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LEAN INVENTORY VALUATION: LEAN ACCOUNTING AND GAAP COMPLIANCE

Each lean manufacturing company must create a lean inventory valuation methodology that works best for itself in complying with GAAP and being consistent over time.

Nicholas S. Katko and Scott A. Olinger

Lean accounting refers to a collection of principles, practices, and tools that are used by lean companies to measure the business, control operations, analyze and make sound financial decisions, and improve financial processes. Lean accounting practices have been around since the early 1990s, and since then there have been some that argue that lean accounting practices don’t comply with generally accepted accounting principles (GAAP). This argument usually leads to a debate about lean accounting versus conventional inventory valuation systems.

Conventional inventory valuation is usually done using an enterprise resource planning (ERP) system, and it does a good job of inventory valuation for GAAP purposes in companies with high inventory. A very simple explanation of how this works is as follows: Each purchased part is assigned a cost. Labor and overhead rates are created for each production work center. Production reporting systems track the movement of materials from receipt through the production process, and finally to shipment. Production reporting builds a product cost through the reporting of completed production. The ERP system can calculate the cost of any individual product, the total raw material, work in process, finished goods inventory, and the cost of goods sold at any point in time. It also produces many types of variances, comparing the actual to the set rates in the system.

The process of setting material costs, labor rates, and overhead rates is commonly called setting standards, which can be set annually or more frequently. How each company determines its rates is unique to each company. Conventional inventory valuation systems that set rates are commonly referred to as standard costing systems. For the sake of simplicity, this article will use the term “standard costing” when referring to these conventional inventory valuation systems.

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Standard costing systems can be time-consuming and complex to maintain. Factors that can impact the maintenance of standard costing systems include, but are not limited to, the number of raw material items purchased, raw material price stability, the number of manufacturing work centers requiring labor and overhead rates, rate calculation, and the analysis of the output such as variances and absorption numbers.

The issue is not whether lean accounting complies with GAAP, or whether lean accounting is better than standard costing. The real issue is how does a lean manufacturing company with low inventories comply with GAAP in terms of properly stating inventory and cost of goods sold in the leanest way possible.

The proper valuation of inventory for GAAP is a complex issue when inventories are high because the materiality of misstatement can have a dramatic impact on reported profits. However, in a lean company, low inventories reduce the materiality and create the opportunity to comply with GAAP using simpler methods.

In this article, we will look at the relevant accounting principles, then explain in general terms how and why lean accounting complies with GAAP, and finally look at some lean inventory valuation methods that companies use today.

The accounting principles

Accounting standards are governed by GAAP in the United States and by International Financial Reporting Standards (IFRS) throughout the rest of the world. For reference purposes, inventory valuation is covered in U.S. GAAP by Accounting Standards Codification Topic 330 (ASC 330) and internationally by International Accounting Standard No. 2. There are a few technical differences in these standards. What is important to know is that both standards basically say the same thing about inventory valuation requirements.

For the sake of simplicity, this article will use the acronym GAAP to mean both U.S. GAAP and IFRS, and will periodically cite ASC 330.

The valuation of inventory and cost of goods sold is one of the most important issues for financial reporting because it is material to the proper determination of income. Inventory valuation is one of the most unique components of accounting because GAAP requires companies that carry inventory to capitalize a portion of production costs into inventory to determine the proper reporting of income. ASC 330-10 states:

> Inventory has financial significance because revenues may be obtained from its sale, or from the sale of the goods or services in the production of which it is used. Normally such revenues arise in a continuous repetitive process or cycle of operations in which goods are acquired, created, and sold, and further goods are acquired for additional sales.

Thus, the inventory at any given date is the balance of costs applicable to goods on hand remaining after the matching of absorbed costs with concurrent revenues. This balance is appropriately carried to future periods provided it does not exceed an amount properly chargeable against the revenues expected to be obtained from ultimate disposition of the goods carried forward. In practice, this balance is determined by the process of pricing the articles included in the inventory.1

What this means is that a portion of a company’s expenses are moved from the income statement to the balance sheet. Expenses are reduced, and this increases profits. Because inventory is usually one of the largest current assets on the balance sheet, it’s easy to understand why inventory valuation is material for proper financial reporting.

There are two issues related to inventory valuation: the value of inventory on the balance sheet and the determination of cost of goods sold.

ASC 330-10-30 states that inventory must be valued at cost, which is the same as all other assets on a balance sheet. Cost is defined as the actual expenses incurred to get goods (products that are sold) in condition for sale. These expenses are the actual cost of materials plus a portion of the actual costs of production. ASC 330 also recognizes the inherent complexity of inventory valuation: “It is understood to mean acquisition costs and production cost, and its determination involves many considerations.”2 The matching principle is more of an overall, general accounting principle and states that all expenses rec-
recognized in any period should be the expenses incurred to generate the revenues recognized. Because cost of sales is oftentimes the largest expense on the income statement of a manufacturing company, it is material to the proper determination of income. ASC 330 states this as follows: “A major objective of accounting for inventories is the proper determination of income through the process of matching appropriate costs against revenues.”

The issues in a manufacturing company in determining cost of goods sold are related to the continuous nature of manufacturing. Products produced in one period may not be sold until a subsequent period. The prices paid for purchased items may change, and actual production costs change over time. This makes matching the specific actual production costs to the revenue reported quite difficult.

GAAP recognizes that calculating the exact cost of an item (in inventory and cost of goods sold) cannot be done because of the timing issues of goods produced and sold, changing material costs, and determining the exact manufacturing costs incurred for goods in inventory. ASC 330 states: “Although the principles for the determination of inventory costs may be easily stated, their application, particularly to such inventory items as work in process and finished goods, is difficult because of the variety of considerations in the allocation of costs and charges.”

To overcome this problem, GAAP allows companies to use a cost flow assumption to value inventory and cost of goods sold in a consistent and systematic manner that best reflects income.

Companies must use a consistent method over time, which means a company can’t simply switch cost flow assumptions year to year. By consistently applying a cost flow assumption to value inventory, the cost of goods sold will also be properly stated. If a company changes its cost flow assumption, it is considered a change in accounting method and must be disclosed in audit reports.

There are four cost flow assumptions that can be used: first-in, first-out (FIFO), last-in, first-out (LIFO), average cost, or specific identification, which are summarized in Exhibit 1. (Note: IFRS does not allow the use of LIFO, which is one of the most significant differences between it and U.S. GAAP.)

In practice, cost of goods sold is really the difference between goods available for sale (beginning inventory plus purchases) and ending inventory. As long as management’s method of inventory valuation approximates cost and is applied in a consistent manner, the company’s financial statements are compliant with GAAP. Determining if inventory approximates cost and is applied in a consistent manner is usually determined by the company’s outside auditors, who will issue an unqualified opinion on the financial statements.

During an external audit, the auditors will test the company’s inventory valuation methodology to determine if it approximates cost. If it "passes" the audit tests, inventory is considered properly valued. If the tests are not passed, the company may need to adjust inventory to obtain an unqualified opinion on the financial statements.

### Lean inventory valuation and GAAP compliance

One of the major impacts of lean is significant reductions in inventory over time. It’s common to see annual inventory reductions of 25–50 percent as lean practices become established in manufacturing operations. A common goal in lean is to have inventory levels of 30–60 days or less. When inventory levels reach this range, the financial risk of inaccurate inventory valuation decreases significantly, and the risk of material misstatement of profit is reduced. Low inventories also create the opportunity for accounting to use simpler methods to value inventory and cost of goods sold for financial reporting purposes.

Lean inventory valuation methods use the cost flow assumption of average cost. With low inventories, it’s easy to identify the actual material and production costs, especially when using a value stream income statement. Calculating the average cost can also be done at a higher level than each part, which is the basis for simplification of inventory valuation.
Migrating away from a typical standard costing system, in which each unique part is costed to a simpler system, is a two-step process. First, determine the leanest, simplest system to value material, then determine how to capitalize production costs. The greatest opportunity for simplification and elimination of work is in how a lean manufacturing company capitalizes production costs.

There is not a specific method lean companies have employed to simplify inventory valuation, but there are enough lean companies that have done this to provide guidance on how to create a consistent method that can be used over time to comply with GAAP.

**Lean inventory valuation: Material**

Calculating the value of material inventory is generally dependent on three factors: the number of purchased items, price stability, and rate of flow of materials.

For a company with thousands of items, calculating the average material cost per unit should be done at either the individual item level or by common product family. A company with few items of purchased raw material or components can do an overall average material cost.

For stable material prices, the average cost may be calculated less frequently (annually or semiannually). In cases where material prices are highly volatile, the average cost may have to be calculated more frequently, such as monthly.

The final factor in calculating average material cost is the rate of flow of materials, which is typically measured in days of inventory. The rate of flow helps determine which costs to average. For example, if a company has 30 days of inventory on hand, this means that the inventory
was purchased in the last 30 days, and average cost would be calculated based on cost changes over the last 30 days.

The following sections provide two examples of the actual mechanics of lean inventory valuation for material.

**Many purchased parts and multiple value streams.** Most manufacturing companies fall into this category. In this case, simplification comes mostly from getting away from a unique standard cost for each part and moving to an average cost for each part or product family, which can simply be last price paid in a low inventory environment.

It’s most practical to continue to track material quantities and transactions in an ERP system, given the number of parts and volume of transactions. The ERP system will continue to value each raw material part individually and, based on the transactions, will also value material inventory in total and material cost of goods sold.

**Few purchased parts and few value streams.** If a manufacturing company falls into this category, additional simplification can be done by getting away from individual part costing and moving to an overall average cost. In this case, purchases can be expensed directly to the value stream income statement. At month-end, the value of material inventory can simply be calculated by the quantity ratio of material on hand to total material purchased. Material inventory can be recorded by using a journal entry between inventory and cost of goods sold.

In both examples, GAAP inventory valuation compliance is achieved because actual material costs, either per unit or an overall average, are being used to value material inventory. The material costs that appear on a value stream income statement will represent the actual cost of materials consumed to generate the revenue recognized, which meets compliance with the matching principle.

**Lean inventory valuation: Capitalization of actual production costs**

The leanest method for capitalizing actual production costs into inventory is to do this at the level of total production costs rather than on a part-by-part basis. A simple journal entry at the end of each month will adjust the capitalized production costs on the balance sheet to actual. Here is the process a lean company usually follows to capitalize actual production costs using a journal entry.

The first step in the process is to gather actual production costs for the period. In a lean company, creating a value stream income statement for each value stream is the best method to gather actual production costs. Many lean companies use the value stream income statement approach because oftentimes value streams produce different products and have different cost structures. A value stream income statement approach works well to achieve a “consistency over time” that GAAP requires in regards to production costs.

The next step is to determine the best method to use to calculate the value of capitalized production costs each month. Exhibit 2 shows some simplified production cost capitalization methods that lean companies have used. What method works best for a company must be specific to that company.

Each of these methods uses a simple, but consistent, ratio to determine what the capitalized production costs need to be on the balance sheet at month-end. The adjusting journal entry is simply to debit or credit capitalized production costs and cost of goods sold so the balance sheet equals the calculated amount.

GAAP requires the capitalization of production costs to be consistent over time, so it’s best to take some time to study this. Based on experience, it’s best to try a few methods over time before making a final decision.

If a lean manufacturing company is audited, it’s also best to bring the auditors in on this discussion, as they will want to be able to perform the necessary audit tests on any simplified valuation methodology. External auditors also look for consistency in historical margins and
Getting started with lean inventory valuation

After lean inventory valuation methods for material and capitalized production costs have been decided, a date needs to be set to cut over to lean inventory valuation. The end of an accounting period is best because changes need to be made in the ERP system. For accountants, this process is similar to conducting a physical inventory, where shop floor operations are locked out of performing transactions, so the physical inventory quantities can be adjusted to actual. The steps listed in Exhibit 3 are then followed.

The benefits of lean inventory valuation

GAAP for inventory valuation are more a set of broad principles rather than specified methodologies. Accounting principles focus on requiring a consistent method of valuation over time that properly reflects the determination of income primarily by selecting one of the permissible cost flow assumptions.

Lean inventory valuation uses the average cost flow methodology and attempts to get the broadest average possible. Production costs are capitalized at a macro level via a journal entry. Material average costs can be by item level or at higher levels, depending on each company’s specific circumstances.

The primary benefit of lean inventory valuation is the elimination of unnecessary work, which creates capacity (time) to reallocate to other tasks. Much of accounting’s work required in conventional inventory valuation is no longer required. The time and effort of setting detailed labor and overhead rates is eliminated. The time spent analyzing, explaining, and reconciling product cost information, variances, and absorption is also eliminated. The average material cost is relatively simple to calculate and probably doesn’t need to be updated too often unless the material is a commodity.

Lean inventory valuation can transform the traditional cost accounting function.
into a proactive team member of lean operations that provides relevant financial information and analysis to make sound business decisions that support a lean business strategy.

Lean inventory valuation also provides benefits to operations through the elimination of production-reporting transactions. Many transactions required under conventional inventory valuation methods are not required under lean inventory valuation, which frees up operations capacity that can be reallocated to filling customer orders.

**Practical advice**

It’s up to the accounting function to lead this effort, because inventory valuation is a financial accounting requirement under GAAP. Begin with the goal in mind — maintaining GAAP compliance in the leanest way possible. Each lean manufacturing company must create a lean inventory valuation methodology that works best for itself in complying with GAAP and being consistent over time.

Learn from others; talk to other lean manufacturing companies that use lean inventory valuation. Learn how they made the transition, the issues they faced, and the methods they use. There are both private and public lean companies that have transitioned from standard costing systems to lean inventory valuation systems.

If you use external auditors, bring them into the discussion early and have them partner with you as you transition to lean inventory valuation. They will provide very clear guidance on maintaining GAAP compliance.

Lean inventory valuation represents a great opportunity for the accounting departments of lean companies to eliminate unnecessary work, create capacity, and use that capacity to provide value-added services to your internal customers.

**NOTES**

2. *Ibid*.