

Stern Stewart Research

The Americas

EVA & Corporate Portfolio Strategy

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- Many companies feel pressed to find exactly where they are creating value and destroying value within their business portfolios. Yet 80% of companies cannot measure returns on assets below the business unit level. In practice, meaningful measures of customer, product and SKU profitability remain a distant dream.
- Strategies fail in the decisions, not the vision. It is the deployment and execution of strategy that requires countless economic, value-based decisions at all levels within the company – integrations, dispositions, closures, outsourcing, licensing, customer & SKU rationalization, and changes to pricing, promotions and value propositions.
- We have found that all too often strategies and strategic execution are premised on flawed measures and metrics, driving uneconomic decisions, sub-optimization, and value destruction.
- We introduce and apply our framework for value-based strategy that draws on both Six Sigma and economic principles to drive value-based strategic change.
- We apply sound economic analysis and progressive accounting practices to unearth the sources of value creation and destruction within a corporate portfolio. We also show how to decide what to do about it.
- We define the key elements of a granular value-based profitability measure, describe what levers can be used to increase contributions to value, show how to categorize business and activities along a spectrum of contribution to value, and how to optimize the value of a portfolio of SKUs, customers, and products.

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INTRODUCTION

Many companies feel pressed to discern exactly where they are creating value and where they are destroying value within their business portfolios. Yet 80% of companies cannot measure returns on assets below the business unit level. In practice, meaningful measures of customer, product and SKU profitability remain a distant dream.

Strategies fail in the decisions, not the vision. It is the deployment and execution of strategies that require countless economic, value-based decisions to be made at all levels within the company – integrations, dispositions, closures, outsourcing, licensing, customer & SKU rationalization, and changes to pricing, promotions and value propositions. We have found all too often that strategies and their execution are premised on flawed measures and metrics, driving uneconomic decisions and value destruction or sub-optimization.

Figure 1, introduces our value based strategy framework. It draws on Six Sigma and economic principles to drive value-based strategic change through operations and the corporate portfolio.

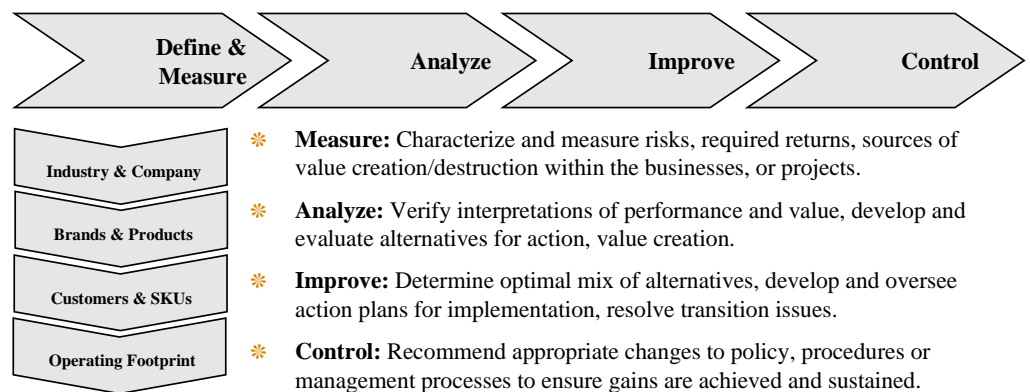


Figure 1: Our Value-Based Strategy Framework

We apply sound economic analysis and progressive accounting practices to unearth the sources of value creation and value destruction within a corporate portfolio. We also show how to decide what to do about it. We define the key elements of a granular value-based profitability measure, describe what levers can be used to increase contributions to value, show how to categorize business and activities along a spectrum of contribution to value, and how to optimize the value of a portfolio of SKUs, customers, and products.

MEASURING VALUE CREATION

Gross Margin or Standard Profit are commonly used measures for low level profitability analysis. At best, “costs” may include all variable costs plus fixed costs unitized over the production quantity, creating severe drawbacks for discerning the sources of value creation and value destruction.

Standard Measures Are Flawed

Standard Profit ignores the cost of capital – the opportunity costs of capital employed in capacity, inventory, receivables, etc. And *excess* (unsold) throughput often *reduces* perceived unit costs, increasing Standard Profit. Excess throughput costs are capitalized into inventory. Because inventory has no income statement cost (and sometimes a false “absorption” benefit) Standard Profit increases with production, even if there is no demand for the goods that are produced. Standard Cost also tends to convert period costs into unit costs – the fixed production costs and the costs of capacity. This leads to a situation where Standard Profit per unit can be maximized by producing as many units as possible, independent of demand.

Strategies fail in the decisions, not the vision ... strategies and their execution are premised on flawed metrics

We unearth the sources of value creation and value destruction within your corporate portfolio



Top line growth and Standard Cost reduction can mask rampant value destruction

Figure 2 illustrates the chronic problem that results from using the ever-popular potpourri of performance metrics – top line growth, market share, gross margin, operating income and Standard Cost – as an implicit proxy for value creation. This company chased these metrics into bankruptcy with a declining return on capital and negative economic profits. Top line growth and Standard Cost reduction can mask rampant value destruction if the costs of capital and capacity are not adequately accounted for and covered.

This company was growing capacity and inventory at a time when markets were already flooded with products. Plant managers are often directed to minimize unit costs, irrespective of actual demand, and will thus produce to, and expand capacity. Gross margins and Standard Profits will increase with production and capital investment, but inventory levels, utilization and ultimately returns on capital and EVA suffer. This company, within a short period of time, found themselves with warehouses full of excess inventory and plant capacity they didn't need.

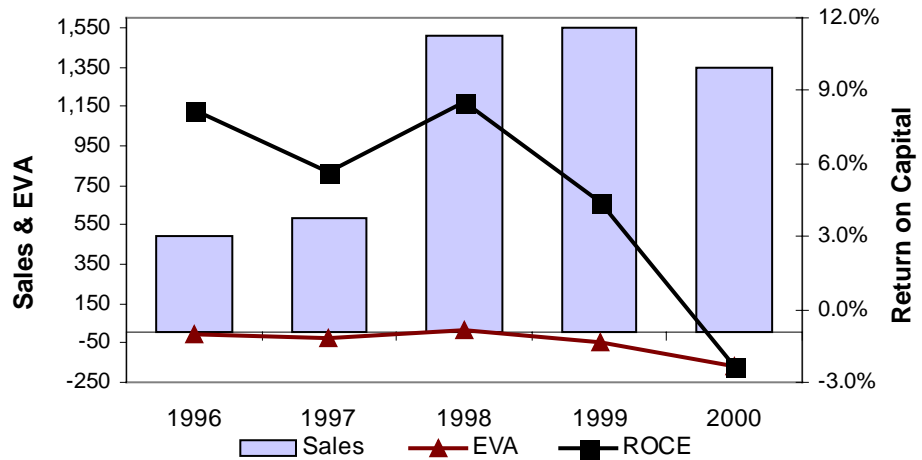


Figure 2: How To Grow Into Bankruptcy

In our experience this case is all too common. Rampant over-capacity plagues many sectors, undermining margins. In some cases, excess inventory reaches a point where product quality, material flow, and order fulfillment suffer. Excess product is often heavily discounted, wholesaled, or scrapped. One chocolate company allowed trade loading to tarnish its brand because of consumer association with stale product. In another case, a company actually rented storage trailers and filled them with excess inventory.

Excess inventory leads to product quality, material flow, and fulfillment problems

Economic Value Added (EVA)

Economic Value Added (EVA) is the most prominent version of economic profit or residual income and is defined as follows:

$$EVA = \text{Net Operating Profit After Tax} - \text{Capital Employed} \times \text{Cost of Capital}$$

EVA simultaneously captures revenue, cost and the cost of capital in one complete measure

EVA simultaneously captures revenue, cost and the cost of capital in one measure. It charges the full cost of your balance sheet to a new economic profit statement. It is the single measure to manage the complex tradeoffs between profit and capital, risk and return, short and long term. But to measure value creation and destruction at low, granular levels within the corporate portfolio (customer, SKU, product, brand) several measurement issues must be addressed.

1. A Cost for Capital

A true economic profit measure must include a charge for the capital invested in the business. Although a capital charge is a necessary component for creating a value based profitability measure, there are issues with how to measure the actual level of capital employed at these low



levels. Capital has two main components, they are net working capital and the fixed assets put in place to provide a platform for doing business.

On the surface, measuring the components of capital would seem to be a simple procedure: Simply measure the point-in-time levels of working capital plus fixed assets, and attribute these to products and customers. But there are difficulties.

a) Actual versus Optimal Inventory

Actual inventory levels are not likely to be optimal. As demonstrated above, traditional performance measurement and incentive systems, which neglect the cost of capital, focus on plant efficiency. Thus, the observed level of inventory does not reflect the level needed to run the business smoothly, thus distorting a forward-looking analysis of economic profitability.

When measuring performance *ex post* on a firm level, actual levels of inventory, accounts receivable and accounts payable must be considered because managers should be held accountable for tying up working capital. However, looking back at our previous example, it can be inappropriate to assign the costs of the excess inventory sitting in trailers *ex ante*. These inflated levels of inventory do not represent the true capital investment needed to sell the product. Therefore, to assess economic profitability on a forward-looking basis, it may be most appropriate to approximate normalized inventory requirements.

b) Customer versus Product Working Capital

Net working capital is especially susceptible to distortion by inaccurately assigning capital costs to either products or customers. While it may be easy to attribute accounts receivable to a customer, it is more difficult to justify that charge when looking at product profitability because the charge is the result of the customer being served. When a product is sold to a large customer, the profitability of that product is influenced by the profitability of that customer.

Retail suppliers are subject to this problem. Many of their products appear unprofitable because they serve a very few large customers and numerous small shops. Large customers have the power to force a supplier into longer terms, higher inventory requirements and lower margins. When the product is sold to the small shops it appears profitable, but when the same product is sold to large customers it looks unprofitable.

c) Fixed Assets

Measuring fixed capital has some of the same pitfalls as working capital. Fixed asset values are not as volatile, but book values do not represent the true opportunity cost of capital employed. Book values can be overstated for plant and property in sectors with chronic over-capacity or high closure costs, and can be understated for equipment that can remain in service long beyond stated lives.

Net realizable value (NRV) is a more accurate measure for the opportunity cost of fixed assets. NRV should be an approximate expected salvage or liquidation value, net of all exit or closure costs (e.g. severance and tax). NRV is a forward-looking measure for the opportunity cost of capital and should be used especially when liquidation can be considered a viable long- or short-term alternative. However, closing facilities with little or no NRV provides no economic benefit beyond potential secondary effects from a reduction in capacity. In economic terms, this capacity is now essentially free.

2. Throughput Accounting

We propose full cost accounting, including the cost of all capital, but with an assumed 100% capacity utilization. Instead of unitizing fixed costs (including the cost of capital) over actual or budgeted volumes, throughput accounting unitizes them by *capacity*. When utilization is less than 100%, a portion of overhead remains an unallocated, period cost. Thus, volume variance does not impose any burden on either customer or product profitability.

... on a forward-looking basis, we approximate normalized inventory requirements

With large customers, product profitability is influenced by profitability of that customer

Book values can be overstated for plant and property with chronic over-capacity or high closure costs

Full cost accounting, including the cost of all capital, with an assumed 100% utilization



A Case in Economic Costing for Joint Products

Joint products are products that are produced together in a fixed or variable ratio. A common example is that of the poultry farmer. Poultry farmers' primary product is chicken breasts, but a chicken also has wings and drumsticks, which may be sold for additional revenue. In other industries, such as textiles and apparel, production often leads to some amount of off-quality product. These "irregular" goods are an involuntary outcome of producing "first quality" products. Over time variation reduction efforts can greatly reduce these irregular byproducts.

Joint production costs are frequently ignored, leading to a skewed profitability analysis that can overstate profitability of first quality products and mislead decision-making for irregular products. With the same production cost applied to both product qualities, irregulars are sold "at a loss" and the cost of quality is not reflected in the analysis of first quality products. Figure 3 illustrates a simple case of joint costs for first quality and irregulars.

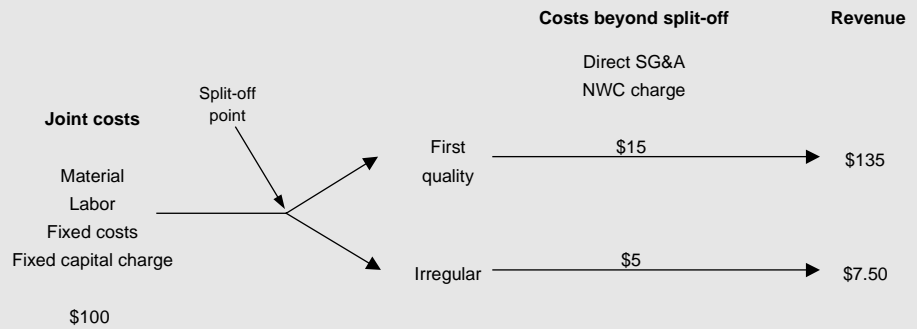


Figure 3: Joint Products And Costs

The first quality product incurs a \$15 cost after the split-off point and brings in revenue of \$135. The sale of irregulars brings revenue of \$7.50 on incremental direct costs of \$5. The next step, outlined in Figure 4, is essentially an allocation of the joint production costs according to the ability to cover those production costs.

	First Quality	Irregular	Total
Volume	90	10	100
Price per unit	\$1.50	\$0.75	
Revenue	\$135.00	\$7.50	\$142.50
Costs beyond split-off	\$15.00	\$5.00	\$20.00
Profit beyond split-off	\$120.00	\$2.50	\$122.50
	98%	2%	100%
Joint cost allocation	\$98.00	\$2.00	\$100.00
	98%	2%	100%
Overall profit	\$22.00	\$0.50	\$22.50

Figure 4: Cost Allocation For Joint Products¹

In our example, first quality products receive a weight of 98% because the \$120 corresponds to 98% of the total contribution made to cover production costs. Therefore, 98% of joint production costs are attributed to first quality products. The overall profit is then the difference between revenue, costs after split-off and allocated costs of the joint production process.

However, this approach is difficult if you cannot match the irregular data back to the first quality data. A practical alternative is instead to use scrap rates. This method recognizes the cost of quality in the production of first quality products. The production costs for the first quality units are inflated by the scrap rate, while production costs for irregulars are set to zero. While less accurate than the joint cost allocation method, it uses information that is readily available and is still far superior to Standard Costing.

Joint production overstates profitability of first quality products...

We use information that is readily available and is still far superior to Standard Costing

¹ Adapted from, Zimmerman, Jerold L., Accounting for Decision Making and Control, McGraw-Hill, 1997.



Traditional Standard Costing makes volume variance a unit cost rather than a period cost. Under this system, increased excess capacity increases Standard Cost and reduces perceived product profitability. If this measure is used to make decisions and unprofitable customers or products are dropped, all remaining customers or products are forced to absorb an even higher fixed-cost burden, making the products appear even less profitable. This “Death Spiral” accounting is even more severe when the cost of capital is also included, making the cost of volume variance that much more significant.

Profitability is now independent of utilization and mix

But, using throughput accounting, profitability is independent of utilization and portfolio mix and capacity decisions can be made more correctly and independently. Additionally, comparisons of customer and product profitability can be made across plants where utilization rates vary.

MANAGING THE VALUE PROPOSITION

Pricing, terms, promotions, selection, availability, process control and quality, packaging need to be reviewed

Measuring and analyzing the sources of value creation and value destruction within your corporate portfolio is only the beginning. Ultimately, improvements must be made to mitigate sources of value destruction while leveraging sources of value creation. Changes in pricing, terms, promotions, selection, availability, process control and quality, packaging and other aspects of the total value proposition will each need to be reviewed in light of the new insights.

Much ado is often made of “loss leader” strategies, intentionally losing money somewhere in order to more than make up for it elsewhere. For example, retailers drop their prices on select visible items (e.g. milk, diapers) to establish an image of “value” pricing in the minds of shoppers. We’ve all heard how Polaroid must sell cameras at a loss in order to make it up in film. However, these strategies, their performance and their value need to be carefully quantified and monitored. Once a star, Polaroid is now a bankrupt company.

The loss leader strategy creates challenges for your action plan. While it might appear that dropping a “loss leader” would improve profitability, it can reduce sales of profitable products and overall profitability. For example, after lobbying for a price increase and working capital improvements, one client was still losing \$2 million per year on a product to a large retailer but retained the customer because of \$4 million per year of related, and profitable, sales.

1. Pricing

Pricing is a primary lever in the value proposition. But generally price and volume vary inversely. Price elasticity of demand is a measure that indicates the percentage change in the quantity of a good demanded resulting from a 1% change in price. This determines what happens to total revenue when prices are changed and quantities demanded react to these price changes. The analysis may be performed at the company level to include the effects of competitive response or, at the industry level, to examine macro consumer response.

2. Cost Structure

The ultimate impact of price changes depends not only on the demand curve but also on the cost structure. The drive for lower unit costs and higher margins often leads to investments in capacity, equipment and new technology. However, these investments often destroy value because profits don’t rise by enough to cover the cost of additional capital employed. For example, the domestic textile industry has seen large investments in new capacity and new technology, increasing both efficiency and capacity. With excess capacity wreaking havoc on both pricing and return on capital, the long-term solution clearly calls for more offshore sourcing and domestic capacity closures. But the lowest cost value proposition is not easy to find. We have found cases where it is the new, “low-cost” capacity that needs to be closed for several reasons such as lower cost of closure, higher salvage value, higher cash operating costs, taxes, more realizable overhead reductions, and misleading profitability (benefiting from higher allocated utilization or higher margin product mix).

Lower cost of closure or exit, higher salvage value, higher cash operating costs, taxes, overhead reductions, and business mix complicate cost structure choices



3. Terms of Trade

In addition to fixed assets, an important issue in low level economic profitability analysis is the net working capital requirements of customers and/or products. Different customers require different levels of working capital. These parameters are ignored by traditional profit measures. But in an EVA system, they are additional levers in the value proposition.

We performed an analysis of capital turns and profit margins by customer in an effort to identify customers with whom there were large potential gains. In cases where a customer was unwilling to accept a price increase, an attempt was made to improve payment terms (fewer days outstanding) or reduce inventory requirements. Sufficient improvements in this area could mean the difference between serving and not serving a customer.

MANAGING FOR BOTH THE SHORT AND LONG TERM

Our Readiness-To-Serve (RTS) framework gives insight into short- and long-term decision making.² The framework breaks economic profitability of customers and products into two groups. The first group includes only the direct operating costs. It includes the direct variable costs of manufacturing and selling products as well as a charge for the net working capital tied up in running the business. The second group consists of longer-term costs of capacity. These costs, called Readiness-To-Serve costs, are often quite independent of volume.

The value of the model comes from its ability to “layer” costs and define value creation on different levels. The EVA Contribution Margin shows whether the business is value accretive in the short term, covering the variable costs, including variable capital costs. Full Cost EVA shows whether the business is value accretive in the long term, covering all costs (including all fixed cost and capital, such as the cost of capacity) associated with that business. Thus, products and customers fall into one of three categories (see Figure 5):

Category 1: Both EVA Contribution and EVA are negative.

Category 2: EVA Contribution is positive, EVA is negative (i.e. the customer/product earns its directly attributable costs).

Category 3: Both EVA Contribution and EVA are positive (i.e., all costs are covered).

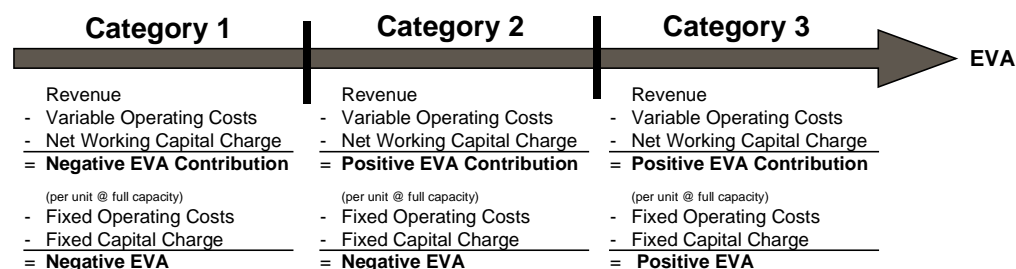


Figure 5: RTS Categorization

In the short run, where the costs of capacity and overhead are “sunk” period costs, it is advantageous to serve all customers that have a positive EVA contribution. All category 2 and category 3 customers should be served. But in the longer run, *all* costs have to be covered or capital should be reallocated and capacity and related overhead costs should be shed. Capacity will be based on the long-term outlook for category 3 customers and products, including category 2 business that can be migrated to category 3 through a better value proposition.

² See Glassman, David. “Contracting for Value: EVA and the Economics of Organizations,” Journal of Applied Corporate Finance, Vol. 10, No. 2, Summer 1997.

RTS gives insight into short and long term decision making

EVA Contribution Margin shows if the business is value-accretive in the short term...

Full Cost EVA shows if the business is value-accretive in the long term

Capacity based on an outlook for category 3 volume, plus category 2 business that can be migrated to category 3

Figure 6 presents a typical profile for a company in a competitive sector facing margin pressures and excess capacity. Often, as illustrated in Figure 6, the short-term decision to serve category 2 customers becomes the company's long term production strategy.

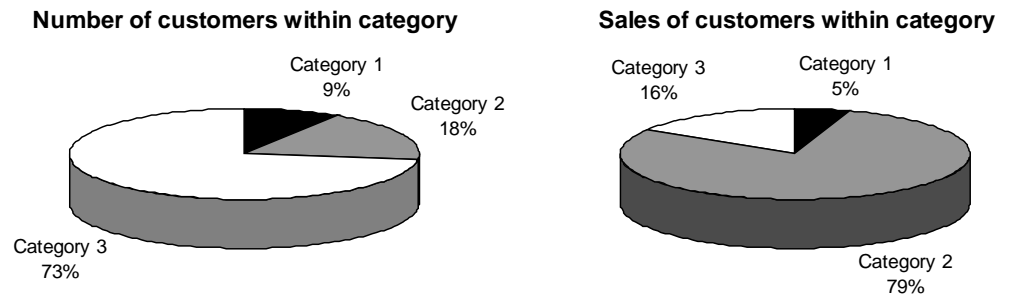


Figure 6: Number And Sales Of Customers Per Category

This company, at some point, had excess capacity, which it filled by producing for large customers. At that time, the large customer contributed to covering fixed costs. However, longer term planning often overlooks the excess capacity issue. In this case capacity continued to expand through operational improvements, new equipment and acquisitions. In the airline industry, this behavior often pushes the company into financial distress. For example, airlines have the ongoing challenge of filling up planes, first with full-fare customers, such as business travelers, and then with restricted fare passengers. The low-fare seats cover variable costs and contribute to fixed cost coverage. Having set a timetable and a predetermined number of planes, the only relevant costs, in the short run, are operating costs. However, when it comes time to redefine the fleet size (i.e. the capacity of an airline), this decision should depend primarily on the projected number of full-fare (category 3) customers.

...“lumpy” nature of capacity costs dictates a minimum capacity... the fixed cost contribution of category 3 is equal to or greater than the fixed cost shortfall of category 2 customers, so EVA is still positive

Technological constraints and the “lumpy” nature of capacity costs can often dictate a minimum capacity (e.g. there are few small aluminum smelters). In these cases, capacity should be filled first with category 3 customers and then with the most profitable category 2 customers, because they, at least, *contribute* to fixed cost coverage. This scenario assumes the fixed cost contribution of category 3 customers is equal to or greater than the fixed cost shortfall of category 2 customers, so that overall plant EVA is still positive. If this is not the case, then neither category 2 nor category 3 customers should be served.

Overall, the long-term outlook for these customers defines the profitable capacity level. The RTS model can support a constant monitoring of cost and capacity, especially when demand is soft. The model is also a useful tool for determining profitable capacity.

WHAT TO DO WITH EXCESS CAPACITY

Using Figure 6 as an illustrative example, nearly 80% of all sales were in category 2, but this number is made up of a handful of large accounts. The profitability of these customers was quite sensitive to value drivers such as terms and inventory requirements. After preliminary negotiations with the key accounts, management believed that it would be able to turn half of these category 2 sales into category 3 sales. Relative to actual capacity, the firm needs to reduce capacity by approximately 50%. However, the firm produced goods in two plants (A and B) of similar size, equipment, and cost structures. So which one should be closed?

The profitability of these customers was quite sensitive to value drivers such as terms and inventory requirements

Figure 7 presents the numbers for these two plants. Plant A is running at capacity whereas Plant B has a utilization rate of 60%. Plant A produces more premium goods while plant B produces more “value” merchandise. Differences in direct costs (material) reflect the higher quality inputs used to manufacture premium products. Utilities and other fixed costs are higher in Plant B in the Standard Cost approach since the overhead is unitized over a smaller quantity. Based on Standard Profit, Plant A is much more profitable and the correct decision would seem to be to keep A and shut down plant B. However, this line of reasoning is flawed because of



two distortions. First, plant A is more profitable partly because it runs at full capacity, which reduces standard unit cost. Second, premium products are produced in plant A. The capacity problem can be addressed by using throughput accounting. To compare plant cost structures, both should be measured based on the same utilization rates. "Throughput profit" corrects for the utilization problem; plant B now appears more profitable, but still less than plant A.

	Plant A	Plant B
Utilization rate	100%	60%
Unit price	\$ 4.20	\$ 4.00
Standard unit cost	\$ 2.65	\$ 3.10
Standard profit	\$ 1.55	\$ 0.90
Throughput unit cost	\$ 2.65	\$ 2.66
Throughput profit	\$ 1.55	\$ 1.34
Capital charge on liquidation value	\$ 0.35	\$ 0.08
Economic cost per unit	\$ 3.00	\$ 2.74

Figure 7: Capacity Strategy Is Misguided Using Standard Cost

To correct for the distortion caused by different product prices, we removed the unit price and looked only at unit cash and economic costs. After making this adjustment, plant A was only marginally better than B. So the question still remained, which plant should we close?

The final factor is the amount of capital tied up in each plant. While we could simply look at the accounting books to see the historical value of the plant and equipment, a better measure would consider only the opportunity (not historic) cost of capital. To do this, we recognized that if a plant is shut down, the manufacturer realizes a liquidation value based on the salvage value of property, plant and equipment, severance payments, tax liabilities and the sale of the land (Net Realizable Value, see above). If it is decided to keep a specific plant, this is the amount of capital tied up and subject to an opportunity cost.

In this case, plant A had a much higher NRV and therefore a higher opportunity cost of not being shut down. Including this opportunity cost in the analysis showed that plant B was actually the "cheaper" of the two. The manufacturer decided to close plant A, realize the significant liquidation value and reduce outstanding debt.

SUMMARY

Management must be able to measure accurately economic profitability at both the firm and granular levels. Common granular profitability measures, such as Standard Profit, have the same problems as standard accounting numbers: They lack a charge for capital employed in the business. Using an economic profit measure, management gets a clearer view of where it is making money and where it is losing. This is the first and most important step toward developing and executing a successful corporate portfolio strategy.

The topics covered in this paper should be considered an ongoing management process, from measuring and identifying value creation opportunities, to renegotiating the terms of money-losing activities to the right short and long-term decisions and adapting capacity to the medium and long term economic outlook.

Continuous monitoring of value creation and value destruction and quick response to the changing economic environment is key to succeed in an economy now characterized by uncertainty and global competition.

The final factor is the amount of capital tied up in each plant... Net Realizable Value

Continuous monitoring of value creation and value destruction is key to succeed amidst uncertainty and global competition

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Past Issues

Why So Many Dotcoms Failed

M&A: Why Most Winners Lose

The Equity Risk Measurement Handbook

EVA & Strategy II: Value-Based Strategic Portfolio Management

Herman Miller: Growth in the New Economy

Best of Times, Worst of Times

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IT Outsourcing & Shareholder Value

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