

Lean Accounting for Manufacturers A Tool For Lean Transformation

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Chapter 12

**Authored by Leading Manufacturing Journalist:
Thomas R. Cutler**

12

Lean Accounting for Manufacturers

Thomas R Cutler

Lean accounting cost management provides a fresh way to look at accounting for operations in manufacturing companies. Lean cost management provides the tools that help staff to understand the changing physical operations in the plant. Traditional accounting is not spoken by the staff on the shop floor who have to use the information to improve. Accounting information must be translated and should be easy to understand, actionable, and timely.

Keep Score: Lean Accounting

Manufacturers determine the operational elements in the value stream to track. Those elements are shown in the top half of the scorecard; in the bottom half of the scorecard financial performance is shown. This includes common elements such as sales per employee, inventory turns, variable margin, and gross margin.

Operational items are displayed on the top of the scorecard because it is where people have to focus. If the operational scorecard is improved, the financial scorecard will also improve. To test the efficacy of the operational parameters, improvements are made on the operational side that do not improve the financial picture were the wrong operational parameters.

A traditional Profit and Loss (P&L) statement illustrates sales, cost of sales based on standard costing, labor variance, material variance, overhead variance, and labor rate variance. None of these data provide actionable responses in a lean accounting environment. In lean accounting, manufacturers look at the variable costs each month and decide which cost categories should be the focus for continued process improvement.

The Role of the Demand Driven Supply Chain in Lean Accounting

“The central hallmark of demand driven supply chain is a digital kanban system, which achieves savings in several key areas,” according to Stephen Parker, CEO of North Carolina-based, Datacraft Solutions.

- It reduces the need to build inventory. All production is initiated based on the immediate needs of customers. Inventory turns for digital kanban parts are optimized (a definition of lean accounting.)
- Time spent by customer service communicating on expedited parts issues is practically been eliminated through a demand driven supply chain. Often customer service staff members spend 40% of their time expediting part orders prior to digital kanban implementation.
- Sales have increased with the benefit of the e-kanban program because the copper manufacturer no longer uses capacity to build parts without an order to buy NOW. 100% of production capacity is utilized to build parts that are already sold as soon as they hit the shipping dock.

Parker insists, “Capacity is expensive and a demand driven supply chain via digital kanban provides lean accounting efficiency and elimination of waste.”

Business Process Efficiencies Translate into Lean Accounting

Business process efficiencies increase with digital kanban, since orders are no longer run through the scheduling department, cutting shop orders and batching them. Demand driven supply chain replaces a very long chain of events in the order entry and scheduling function. Customer needs are displayed in real time. Everyone, including the customer, can see the status of any digital kanban at all times.

This scorecard methodology along with digital kanban assists all manufacturing staff to understand the business and see the impact of their efforts manifested in

better results. People want to know what they can do to make the business better, and link what they do to the financial results. Lean accounting provides a sense of ownership. Manufacturing staff now can understand what is occurring on the shop floor and make the appropriate changes.

Statistical Process Control: Critical to Lean Accounting Practices

Saving money from expensive audits and material cost reduction influences the funding of quality standards. “This should be the standard,” was the comment of an auditor made during a recent audit of the McCormick Flavor Division (South Bend, Indiana) of McCormick & Company, Inc. The auditor was referring to the way his supplier (the McCormick Flavor Division) presented their data for review. The presentation of the data and facts that the supplier made available online in the conference room during the audit was appreciated, yet must become the quality standard for all food companies.

According to John Campbell, Quality Manager, McCormick & Company, Inc., “The auditor really appreciated how open we were with our data and overall system. Having the system online and available during the audit let him know we have nothing to hide. However, just as important, we can pull the charts and data that he asks for in a few minutes. All of this adds up to a huge time saver for us – probably on the order of a couple man-days per audit.” Like every company, customer satisfaction is important to McCormick. They make sauces, dressings and condiments for the world’s largest restaurants and fast food chains. According to Campbell, the smooth audit is just the tip of the iceberg of the benefits the company has seen from using Hertzler Systems’ GainSeeker Suite of products.

Reducing Material Costs

“This new technology system helped us reduce material costs by 10-30% on an annual basis,” noted Campbell. “Of all the plants in the McCormick Flavor Division, our plant is consistently at the top of the list for efficiency of material usage and by a substantial margin. We trace that directly back to our use of the Hertzler software,” added Campbell. “One application that has generated substantial savings has been on our fill lines. Reducing over pack by as little as one tenth of a gram per line had a huge impact on our material costs. We have achieved reductions of up to three tenths of a gram across all our fill lines. I can’t tell you how much money that is (because it

is proprietary information) but it is a big number,” suggested Campbell. According to Hertzler’s CEO, Evan J. Miller, “McCormick uses control charts to listen to the voice of the manufacturing process. As the company has learned to understand the natural variation in their process, they have been able to adjust the process so that it is closer to target the fill weight. They also better understand the variation in the system, which makes the process tighter.” (Evan Miller joined Hertzler Systems Inc., in 1984. For the next seven years, he held positions within the company in sales, marketing, technical support and training. In 1991, when founder Paul Hertzler retired from the firm, Evan Miller became President and is now co-owner of the company). Another area where the company has seen substantial savings has been in the premix of materials. “All too often, the variation that our designers allow us is completely arbitrary,” commented Campbell. “It has no discernible impact on the taste of the product and it has nothing to do with what we can actually produce. Now that we understand our equipment, our customers have reset the limits to match our capability. We are able to reduce the amount of waste because it did not meet an arbitrary specification. This has also given us an enormous savings.”

The Enterprise Dashboard Monitors Scrap Defects

The Enterprise Dashboard is the latest addition to the GainSeeker Suite, which allows manufacturers to focus attention on critical issues and provides one-click access to the underlying data. A leading producer of meat products in the US will use the Enterprise Dashboard to monitor scrap defect percentages across dozens of production facilities. Users track defect percentages, cost of poor quality and profitability, as well as drill down by business unit, plant, line and product lot number. Dashboard tools must make real time data more visible, accessible and actionable; it must also be easily customized for users up and down the organization. Due to the complexity of food processing, dashboard tools must roll up complex processes into convenient, easy to understand graphics and tables.

Next Steps in Using the Data

Of course, not all of these benefits would be available if the cost of obtaining data were too high. McCormick Flavor uses many of the new system’s automated data collection capabilities to streamline and reduce these costs. One of the applications on the drawing board is to connect to temperature monitors on coolers.

Technology systems for manufacturers must provide seamless, accurate data acquisition solutions for the business enterprise as well as experience in working with a large and diverse customer base in the service, transactional chain and the manufacturing environments. Leading manufacturers have found they can easily acquire data from any process, analyze that data in real time, and instantly notify process owners of process variation. These capabilities help them reduce costs, cycle time, errors, defects, increase profitability and customer satisfaction. According to Miller, “These core competencies turn data into knowledge and quality.”

Gaining Control

Taking a broader view of control, Statistical Process Control (SPC) in industry is being used more frequently to ensure that maximum production can be quantified en route to the warehouse. Reducing overpacking and material costs at the same time is becoming vital as ingredient costs continue to rise. “When companies overpack, they are giving money to their customers, and when they underfill, they are giving money to the regulators,” said Miller. GainSeeker monitors this process and demonstrates that overpacking is just giving away product. In high-volume operations, this quickly adds up to tens or hundreds of thousands of dollars. If companies underfill, the fines and damage to company reputation are even more costly. The first task of any net contents program is to meet the requirements of NIST Handbook 133 and other governmental regulations for compliance to net content declarations on packaged goods.

However, the National Institute of Standards and Technology (NIST) 133 standard does not specify limits for overfilling; that becomes a costly challenge for all manufacturing firms. Fill weights must be above the Maximum Allowable Variance (MAV) but as close as possible to the label declaration. The classic method of meeting the regulation is to shift the curve up, so that the average is at or above label, and the lower tail is just above MAV. SPC technology solutions allow industrial firms to tighten the curve so that there are no MAVs and less overpack.

Streamlining data collection by connecting directly to all brands and models of scales and balances provides either simple or complex calculations to derive volume, whether immediate or “roaded.” As each new measurement is entered into the system, real-time statistical tests to this data will immediately alert production if a process change is detected. Beyond reacting to real-time alerts, powerful analysis tools to pinpoint

sources of variation in the fill processes makes it easy to discover which fill heads, material suppliers, operators, product lines and other variables have the greatest impact on process variation – individually or in combination. Armed with this information, companies are making better decisions on process improvements that reduce process variation and shift average fill weights closer to the declared label weights.

One reason why SPC solutions are widely used is that they easily convert raw data (such as overpack weights) into something everyone understands – money. Miller gave this example: “Imagine reporting, ‘last month we gave away \$43,221.53 of product’ instead of ‘last month we had an average overpack of 22 g per product.’” Accurately calculating overpack costs by linking directly to a baking cost accounting system and production systems provides the kind of lean accountability that is normative in new technology solutions.

The US Food and Drug Administration (FDA) Code of Federal Regulations (21 CFR Part 11) establishes the criteria under which electronic records and electronic signatures will be considered equivalent to paper records and handwritten signatures. Manufacturers of products regulated by FDA must apply this rule to records in electronic form that are created, modified, maintained, archived, retrieved or transmitted. Not all SPC solutions support 21 CFR Part 11; this is an immediate selection criteria qualifier. ISO 22000 and HACCP define a system for ensuring the safe production and packaging of food. Miller noted that any SPC solution must leverage existing HACCP data by using modern statistical techniques to help improve process stability over time. These solutions must record measurements for variable data in a database for easy analysis and reporting as well as the ability to immediately identify unstable conditions using statistical alarms, which are much more sensitive than pass/fail data. SPC technology must allow companies to analyze and report results based on product lines, point in process, shift, operator and other critical variables such as track on-time data collection by department, shift and operator to ensure compliance with safety standards.

How Warehouse Control Systems Contribute a Lean Accounting Practice

Warehouse Management Systems (WMS) are often insufficient for manufacturing production and supply chain efficiency. The batch data often used by a WMS in industry falls short of the real-time data needed to meet the strict Hazard Analysis

Critical Control Point (HACCP) requirements. And the real-time pick-and-pack requirements for many industries on the plant and warehouse distribution floor are rigorous because the Bioterrorism Act necessitates near immediate responses for possible contamination. Increasingly, Warehouse Control Systems (WCS) are being used to overcome these mandates.

A warehouse without a WCS operates as A separate islands of automation, with each system working independently. Without a WCS, the conveyor system may decide where to route a carton with no information from the other systems. The decision to divert a carton (or not) to a specific zone will depend on whether the carton has a “1” or “0” in the barcode. Another approach would be to load a routing table into the programmable logic controller. However, this fixed table does not allow flexibility. “Both of these techniques are very basic and give little or no control,” said Jerry List, vice-president of QC Software, Cincinnati, OH. “One alternative used by many companies is to enlist a single supplier to provide all material-handling equipment. The equipment provider supplies the control software and interfaces to the host system. However, the system will be very basic, and any changes to the equipment layout will require modification to the software code. This is the easiest option, yet often the most expensive.”

Some operations choose a WMS that already has built-in integration to the material-handling equipment systems. Some equipment suppliers provide interfaces; many do not. Customized modifications to the WMS are cost prohibitive.

Less Costly Option

Making modifications to any software package can be a double-edged sword. While WMS modifications will make the system closely fit requirements, they incur a maintenance problem of reapplying those modifications with every upgrade. List noted, “The cost of upgrading may prevent baking and snack companies from taking advantage of some new functionality that would benefit the operation. A system integrator can build a complete system, selecting the best WMS and material-handling equipment for industry specific needs; they are, in effect, building a custom WCS.” Such modifications have the inherent problems of any custom software project including “bugs,” delays, maintenance and high costs.

Customer Requirement: Value-Added Services

As noted in *Modern Materials Handling*, Jerry List articulated, “For companies selling directly to consumers, the ability to personalize products before shipment is a differentiator. Take a company in the direct-selling industry whose products are sold by consultants to consumers in their homes. Consultants not only need all the items they have ordered, but they need an order sheet for each of the consultant’s customers. What’s more each order may require additional documentation, like certificates of authenticity or warranties. A lot of that personalization happens at the pack out station,” says List.

The solution: A warehouse control system. One of QC Software’s direct-selling customers created two packing lines: One for small orders that can be quickly packed out without creating bottlenecks and another for larger orders requiring additional documentation. “In this case, orders come down to the warehouse control system,” List says. “It knows from the WMS where inventory is located, and dynamically determines the best picks to balance the workload on the line in real-time.”

Once items have been picked to cartons, the WCS sorts them to a packing station. There, a bar code label on the carton is automatically scanned, which generates a list of value-added items for the operator to add to the carton. “Often, those items may be in a pick-to-light area, which directs the picking process,” List adds. Once the documentation has been added to the carton, it’s sealed and sorted to the shipping area, where compliant labeling and any shipping labels are applied.

Lean Accounting requires the examination of all processes and continued process improvement. Statistical Process Control, Warehouse Control Systems, and Digital Kanban solutions are three central areas where process improvement can begin.

(Thomas R Cutler is the President and CEO of Fort Lauderdale, Florida-based TR Cutler, Inc, (www.trcutlerinc.com). Cutler is the founder of the Manufacturing Media Consortium of three thousand journalists and editors writing about trends in manufacturing. Cutler is a member of the Society of Professional Journalists, Online News Association, and American Society of Business Publication Editors, as well as author of more than 300 feature articles annually, regarding the manufacturing sector. He can be reached at trcutler@trcutlerinc.com).