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The Importance of Converting Data to Monetary Values

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Traditionally, most impact evaluation studies stop with a tabulation of business results. In these situations, the program is considered successful if it produced improvements such as productivity increases, quality enhancements, absenteeism reductions, or customer satisfaction improvements. While these results are important, converting the data to monetary values and showing the total monetary impact of the improvement provides more concrete data for determining and validating program success. This calculation responds to the request "Show me the money." Also, the monetary value of program benefits is needed for comparison with the cost of the program in developing the return on investment (ROI). This evaluation is the ultimate level of the evaluation framework on which the ROI Methodology is based.

This book shows how leading organizations are moving beyond simply tabulating business results and are adding the step of converting data to monetary values.

This initial chapter focuses on the importance of taking this extra step. It also explores some of the preliminary issues that must be considered before addressing the specific techniques available for converting data to money.

Why Convert Data to Monetary Values?

The need to convert data to monetary amounts is not always clearly understood. A program or project can be shown to be a success just by providing business impact data showing the amount of change directly attributable to the program. For example, a change in quality, cycle time, market share, or customer satisfaction could represent a significant improvement linked directly to a new program. For some programs, this may be sufficient. However, many sponsors require the actual monetary value, and increasingly, evaluators are taking the extra step of converting data to monetary values.

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Value Equals Money

For some stakeholders, the most important value is money. Although there are many different types of value, monetary value is one of the primary criteria of success. Executives, sponsors, clients, administrators, and other leaders are concerned with the allocation of funds and want to see evidence of the contribution of a program in terms of monetary value. Often, for these key stakeholders, outcomes stated in any other terms are unsatisfactory.

Impact Is More Understandable

For some programs, the impact is more understandable when it is stated in terms of monetary value. Consider, for example, the impact of a major program to improve the creativity of an organization's employees and thereby enhance the innovation of the organization. Suppose this program involved all employees and had an impact on all parts of the organization. Across all departments, functions, units, and divisions, employees were being more creative, suggesting new ideas, taking on new challenges, driving new products—in short, helping the organization in a wide variety of

ways. The easiest way to understand the value of such a program is to convert the individual efforts and their consequences to monetary values. Totaling the monetary values of all the innovations can provide a sense of the value of the program.

Consider the impact of a leadership development program directed at all of the middle managers in an organization. As part of the program, the managers were asked to select at least two measures of importance to them and to indicate what would need to change or improve for them to meet their specific goals. The measures numbered in the dozens. When the program's impact was studied, a large number of improvements were identified but were hard to quantify. Converting them to monetary values allowed these improvements to be expressed in the same terms, enabling the outcomes to be more clearly reported.

As described in earlier books in this series, the monetary value of program benefits is needed to compare against costs in order to develop the benefit-cost ratio, the ROI (as a percentage), and the payback period. Calculating ROI is impossible without converting data to monetary amounts.

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Programs Start Because of Money

Sometimes, the monetary value of a particular issue provides the impetus for a program. For example, a company might be experiencing huge fines due to compliance violations, and these fines result in a program to prevent further violations. In another example, excessive accidents, when converted to monetary values, might illustrate the magnitude of a problem, which leads directly to new programs to lower the number of accidents. Essentially, the best way to get the attention of a potential sponsor for a program is to place the problem or opportunity in the context of money. This almost guarantees that the program will be implemented, if the data are credible and the resources are available.

Converting Data to Money Is Similar to Budgeting

Professionals and administrators work with budgets and are expected to develop budgets for programs with an acceptable degree of accuracy; thus they are comfortable with tabulating costs. When it comes to benefits, however, many are not comfortable, even though some of the same techniques used to develop budgets are used to determine benefits. Defining the benefits of a program in terms of cost savings or cost reductions may make identification of the costs or value of the program easier for some managers. The monetary benefit resulting from a program becomes a natural extension of the budget.

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Monetary Value Is Vital to Organizational Operations

With global competitiveness and the drive to improve the efficiency of operations, awareness of the costs related to particular processes and activities is essential. In the 1990s, this emphasis gave rise to activity-based costing (ABC) and activity-based management. ABC is not a replacement for traditional general ledger accounting. Rather, it is a translator or medium between cost accumulations—that is, the specific expenditure account balances in the general ledger—and the end users who must apply cost data in decision making. In typical cost statements, the actual cost of a process or problem is not readily discernible. ABC converts inert cost data to relevant, actionable information. ABC has become increasingly useful for identifying improvement opportunities and measuring the benefits realized from performance initiatives (Cokins, 1996). Over 80 percent of the ROI impact studies that have been conducted show that a program has benefited an organization through cost savings (cost reduction or cost avoidance). Understanding the cost of a problem and the payoff of the corresponding solution is essential to proper management of a business.

Monetary Values Are Necessary to Understand Problems

In any business, costs are essential to understanding the magnitude of a problem. Consider, for example, the cost of employee turnover. Traditional records and even those available through activity-based costing will not indicate the full cost of the problem. A variety of estimates and expert inputs may be necessary to supplement cost statements in order to arrive at a specific value. The good news is that organizations have developed a number of standard procedures for identifying undesirable costs. For example, Wal-Mart has calculated the cost of one truck sitting idle at a store for one minute, waiting to be unloaded. When this cost is multiplied by hundreds of deliveries per store and then multiplied by five thousand stores, the cost becomes enormous. Understanding the enormity of the cost gives the retailer an undisputable reason why strides must be taken to ensure the trucks are unloaded as quickly as possible.

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Hard and Soft Data

When collecting business impact data, some managers find it helpful to divide the data into two categories: hard data and soft data. Hard data are obtained through the traditional measures of organizational performance. Hard data are objective, easy to measure, and easy to convert to monetary values. Because hard data are often obtained through common performance measures, they enjoy high credibility with management and are available in almost every organization. They are destined to be converted to monetary values and included in the ROI calculation.

Hard data represent the output, quality, cost, and time of work-related processes. Table 1.1 shows examples of data in these four categories. Almost every department or function will have performance measures that yield hard data. For example, a government

Table 1.1. Examples of Hard Data

Output	Quality	Cost	Time
Units produced	Failure rates	Shelter costs	Cycle time
Tons manufactured	Dropout rates	Treatment costs	Equipment downtime
Items assembled	Scrap	Budget variances	Overtime
Money collected	Waste	Unit costs	On-time shipments
Items sold	Rejects	Cost by account	Time to project completion
New accounts generated	Error rates	Variable costs	Processing time
Forms processed	Rework	Fixed costs	Supervisory time
Loans approved	Shortages	Overhead cost	Time to proficiency
Inventory turnover	Product defects	Operating costs	Learning time
Patients visited	Deviation from standard	Program cost savings	Adherence to schedules
Applications processed	Product failures	Accident costs	Repair time
Students graduated	Inventory adjustments	Program costs	Efficiency
Tasks completed	Time card corrections	Sales expense	Work stoppages
Output per hour	Incidents		Order response time
Productivity	Compliance discrepancies		Late reporting
Work backlog	Agency fines		Lost-time days
Incentive bonus			
Shipments			
Completion rate			

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office that approves applications for work visas might track the following four performance measures: number of applications processed (output), number of errors made in processing applications (quality), cost per application processed (cost), and average time taken to process and approve an application (time). Most projects or programs in this unit should be linked to one or more hard data measures.

Because many programs are designed to develop soft skills, soft data must also be collected during evaluation. Soft data are usually subjective, are sometimes difficult to measure, are almost always difficult to convert to monetary values, and are behavior-oriented. Compared with hard data, soft data are usually perceived as less credible although we use them frequently when managing organization processes. Soft data measures may or may not be converted to monetary values.

Soft data items can be grouped into several categories; Table 1.2 shows one such grouping. Measures such as employee complaints and grievances are listed as soft data items not because they are difficult to measure but because they are difficult to convert accurately to monetary values.

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Converting Data to Monetary Values

Before describing the techniques to convert either hard or soft data to monetary values, we will briefly summarize the steps used to convert data in each category. These steps should be followed each time a measure is converted to monetary value.

1. Focus on a Unit of Measure

First, identify a unit of measure targeted for improvement. For output data, the unit of measure might be an item produced, a service provided, or a sale completed. Time measures are varied and include items such as the time to complete a program, cycle time, or customer response time. Units of time measures are usually

Table 1.2. Examples of Soft Data

Work Habits	**Customer Service**
Excessive breaks	Customer complaints
Tardiness	Customer satisfaction
Visits to the dispensary	Customer dissatisfaction
Violations of safety rules	Customer impressions
Communication breakdowns	Customer loyalty
	Customer retention
	Lost customers
Work Climate and Job Satisfaction	**Employee Development and Advancement**
Grievances	Promotions
Discrimination charges	Capability
Employee complaints	Intellectual capital
Job satisfaction	Requests for transfer
Employee organizational commitment	Performance appraisal ratings
Employee engagement	Readiness
Employee loyalty	Networking
Intent to leave the organization	
Stress	
Initiative and Innovation	**Image**
Creativity	Brand awareness
Innovation	Reputation
New ideas	Leadership
Suggestions	Social responsibility
New products and services	Environmental friendliness
Trademarks	
Copyrights and patents	Social consciousness
Process improvements	Diversity
Partnerships and alliances	External awards

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expressed in minutes, hours, or days. For quality the unit might be one error, reject, defect, or rework item. Soft data measures are varied; a unit of improvement might be one sale or a change of one point in the employee engagement score. Here are some specific examples of units of improvement:

- One student enrolled
- One patient served
- One loan approved
- One full-time employee hired
- One reworked item
- One grievance
- One voluntary turnover
- One hour of downtime
- One hour of cycle time
- One hour of employee time
- One customer complaint
- One person removed from welfare
- One less day of incarceration (prison)
- One point increase in customer satisfaction

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2. Determine the Value of Each Unit

Now, the challenge: place a value (*V*) on the unit of measure identified in the first step. This step is the focus of this book. For measures of production, quality, cost, and time, this process is relatively easy. Most organizations have records or reports that state the value of items such as one unit of production or the cost of a defect. Soft data are more difficult to convert to a value; the cost of one absence, one grievance, or a change of one point in the employee attitude survey is often difficult to pinpoint. The techniques in this book provide an array of possibilities for making this conversion. When more than one value is available, either the most credible or the lowest value is used.

3. Calculate the Change in Performance

The change in output data is calculated after the effects of the program have been isolated from other influences. The change (Δ) is the performance improvement, expressed in hard or soft data, which is directly attributable to the program. The value may represent the performance improvement for an individual, a team, a group, or several groups of participants.

4. Determine the Annual Amount of Change

Annualize the value by calculating the total change in the performance data that would occur in one year if improvement were to continue at the same rate that was recorded during the program (ΔP). In many organizations, calculating the benefits for one year has become a standard approach to defining the total benefits of a program. Although the benefits may not be realized at the same level for an entire year, some programs will continue to produce benefits beyond one year. In some cases, the stream of benefits may continue for several years. Using one year of benefits is considered a conservative approach, leading to Guiding Principle 9: Use only the first year of annual benefits in ROI analysis of short-term solutions.

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5. Calculate the Total Value of the Improvement

Compute the total value of improvement that can be attributed to the program by multiplying the unit value (V) by the annual performance change (ΔP). For example, if a group of fifteen supervisors attended a program designed to reduce the number of complaints filed by a specific employee group, the annual change in performance would be the total number by which grievances were reduced for the entire year, not just up to the point in time at which the data were collected. This annual improvement is then multiplied by the value of one unit to calculate the total monetary benefits to the organization.

Another example of this calculation is annualizing the measure representative of a large population. If a group of twenty managers attended a program designed to reduce absenteeism, the annualized performance change would reflect the reduction in absenteeism for the entire target population (say two hundred employees working in operations) over the course of one year. This value is then multiplied by the unit value of one absence to calculate the annual monetary benefits of the program. This value for the total annual program benefits is then compared with the cost of the program, usually by using the return on investment formula presented in *ROI Fundamentals*, the first book of this series.

Case Example of Converting Data to Monetary Values

An example taken from a team-building program at a manufacturing plant illustrates the five-step process of converting data to monetary values. This program was developed and implemented after a needs assessment revealed that lack of teamwork was causing an excessive number of grievances. The number of grievances resolved at step 2 in the four-step grievance process was selected as an impact measure. Exhibit 1.1 shows the steps taken to assign monetary values to the reduction in grievances.

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Final Thoughts

This brief chapter sets the stage for addressing one of the critical issues in an ROI evaluation: converting data to monetary values. This chapter shows the rationale for this step and some of the key issues that must be addressed when beginning the process.

As this book will illustrate, many techniques can be used to convert data to monetary values; the good news is that often much of the conversion work has already been done. Several techniques are available for converting data to monetary values. Some methods are appropriate only for a specific type of data, while others can be used with virtually any type of data. The challenge is to select the

Exhibit 1.1. Converting Data to Monetary Values: Evaluation of a Team-Building Program in a Manufacturing Plant

Step 1:	**Define the unit of measure.**
	Unit of measure = one less grievance reaching step 2 in the four-step grievance resolution process.
Step 2:	**Determine the value of each unit.**
	Using internal experts on the labor relations staff, the cost of an average grievance was estimated to be $6,500, considering time and direct costs. (V = $6,500)
Step 3:	**Calculate the change in performance.**
	Six months after the program was completed, total grievances per month reaching step 2 had declined by ten. Supervisors isolated the effects of the program, determining that seven of the ten grievance reductions were related to the program. ($\Delta = 7$)
Step 4:	**Determine an annual amount of change.**
	Using the adjusted Δ value of seven per month yields an annual improvement of eighty-four (7 fewer grievances $\times$ 12 months) for the first year. ($\Delta P = 84$)
Step 5:	**Calculate the total value of the improvement.**
	Annual value $= \Delta P \times V$ $= 84 \times \$6{,}500$ $= \$546{,}000$

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technique that best matches the type of data and situation. Each method is presented in the next four chapters, beginning with the most credible approach. The next chapter focuses on the easiest method for getting to the monetary value: finding standard values that have already been converted.

Reference

Cokins, G. *Activity-Based Cost Management: Making It Work—A Manager's Guide to Implementing and Sustaining an Effective ABC System*. New York: McGraw-Hill, 1996.