ARE YOU GETTING VALUE FROM YOUR IT?

Assigning value to IT investments doesn't have to be guesswork.

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TECHNOLOGY IS A VERY EXPENSIVE PROPOSITION FOR MOST COMpanies. Although IT spending growth was down in 2002. reflecting overcapacity and the economic environment, estimates for U.S. IT spending growth in 2003 average 4% to 6%; estimates for worldwide spending growth are a bit higher at 5% to 7%. For most mid-size to large companies, IT spending consumes a considerable portion of both the balance sheet and the annual operating budget. Companies heavily dependent on technology for transaction processing, product development, marketing, and delivery routinely spend hundreds of millions of dollars each year to support their business activities.

Is it worth it? When all the capital and all the operating expenses are added up, how do the CEO, CFO, and the shareholders know whether the company got its money's worth? There are ways to measure the value IT adds to an organization. And there are new metrics not only for measuring the contribution of IT staff, but also for valuing IT's links to business outcomes and to the intangible value of innovation.

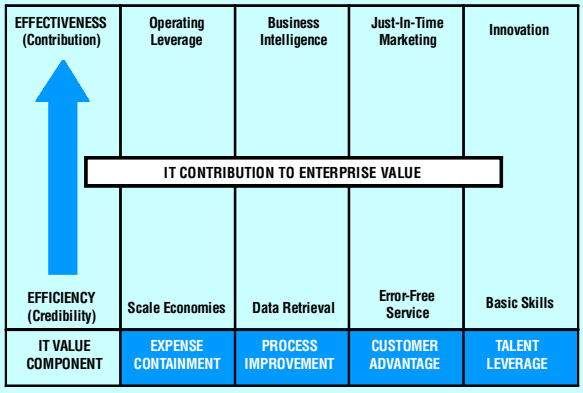
Understanding the Value of IT

To figure out whether your company is getting its money's worth out of its investment in technology, it is important to first identify where and how IT can add value. While the value definitions will differ somewhat from company to company depending on strategic focus, there are four major areas where IT can and should add value:

1. *Expense Containment.* This is the historical purview of technology, going back to the original focus of most data processing applications: replace high-cost manpower with lower cost and more efficient technology. Today, expense containment often means attaining the scalability and flexibility to move quickly to adopt new technologies without disrupting existing infrastructure.

2. *Process Improvement.* The value of IT comes not from replicating work processes but from improving them through the application of technology to complex problems. Given IT's capacity to provide better and faster access to information and to create business intelligence that fosters good decision making, most organizations look to technology as a means to achieve competitive advantage. IT adds additional value by lowering defect rates, improving information relevancy, and speeding the time to market in new and creative ways.

Figure 1: IT Value Components



3. *Customer Advantage.* The traditional application of technology as it relates to the customer has been to reduce transaction errors and thus contain customer complaints—not a particularly strategic approach to customer service. More recently, IT has been used to achieve customer productivity by moving more and more of the routine processing and customer inquiry functions directly to the customer. Depending on the application and the delivery, customers say that these systems either add to or detract from customer service. Another aspect of applying technology to the customer component of business strategy is IT's value in enabling the company to understand and predict customer needs and wants and move to "just-in-time" marketing.

4. *Talent Leverage.* A significant value component of technology is the role IT plays in improving the workers' environment and fostering innovation. With new hardware, software, and networking tools, and a virtual environment conducive to innovation, good companies are well positioned to maximize the talent in their organizations.

IT Value: Moving from Efficiency to Effectiveness

While all organizations have opportunities to derive these four types of value from their IT investment, some companies will put more emphasis on value as defined by IT *efficiency* while others will focus more on the value to be derived from IT *effectiveness*. In this context, *efficiency* is defined as "doing things right," while *effectiveness* is defined as "doing the right things." Each of the four IT value components includes aspects of efficiency and effectiveness as shown in Figure 1.

To be considered "valuable" by management, business partners, customers, and shareholders, IT systems must be able to perform basic tasks efficiently, without error, and in a timely and reliable manner. Thus, the base level of IT value is in being a credible performer of those efficiency tasks shown in the exhibit.

As IT moves up the value continuum and begins to contribute to the organization's strategic goals, it adds value in the form of tools and innovation that effectively move the company forward. Applications such as customer relationship management (CRM) can be either a success or a failure, depending on the value the IT staff brings to the application through its understanding of business strategy and its alignment of technology resources with those business goals.

Measuring the Value of IT

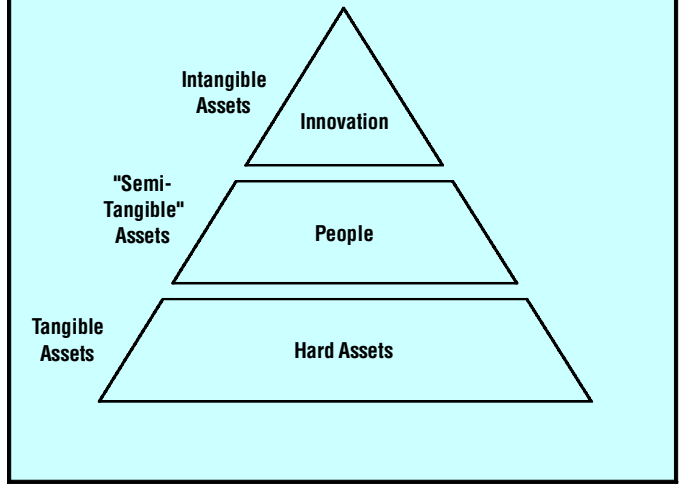
Given the size of most IT budgets and the debate that swirls around defining the value of technology, it is not surprising that measuring IT is also a complex and controversial topic. On the one hand, accounting standards and financial valuation techniques abound to capture and categorize capital and operating expenditures related to IT hardware, software, and facilities.

However, the value of IT extends beyond capital spending and the annual budget. Thus, the challenge is how to capture and measure the remaining aspects of IT value.

One approach is to further divide the components of each IT value dimension into its subcomponents. For each of the four major components—expense containment, process improvement, customer advantage, and talent leverage—resources are devoted to the activities and outputs that produce value. The three major resource subcomponents (shown in Figure 1) are:

1. Capital and annual operating expense
2. People
3. Innovation

Figure 2: IT Value Subcomponents



Measuring capital and annual operating expenses related to facilities, hardware, and software (collectively, hard assets) is, as mentioned previously, driven by accounting rules and conventions. Accordingly, we will not enter into the debate on whether such rules and conventions are fair and whether they reflect the true value derived from these IT expenditures.

Turning our attention to the two remaining subcomponents of IT value—people and innovation—moves the discussion beyond the well-worn path of valuing tangible assets into the gray area of valuing intangibles. As Figure 2 illustrates, establishing a value for IT demands not only valuing tangible assets (hardware, software, facilities, etc.) but also valuing human capital as a "semi-tangible" asset. As it relates to IT and, indeed, to all aspects of the enterprise, measuring the value of people is an area that mandates careful thought and analytic rigor since, for most companies, people are the second biggest expense component after hard assets. At the other end of the spectrum, valuing innovation is largely an exercise in understanding how intangibles affect business outcomes and establishing measures of how innovation contributes to business success.

A Quantitative Approach to Measuring the Value of IT Staff

IT professionals frequently use ROI (return on investment) when evaluating a project's success or shortcomings. ROCE, return on capital expended (net profit/shareholder equity, as a short form definition), is a measure of capital effectiveness, which looks at the financial interaction of the balance sheet and income statement as it relates to capital utilization and capital productivity. ROCE is a better measure of the overall value of IT than is ROI because it takes into account the return on capital consumption and capital productivity, in addition to the income statement impact.

Looking at the components of ROCE that build to the ultimate measure of return on capital expended adds financial rigor to the analysis. A similar "equation analysis" is often applied to return on assets (ROA) and other common financial ratios to add depth and substance to the analysis.

To illustrate how equation analysis adds an extra dimension, we compare the results of three companies from three different industries. Keep in mind that across industries we would expect there to be different dynamics, so the equation analysis is best used to track trends in the same company over time or to compare performance of peer organizations. The three companies shown in Table 1 are: (1) a commercial bank, (2) a manufacturer, and (3) a services company.

In this example, the manufacturer has a higher ROA than, for instance, the bank, despite a lower profit margin. This is because the asset turn is greater; i.e., the volume of business generated by the manufacturer is greater relative to its asset investment.

Table 1: Financial Equation Analysis of Return on Assets (ROA)

Company	ROA	=	Asset Turnover	X	Profit Margin
Bank	.97%	=	.05	X	19.7%
Manufacturer	1.47%	=	.61	X	2.4%
Services Co.	1.31%	=	.52	X	2.5%

Table 2: Financial Equation Analysis ROCE Comparisons

Company	ROCE		ROA	X	Leverage Reciprocal
Bank	12.13%	=	.97%	X	12.5
Manufacturer	14.75%	=	1.47%	X	10.0
Services Co.	16.64%	=	1.31%	X	12.7

After disaggregating ROCE into its subcomponents, we then pull together the ROA and ROCE equation analyses for our same three companies, as shown in Table 2. By using the equation analysis, the trends we saw earlier in terms of ROA are ameliorated somewhat by looking more closely at the ROCE components. While the manufacturer has the highest ROA, its ROCE is less than the service company, which can support $12.50 of assets for each dollar of capital while the manufacturer supports only $10 of assets for each dollar of capital. Thus, the equation analysis has increased our understanding of the financial value components of each company.

This same type of equation analysis can be applied to

Table 3: Human Capital Measures

1. **Human Capital Return on Investment (HCROI*) = Revenue (less) Operating Expense (excluding Personnel Costs)/ Personnel Costs**
2. **Human Capital Value Added (HCVA*) = Revenue (less) Operating Expense (excluding Personnel Costs)/Total FTE**
3. **Human Economic Value Added (HEVA*) = Net Operating Profit After Tax (less) Capital Cost/Total FTE**

**Source:* Saratoga Institute Workforce Diagnostic System, 2002.

Table 4: Equation Analysis of the People Component of IT Value

EFFECTIVENESS (Contribution)	HEVA	=	Revenue per FTE (less) Operating Expense per FTE (excl. Personnel Expenses) (less) Average Compensation per FTE	X	(1 – tax rate) (less) Capital Consumed per FTE X Cost of Capital
	HCVA	=	Capital Operating Productivity	X	Capital Consumed per FTE
EFFICIENCY (Credibility)	HCROI	=	HCVA	X	1/Average Compensation per FTE

determine the value of IT's human capital. However, because people are not "hard" assets in the same sense as facilities and hardware, we need to first establish an approach to valuing human capital. As a starting point, we've used the definitions established by Saratoga Institute, a leading human capital research and benchmarking firm, which maintains that an organization's people are really human capital. Saratoga's measures and their definitions (abbreviated here) are shown in Table 3.

While these definitions form a good foundation, we believe that more financial rigor can be applied and, by so doing, enable CEOs and CFOs to value IT staff (and all the company's people) in a way that is more in keeping with traditional balance sheet and income statement conventions.

To move the analysis of human capital value added closer to an analysis of tangible assets, we have used equation analysis to translate the work of IT staff into financial ratios, primarily by examining capital consumption and capital productivity. This approach solidifies the measurement of human capital value added and takes the valuation of an organization's people, including those involved in IT, beyond the level of measuring staff as intangible assets. While it would be an exaggeration to maintain that this approach produces the same type of financial rigor as valuing hard assets, the resultant "semi-tangible" measures do add a quantitative aspect to determining the value that an organization's people contribute to the overall success of the enterprise.

HCROI can be thought of as the efficiency measure of human capital. Similar to its financial counterpart, ROI, which measures the total cost to generate each dollar of revenue, HCROI captures the gross operating margin generated for each dollar of total human capital expenses. HCROI is a measure well suited to evaluating the IT staff's contribution to overall project costs and payback since the metric looks at staff productivity in ways that complement project ROI analyses.

HCVA and HEVA are better measures to determine the contribution of IT's human capital to the overall enterprise value contributed by technology. Both are effectiveness measures; HEVA is the more encompassing measure and, we believe, the best metric for evaluating IT staff's contribution to IT value. To derive the full benefit of the HEVA analysis, it is important to go beyond what Saratoga Institute has suggested in its definition and disaggregate net operating profit after tax into its pre-tax full-time-equivalent (FTE) components. In addition, we also break the cost of capital consumed into its subcomponents. Using this equation analysis, our revised formulas for HEVA, HCVA, and HCROI are shown in Table 4.

Taking one last look at our three companies, we see, in Table 5 that the bank has a very high HEVA, but it achieves this through the application of capital resources per FTE. Companies with heavy capital investment, particularly those that are also interest rate sensitive, will have HEVAs that change substantially depending on the economic cycle. Also from our example, it can be seen that the services company has the lowest consumption of capital and also the lowest non-personnel cost structure; both factors combine to produce a low HEVA.

Because of the very different capital structures and tax rates for these three types of companies, the reader is again reminded that equation analysis, whether financial or as applied to human capital, is best reserved for trend analysis over time within the same company or confined to a tightly defined peer group with similar business models and industry focus.

Table 5: HEVA Equation Analysis

Company	HEVA ($000s)	=	Revenue per FTE (less) Operating Expense per FTE (excl. Personnel Expenses) (less) Average Compensation per FTE	X (1 – tax rate)	Capital Consumption per FTE	X Cost of Capital
Bank	$54.861	=	($509.8 – 211.0 – 130.3)	(1 – 40%) –	$825.333	X 5.5%
Manufacturer	$7.229	=	($478.3 – 403.8 – 56.0)	(1 – 38%) –	$78.174	X 5.5%
Services Co.	$3.705	=	($219.0 – 141.1 – 69.8)	(1 – 31%) –	$33.256	X 5.5%

Measuring IT Innovation

Of the three subcomponents of IT value, innovation is the least tangible and the most challenging to measure. In this respect, innovation falls into the same category of intangibles as brand equity or social responsibility. However, unlike the latter examples of intangibles, IT innovation does offer some opportunity for more tangible measurement, if not directly then indirectly through business results.

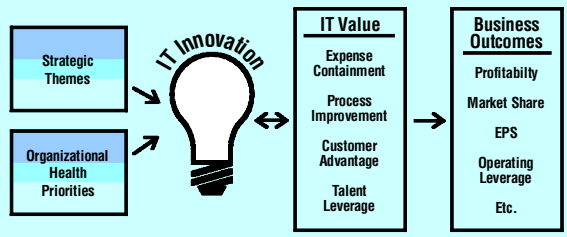
To the extent that IT innovation can be linked to specific business outcomes, measures and value metrics can be established. The linkage is often most obvious in the IT applications area. Here, the ability to establish alignment between IT development hours (or total IT development costs) and business results for a specific application can be reasonably strong. For example, returning to our earlier example of a CRM application, the CFO could link the IT costs associated with developing or maintaining this system to revenue increases per core customer relationship, marginal revenue productivity, cross-selling, or cost of sales trends over time. The specific measures depend, of course, on the business strategy and goals for the company, but the point is still the same; IT innovation should, at some point, result in steady or improved revenue generation, cost containment, operating leverage, or enhanced profitability.

When evaluating how best to measure the value of IT innovation, it is important to remember that innovation can affect any one or all of the IT value dimensions: expense containment, process improvement, customer advantage, and talent leverage. Accordingly, measures of IT innovation need not be linked solely to IT applications. IT infrastructure is often the single largest investment for most companies. While the line of sight to business outcomes is often not as direct as with applications, the CFO, working with the chief information officer (CIO) and business managers, should attempt to establish key measures that reflect the contribution IT innovation makes to overall corporate success. For example, server optimization should lead, over time, to improved e-customer satisfaction and, it can be hoped, to increased purchases per shopping cart. All of these outcomes can be measured, and a portion of the success can be attributed to the server consolidation or optimization of the IT infrastructure.

Measuring the value of people is an area that mandates careful thought and analytic rigor.

To find the measures and metrics that make sense for the company, the starting point needs to be those strategic themes that represent external realities and internal priorities for the next 18 months to three years. The use of strategic themes helps to frame the priorities for IT innovation and begins to establish a framework for valuing innovation through business outcomes. Consistent with the need to ensure that IT remains efficient and credible, innovation measures should also consider those baseline requirements that ensure business continuity and organizational health. These "health" measures are likely to remain reasonably constant over time, whereas those measures that reflect current strategic themes are more likely to change and evolve. Figure 3 shows the steps to understanding the drivers and outcomes of IT innovation.

Figure 3: IT Innovation Linkages



Take the Guesswork Out of Valuation

Valuing IT need not be guesswork. By understanding the ways in which IT creates value for the organization, CEOs and CFOs can formulate analytical frameworks to measure the value of IT capital and operating expense investments as they contribute to enterprise value. After identifying the four major components of IT value, drilling down to the three subcomponents (hard assets, people, and innovation) arrays the task of IT value measurement along a continuum ranging from measuring tangible assets to measuring intangibles.

Measuring tangible or hard assets using both ROI and ROCE analyses clearly yields the most precise measures of IT value. It is also possible to generate values for "semi-tangible" assets like people and intangibles. Using these metrics, CEOs and CFOs can assess the value that is being generated by their IT organizations with greater precision and with much more relevance to business outcomes and enterprise value than in the past. ◆

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