

## Why Time-Based Profit Metrics Matter in Complex Manufacturing

No one disputes the saying, “You can’t manage what you can’t measure.” But very few decision-makers running complex manufacturers—companies making products in hundreds or thousands of varieties—realize that traditional methods of measuring detailed profitability undercut their control of bottom line results.

If you ask business people for a definition of profit, some will say gross margin, others profit after tax, earnings per quarter, earnings per share, return on assets or return on equity. Still others will spout an alphabet soup of ROS, EBITDA, ROCE, ROI, RONA, EVA, etc. Each one is a measure of profit, but only one summarizes all the others.

As any Wall Street analyst will attest, the ultimate measure of corporate profitability is time-based: Return on Equity. ROE is the ratio of the current *year’s* profit divided by shareholders’ equity (accumulated past profits and equity investments), or profit/equity for that *year*. The higher the ROE, the faster shareholder equity grows as each *year’s* profit adds to the stockpile of shareholder wealth—presumably propelling the share price higher.

Though generating the highest possible ROE is the whole point of financial strategy, the ratio itself is too abstract to be a practical metric for measuring detailed product-by-product profitability needed when making operational trade-offs. Because of this inherent limitation, in the real world of manufacturing, day-to-day managerial decisions are at best only loosely aligned with the overarching strategic goal of raising ROE. To see how this overlooked weakness in traditional profit metrics can be remedied, the profit/equity ratio first needs to be broken down into its three components.

The most elegant explanation of what drives profit/equity is the widely-known, century-old “DuPont Profit Formula.”

$$\frac{\text{Profits}}{\text{Equity}} = \frac{\text{Profits}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Assets}} \times \frac{\text{Assets}}{\text{Equity}}$$

The DuPont Profit Formula is not theory. It’s arithmetic. And this arithmetic is unforgiving. Unless the management team running a complex manufacturing business exerts ongoing, detailed and integrated control over all three ratios, it cannot be in control of the ROE or the destiny of the business.

Of the three ratios, by far the simplest to control is assets/equity, the realm of “financial engineering.” If a manufacturer has no debt, its assets are paid for by shareholder equity and its assets/equity ratio equals 1. But if those assets are financed by equity and debt, the more debt the business carries, the more assets it can acquire with the same equity dollars. Financial leverage can work wonders in boom times. But, of course, too high an assets/equity ratio can lead to trouble in tough times.

From the standpoint of gaining and sustaining competitive advantage, however, the assets/equity, or debt leverage, ratio is not that interesting. Bankers and financial markets allow roughly the same ratio of debt leverage for the competitors in a given business segment since those players face similar operating risks. In short, trying to beat competitors’ ROE over the long-term by overleveraging is rarely successful, because it is so risky.

Logically then, to continuously outperform the competition and optimize ROE, complex manufacturers need to maximize the combined result of the other two ratios: profits/sales x sales/assets, namely, profit/assets.

Of these two components, the profit/sales ratio, or product margin data, gets enormous attention by every manufacturer. To calculate the profit generated by each unit of each product shipped or each dollar of revenue generated, organizations expend vast resources to accurately calculate the full cost of each product type made. Teams pound away at costing studies, standards setting, activity-based costing, margin analysis, etc. in an ongoing effort to refine the profit/sales figures for each of the various products.

In stark contrast, no such claim of relentless diligence can be made for measuring and exploiting the equally crucial sales/assets ratio—how fast the products flow through the equipment. Complex manufacturers do, of course, use production control data to measure the production throughput rates of their various products. But virtually all complex manufacturers lack access to advanced time-based metrics that integrate detailed production speed data with detailed margin data to calculate the time-based profit metric of profit/asset (profit per asset hour) for each product. And without that time-based, operational measure of profit to inform decision-makers, pricing, production and sales plans cannot be properly aligned with the goal of driving up the ultimate time-based profit metric: ROE.

In the simplest example, a production line makes a per unit margin of \$50 on Product A and only \$25 on Product B. But is Product A twice as profitable from a ROE standpoint? What if making Product A takes three times as long to flow through the key production step? And if B throws off cash faster than A for each hour of time consumed on expensive production assets, by exactly how much would one be willing to cut the price of (the *lower* unit margin) Product B to take market share from the competition?

In an ever more customized world of manufacturing, with its blossoming proliferation of product types and customer groups, where producers manufacture thousands of product varieties on many lines across multiple plants in widely varying quantities for hundreds of distinct customers all paying different prices, do management teams of complex manufacturers really see how to best commit capacity to maximize total cash flow, EBITDA, and ROE? Do they know with precision and confidence the most competitive price they can profitably offer on a given day to a particular customer for a specific product quantity? Unless a complex manufacturer already uses comprehensive time-based profit metrics in their decision-making processes, by definition, they have not yet integrated their sales/assets (production speed data) with their profit/sales (unit margin data) to measure and manage their profit per asset hour, which in turn leaves them unable to achieve their full ROE potential.

## About Profit Velocity

Profit Velocity evolved from its heritage as a software company to become a highly specialized data analytics advisory services firm. Typically, our proprietary, patented time-based data visualization and analytics capabilities are leveraged by financial consultants whose engagements serve private equity-sponsored and corporate complex manufacturers. Time-based profit metrics enable our partners to help manufacturers tap previously undetectable revenue and value creation opportunities. Our detailed profit analytics and what if planning capabilities allow decision-makers to see exactly how quickly their products and customers actually make money and pinpoint ways to adjust to pricing, production, and sales strategies that will enhance return on equity.

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