

Lean Manufacturing Advisor

STRATEGIES AND TACTICS FOR IMPLEMENTING TPM AND LEAN PRODUCTION

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Overcoming the Obstacle of Accounting

Traditional Financial Measures May Fail to Reveal Benefits

Question: You're improving operations by implementing lean manufacturing in your factory, but your financial reports don't reflect the improvements. In fact, the reports may say things are getting worse. What do you do?

Answer: Change accounting systems.

That's not a joke. The truth is that standard cost accounting systems may not only misrepresent the benefits of lean production, but can undermine a lean transformation by driving the wrong kinds of behavior. This occurs because these systems measure results in some ways that lack meaning or are irrelevant to actual performance. The solution is to focus on meaningful measures and eliminate measures that conflict with lean principles.

"You have to look at performance measurement because whatever you measure does influence how people behave — and a lot of the traditional measures don't work," says Oreste Fiume, vice president of finance at Wiremold, which has been on a lean journey since 1991. "You have to look at cost accounting itself."

The first step in the process is to recognize that a lean transformation must include accounting.

"A lot of companies think of lean as a manufacturing thing. As a result, they don't get very far with it," Fiume explains. "They don't understand that the whole idea of lean is a business strategy; it's not a manufacturing thing, it's not an inventory control thing. It's a business strategy of time-based competition. Therefore, everything in the company has to be looked at in terms of that strategy."

Mark DeLuzio agrees. DeLuzio is the founder of Lean Horizons Consulting, and served as a top executive at the Jake Brake division of Danaher Corporation, an early implementer of lean. He is also a Certified Management Accountant and has published papers on JIT accounting.

"Most companies address lean as a manufacturing phenomenon and not a business enterprise phenomenon," he says. "And what happens is the accountants never get educated in lean. They have to get on teams, and you have to really stress the fact that if every department in the company doesn't change, you're not going to get a lean enterprise."

"Most of your measurements ought to be quantity-based measurements, not dollar-based measurements."

Oreste Fiume, Wiremold

Fiume makes the point even more emphatically. The accountants, he says, "have to be out there on the shop floor in their blue jeans working on kaizen teams so they understand what the transformation is all about."

Misguided Accounting

The problem with standard accounting is that it often motivates non-lean behavior. One of the prime examples is absorption accounting, in which overhead expenses are "absorbed" into inventory based on labor hours or machine hours. That means that "the more I make, the better my absorption rating is. That doesn't necessarily correlate with the objectives of lean, where more isn't necessarily better," says DeLuzio.

Fiume adds that under absorption accounting, "if you don't create enough labor hours or machine hours you don't 'absorb' overhead, and that becomes an unfavorable variance and a negative to the P&L. Come the end of the period, it

Revealing the True Benefits of Lean

These financial statements for a fictional company, developed by Wiremold Vice President of Finance Oreste Fiume, illustrate how standard cost accounting can hide the benefits of a lean implementation - and how a revised financial statement can reveal them.

The statements show a company in the early stages of implementing lean manufacturing. The first, standard statement shows that in the first year, sales went up to \$100 million, but gross profit stayed the same and the profit margin declined. The normal reaction of a CEO, Fiume says, would be to call for a halt to the lean initiative.

However, the alternate presentation demonstrates that "a lot of good stuff is happening," he adds.

Total materials costs did not increase as much as sales, and total processing costs actually went down. Scrap is down significantly, which likely means an increase in quality. "The reality is, my manufacturing costs are really very good compared to the increase in sales," Fiume notes. (As an aside, he observes that the jump in the cost of benefits might prompt the CEO to talk to his human resources director.)

"What really was happening was that last year, we were building inventory. This year, we're decreasing inventory. By isolating that in a separate line item, we can clearly see what's happening in manufacturing," Fiume says.

Exhibit 1: Standard Cost Profit & Loss Statement (000s)

| | <u>This Year</u> | <u>Last Year</u> |
|------------------------------|------------------|------------------|
| Net Sales | 100,000 | 90,000 |
| Cost of Sales: | | |
| Standard Cost | 50,000 | 45,000 |
| Purchase Price Variance | (1,000) | 1,000 |
| Material Usage Variance | 2,000 | 4,000 |
| Labor Efficiency Variance | (1,000) | 1,000 |
| Labor Rate Variance | 5,000 | 6,000 |
| Overhead Volume Variance | 8,000 | (3,000) |
| Overhead Efficiency Variance | (3,000) | 3,000 |
| Overhead Spending Variance | 4,000 | (3,000) |
| Total Cost of Sales | 64,000 | 54,000 |
| Gross Profit | 36,000 | 36,000 |
| | 36.0% | 40.0% |

He also points out that, over time, gross profit margin will eventually increase as a lean initiative continues. At Wiremold, he states, gross margin increased 13 percentage points over a nine-year period.

One other point: At this fictional company, inventory costs have declined a total of \$10 million (\$6 million in material content and \$4 million in labor and overhead content). With a \$10 million decrease compared to \$10 million in inventory spending the year before, that means the company has seen a \$20 million increase in cash flow.

Exhibit 2: An Alternate Presentation (000s)

| | <u>This Year</u> | <u>Last Year</u> | <u>%+(-)</u> |
|----------------------------------|------------------|------------------|---------------|
| Net Sales | 100,000 | 90,000 | 11.1% |
| Cost of Sales: | | | |
| Purchases | 25,300 | 34,900 | -27.5% |
| Inventory (Increase) Decrease: | | | |
| Material Content | <u>6,000</u> | <u>(6,000)</u> | |
| Total Materials | 31,300 | 28,900 | 8.3% |
| Processing Costs: | | | |
| Factory Wages | 11,000 | 11,500 | -4.3% |
| Factory Salaries | 2,100 | 2,000 | 5.0% |
| Factory Benefits | 7,000 | 5,000 | 40.0% |
| Services & Supplies | 2,200 | 2,500 | -12.0% |
| Equipment Depreciation | 2,000 | 1,900 | 5.3% |
| Scrap | <u>2,000</u> | <u>4,000</u> | <u>-50.0%</u> |
| Total Processing Costs: | 26,300 | 26,900 | -2.2% |
| Occupancy Costs: | | | |
| Building Depreciation | 200 | 200 | 0.0% |
| <u>Building Services</u> | <u>2,200</u> | <u>2,000</u> | <u>10.0%</u> |
| Total Occupancy Costs | 2,400 | 2,200 | 9.1% |
| Total Manufacturing Costs | 60,000 | 58,000 | 3.4% |
| Inventory (Increase) Decrease: | | | |
| L & O/H Content | 4,000 | (4,000) | -200.0% |
| Total Cost of Sales | 64,000 | 54,000 | 18.5% |
| Gross Profit | 36,000 | 36,000 | 0.0% |
| | 36.0% | 40.0% | |

forces people on the shop floor to basically create hours to avoid unfavorable overheads, and there is no linkage between this and the products that customers are actually buying."

Brian Maskell, head of Brian Maskell Associates and a specialist in lean accounting, agrees. Maskell is a regular speaker at Productivity, Inc. conferences; in his conference presentation, he lists a variety of ways in which standard accounting creates problems in a lean environment.

These include the aforementioned focus on labor efficiency and utilization, which encourages large batches and over-production; variance reporting, which can lead to "cherry-picking" and out-of-sequence production; a focus on costs

rather than a focus on the customer; a regular month-end push; and encouragement of capital investments in large, expensive, specialized equipment.

Maskell also notes that standard accounting can fail to motivate lean behavior: it does not identify obstacles to flow, therefore hiding waste; it does not actively support continuous improvement; it has no focus on the value stream; performance measures are not balanced; and it discourages empowerment and teams.

DeLuzio offers this example: "Let's say my standard cost is \$10. My actual cost in January is \$7, in February \$8, in March \$9. Each month I incurred a favorable vari-



ance, but the trend is going in the wrong direction. (Standard accounting) masks the phenomenon of continuous improvement.”

Another problem can occur not with accounting systems, but in the way product prices or sales terms are structured. In the past, Fiume notes, Wiremold sales terms “were driving customers to order in batches, which is contrary to what we’re trying to do in lean.”

Wasteful Accounting

One of the first steps is to apply lean principles to accounting operations. Lean is all about eliminating waste, and “accounting processes contain lots of waste,” Fiume observes.

Maskell, in his presentation, notes that this is true in several ways. One is the existence of too many transactions. “Transactions are to lean accounting as inventory is to lean manufacturing,” he states.

Other wasteful processes, he says, include transaction-based operational control systems, budgeting (which he describes as often “wasteful, time-consuming and ineffective”), complex financial accounting and expense control methods, plus reports, meetings and disputes.

All experts stress the importance of including accounting and accountants in the lean transformation, and doing so early on in the process.

“If they don’t understand the essence of lean, they’ll never understand how the measures they’re holding the company to are promoting non-lean behavior,” says DeLuzio.

Fiume suggests that “you have to start identifying what changes you have to make to the accounting system that are concurrent with changes in the operation. You can’t go any faster or slower than the operational changes. As the operation changes, the accounting systems have to evolve with it.”

Fiume questions the whole basis for cost accounting: “We don’t have a system that, on an ongoing basis, can tell us the cost of an individual item. That doesn’t mean we can’t calculate it when we need to, but when we need to is pretty rare. When you talk to people who want that and ask them why they need it, the first thing they say is so you can set a selling price. The reality is that most businesses don’t have the ability to set a selling price on a cost basis. They set a selling price based on the market.”

A second basis for cost accounting, he adds, is to value inventory. However, lean manufacturing may increase inventory turns to the point where a company has only a few weeks worth of inventory — or less — on hand. When that point is reached, “I can value the material content pretty easily, and labor and overhead — I know pretty clearly what that is. I can capitalize it with a journal entry, and I don’t need this massive transactional system.”

DeLuzio says that at Jake Brake, “we threw away variance analysis altogether.” Maskell agrees with that approach, recommending the elimination of variance reports.

Jake Brake, DeLuzio says, did not eliminate cost accounting, but “we actually created direct costing centers for every cell that was created in the company. We had 50-odd cells, and 50 cost centers, budgeted with all overhead, supplies, materials, tooling, labor, machine depreciation, and we were able to calculate unit costs. It was a very direct costing method. It gave that manager control over his own destiny.”

Better Accounting

However, it’s not enough just to eliminate unnecessary measures. It’s also important to focus on appropriate measures.

Fiume comments, “We believe that most of your measurements ought to be quantity-based measurements, not dollar-based measurements. For example, one of our objectives is to reduce defects by 50 percent each year. That’s a quantity-based measure. But that’s an actionable measure. People can do something about it.

“A measure I consider non-actionable is return on investment. We don’t calculate it. We don’t report it. We believe that if you pay attention to all the basic things, ROI will end up improving.”

DeLuzio suggests that when absorption accounting numbers look bad because of a lean implementation, “you need to make corresponding offsets. Travel, supplies, tooling, people — it could be any number of those things. When you look at waste elimination in the company, it often translates into ‘we don’t have to spend that money anymore. We don’t need supplies or six months worth of tooling.’ You cut back on spending that way. That should offset a good portion of the absorption hit.”

At the cell level, Maskell recommends setting new cell-level performance measurements and targets, and eliminating cell operational transactions through backflushing. In the value stream, his proposals include integrated performance measurements at value streams and strategic or corporate levels; direct costing with ‘features and characteristics’ replacing standard costing; and value stream cost analysis linked to sales and operations planning. And throughout the supply chain, Maskell recommends target costing driven from the voice of the customer linked to features and characteristics; target costing driving internal product and process design; and target costing driving supplier product design.

Fiume also puts strong emphasis on revamping the design process. “Depending on which book you read, most studies indicate that 80-90 percent of the lifecycle cost of a product is committed during the design stage,” he says. “That means that everything we do on a day-to-day basis only affects 20 percent of the lifecycle cost. That’s scary. Design is usually defined as fit, form and function. We should add cost. The product development methodology we use is called QFD — quality, function, deployment — and within that is where we use the concept of target costing. It

becomes part of the specifications for the engineering team, and that means that the marketing people have to commit to a market-based selling price before the product is designed.”

Value-Adding Accounting

In changing accounting processes at Jake Brake, says DeLuzio, “the financial integrity of the system did not get compromised at all. We kept that intact. In fact, we enhanced the management decisions that were made because we provided people with better information.”

Within the accounting department, he says, kaizen initiatives reduced the time needed for SEC filings and corporate financial reporting by two-thirds. With the time that was freed up, he adds, “our people are going to be business accountants and navigators, and help our business teams, as opposed to being historians.”

Fiume agrees that simplifying accounting enables a company to “free up time that’s devoted to clerical activities and allow accountants to spend more time on value-added work. As you move into lean, it actually makes everything a lot

easier. You end up eliminating a lot of transactions.”

For example, companies typically devote significant time and effort to creating bills of materials and routings, with accompanying move tickets and labor tickets. “When you move to lean, and set up a cell, you don’t need a routing,” Fiume explains. “What is it going to say — make it? You don’t need labor tickets, you don’t need move tickets because it’s right there. You can eliminate huge amounts of transactions that are, in effect, really nothing but waste.”

Companies often encounter resistance from accounting departments to making changes. Fiume observes: “There are lots of reasons that people can find to avoid doing this. That’s the business transformation. With the accounting transformation, you get a lot of the same excuses: ‘We can’t do away with the individual product costs. The auditors will never buy it.’ Those are the traditional obstacles. When you think of the transformation to lean as a manufacturing thing, the accountants will generally get their way. When you think of lean as a business strategy, then those objections don’t stand up anymore.” ■