we can look at ROI two different ways in this example. Each scenario has its own ROI. And the overall maintenance contract project has an ROI, too, which is made up of the weighted average of the ROI for each scenario.

Note also the distinction between the net monetary benefit and ROI in each case. Specifically, the scenario that yields a 10% increase in uptime offers greater ROI for the dollars invested, both implicit and explicit. In contrast, the scenario that yields a 20% increase in uptime offers a lower rate of return on the dollars invested in the project (17.8 percent versus 20.9 percent), but a larger total monetary benefit (\$27,000 versus \$23,000 annually). We now address how to interpret and apply this ROI information for performance management and strategic decision making.

Strategy and performance management

As the last example demonstrated, there typically is a range of ROI estimates for a team's task that depend on alternate scenarios of how events will transpire. We also can consider the weighted average ROI estimate that takes into account all realistic scenarios. And, once the maintenance contract has been in place for sufficient time, there is the additional "backward looking" ROI figure that takes into account what the actual uptime and cost numbers turned out to be. With all these numbers at our disposal, how should we apply them to evaluate the team's performance and set strategy?

Strategy

Let us return to the work team's original task with regard to the maintenance contract: identify a potential vendor. The ROI estimates above provide the team's best assessment of how one particular vendor will perform if hired. As such they can be used to help make the decision of whether to outsource the maintenance tasks. This is a standard application of ROI concepts and one way to use it to inform decision making over the execution of a company's strategy with respect to outsourcing. The more that ROI methodology can be applied in a team context, the easier it should be evaluate prospective team tasks in terms of their net impact on the bottom line.

Yet it is important to recognize the limits of this approach. For one, *calculating ROI can be a very time consuming task*. Thus it does not make sense to calculate ROI for team tasks that consume small amounts of resources and produce minor benefits. To take an extreme example, what is the ROI from taking the time to disseminate team meeting agendas ahead of time?

Secondly, *calculating ROI makes sense in contexts where there is some uncertainty over the outcome, and it is not already obvious from prior experience that a task is worth undertaking.* Consider the work team's task of trouble shooting assembly defects. Past experience may show that the vast majority of sudden increases in defects on a manufacturing line can be solved by a small work team within a matter of hours. In such cases, the time needed to troubleshoot the problem is paid back many, many times by the return to the previous lower defect rate. Thus we do not need ROI analysis to tell us whether a small team should be initially assigned to trouble shoot defect problems.

Where ROI analysis can help, though, is in determining what to do about larger problems. Suppose that 5-10 percent of all such defect problems cannot be immediately solved by a local team on site. In such cases, off-site help is needed, either from outside vendors, or a specialized team assembled with internal company experts located around the country. Instituting company-wide policies over how much to spend on outside vendors versus building the infrastructure to provide the support with an internal team of experts to serve all the company's manufacturing sites is a significant decision involves significant resources with potentially large impacts on the bottom line. Using ROI analysis to forecast the what the returns will be from the different scenarios may be critically important in making the right decision.

Hurdle rates

It is standard practice in capital budgeting to specify a hurdle rate that all projects must meet in order to be funded. The hurdle rate corresponds to the minimum acceptable ROI, and is supposed to take into account the other potential uses of the funds. Thus an expected ROI of 10.65 percent might look reasonable, but only until compared with a

company-wide hurdle rate of 15 percent, indicating that the expected return on the maintenance contract is less than the company's goal for invested funds.

Company-wide hurdle rates for the cash invested in capital spending projects make sense because a dollar of cash is a dollar of cash, no matter whether it is spent on acquiring pencils, assembly line equipment, other businesses, or Treasury bills. Because a team's resources represent cash in one form or another (either actual dollar outlays or the implicit dollars that employee time represents), it is reasonable to compare the forecasted ROI for a project to the company's hurdle rate for capital spending. Yet there are limits to the usefulness of doing so.

The fundamental problem is that the ROI methodology is only as good as the assumptions that underlie it. This has long been recognized as an issue for capital spending analysis.^{ix} It is doubly true when evaluating teams, given the subjective nature of the various assumptions needed to calculate ROI in many team contexts. Thus ROI can help increase the objectivity of decision making over strategy and operations, but it is not a substitute for sound judgement and contextual interpretation of the numbers.

Performance management

How should the team's performance be evaluated in the case of the maintenance contract vendor? Viewed one way, their task was simply to forecast the ROI from prospective maintenance vendors. If their assessment was accurate, then they can be rewarded commensurately. But how do we evaluate that accuracy, and what types of rewards are appropriate?

It is impossible to evaluate the entire set of scenarios provided by the team because only one of them is realized in the end. However, *the team can be evaluated on*

the basis of the realized ROI for the scenario that actually happened. Suppose the maintenance contract results in 3% improved uptime, as expected, but with greater costs/lower benefits than the team forecast. In this case the realized ROI would be less than the forecast, and the team could be penalized for their inaccuracy by withholding any outcome contingent rewards. If, on the other hand, the realized ROI was better than the team's forecast, they could be given a bonus.

It also might be appropriate to give the team a bonus if the maintenance contract vendor meets one of the higher targets for uptime. Because the team was involved in selecting and structuring the contract, they presumably had insights into how to achieve greater uptime through the financial incentives written into the contract. Giving outcome-based rewards to the team members could provide the incentive needed to maximize ROI for the entire project.

Note, however, that there are two different ways to view the gains from greater uptime: ROI (a percentage return) and the annualized net monetary benefit (a dollar figure). Here we see a potential problem when comparing the return from a 10% versus 20% uptime improvement. The annualized net monetary benefit expressed in dollar terms is \$4,000 greater for the 20% improvement. Yet the ROI for the 10% improvement is *more than* the ROI for the 20% improvement in uptime (20.9 versus 17.8 percent rate of return). This is so because, in going from 10% to 20%, the costs increase proportionately more than the benefits. So the greatest gain in terms of total reward to the company is achieved by only a 10% improvement in uptime, not 20% improvement under the maintenance contract. Incorporating ROI considerations into the team's performance

management can help ensure that proper attention is paid to the total return the team's actions provide the company.

A benefit of incorporating ROI measures into the team's performance management is the incentive this provides the team to approach the entire process differently from the outset. After deriving the ROI estimates for the 10% versus 20% uptime improvement scenarios, the team should ask itself, "Why do we anticipate getting a lower ROI from greater uptime improvement?" Perhaps the financial incentives in the contract are standard ones that the vendor used with previous customers. By forecasting the ROI for the different scenarios, the team will realize before the contract is signed that using a \$10,000 bonus for a 10% improvement and \$25,000 bonus for a 20% improvement is not the optimal incentive structure for the company. They could then use that info to either lower the bonus payment for the 20% improvement, or raise the trigger point for the \$25,000 bonus to something greater than a 20% improvement in uptime. (Note that the latter requires additional calibration of the benefits and implicit costs the company incurs under a scenario of greater than 20% improved uptime.)

Gaming the system

Despite the attraction of ROI for team performance management, it is important to recognize the potential pitfalls as well. As with capital spending decisions, it is possible to manipulate ROI numbers through erroneous assumptions. Anytime subjective valuations have to be used, they can be biased in favor of a higher ROI number to help the team achieve a higher performance award.

Consider the example of the knowledge management system, the management team might come up with an internal forecast of 2 to 25 percent improved cash flow

based on markedly different, yet reasonable, estimates of new product development revenue streams ten years into the future. Yet if they will be rewarded only for showing at least a 10 percent improvement in cash flow, they might be tempted to downplay the likelihood of the worse outcomes. Doing so, however, could negatively impact the value of the information that that team reports to the CEO, leading to the wrong decision to implement the knowledge management system. Of course, this is a classic performance management problem, and one that is not new to teams. The relevant point for our purposes here is that introducing ROI does not fundamentally alter the subjective nature of performance management; it only provides an additional tool.

ⁱ Two good examples are Rachlin, Robert and Sweeny, Allen. Accounting and Financial Fundamentals for Nonfinancial Executives. New York: Amacom (American Management Association), 1996; and Friedlob, George T. and Plewa, Franklin J., Jr. Understanding Return on Investment. New York: John Wiley and Sons, 1996. All of the standard ROI concepts discussed here are covered in these two texts.

ⁱⁱ For a detailed review of the range of types of teams and outcomes, see Cohen, Susan G. and Bailey, Diane E. "What Makes Teams Work: Group Effectiveness Research from the Shop Floor to the Executive Suite." Journal of Management, Volume 23, Number 3, 1997.

ⁱⁱⁱ This might well be the case if the system's main function is a repository of names and anecdotes.

^{iv} This is simply an issue of comparing two ratios. Both have the same numerator: the total (positive) impact produced by people who were trained. The difference is in the denominators. The first one takes into account total expenditures on all employees who were trained. The second one is smaller than the first, and includes only those expenditures associated with trained employees who made positive process changes.

^v Note that this is a different number than the team's total budget, including the implicit costs of the team members' and support staff's time.

^{vi} This approach is similar in spirit to that used by the real options literature to figure out the opportunity cost of a capital investment under different scenarios: (a) Hodder, James E. and Riggs, Henry E. "Pitfalls in Evaluating Risky Projects." Harvard Business Review, January – February, 1985. (b) Luehrman, Timothy A. "Investment Opportunities as Real Options: Getting Started on the Numbers." Harvard Business Review, July – August, 1998. (c) "How Real Options Theory Can Improve Your Decision Making." Harvard Management Update, January, 2001.

^{vii} This figure includes the time cost of the team members, who will be responsible for monitoring the vendor's progress throughout the life of the contract.

^{viii} For simplicity, we implicitly assume here that the annualized costs and benefits of the maintenance contract are the same every year during the life of the contract. We could calculate the total benefit and total cost, and then discount everything to present values, as is standard practice in many approaches to calculating ROI. However, doing so would needlessly complicate the example while distracting our attention from the salient point: a 1% increase in uptime represents a *negative* ROI in this case.

^{ix} See Hodder and Riggs (1985) for a discussion.