

PART 12

MANUFACTURING (CONTRACT AND CAPTIVE)

Standard Costing, Variance Analysis, and the Factory P&L

Captive vs. contract manufacturing tradeoffs, standard cost build for one unit, overhead absorption rate calculation and under-absorption risk, full variance decomposition (MPV, MUV, LRV, LEV, overhead budget and volume), factory P&L structure, break-even analysis with operating leverage, FIFO vs. LIFO vs. weighted average inventory costing, LIFO reserve and recapture risk, ASC 330 NRV write-downs, bonus depreciation and Section 179 tax impact, R&D credits for process improvement, intercompany transfer pricing, and the complete manufacturing metrics framework.

SECTION 1

THE MANUFACTURING BUSINESS MODEL

Manufacturing: The Most Operationally Complex Financial Architecture

Manufacturing is the oldest and most operationally complex business model in commerce. Unlike software or digital businesses — where the marginal cost of producing one more unit approaches zero — manufacturing involves the physical transformation of raw materials into finished goods through a combination of labor, machinery, energy, and process management. The financial architecture of a manufacturing business reflects this physical complexity: standard costing systems, overhead absorption rates, variance analysis, and factory-level P&Ls; are tools with no equivalent in a SaaS or marketplace business.

Manufacturing comes in two fundamental forms: **captive manufacturing**, where the brand owns and operates its own production facilities, bearing the full capital cost and operational risk of production; and **contract manufacturing**, where the brand outsources production to a third-party manufacturer (a contract manufacturer, or CM) who produces the goods to the brand's specifications. The financial architecture differs substantially between these two forms: captive manufacturing carries enormous fixed costs (factories, machinery, specialized labor) that create significant operating leverage — both positive and negative — while contract manufacturing converts those fixed costs into variable costs (per-unit production costs), at the expense of control and margin.

This part covers the complete financial architecture of manufacturing: standard costing systems and how they work, overhead absorption and the absorption rate calculation, variance analysis (price, volume, efficiency, and overhead variances), the factory P&L; structure, transfer pricing for intercompany sales between manufacturing and distribution entities, LIFO/FIFO/weighted average inventory costing and their tax implications, Section 199A and the Domestic Production Activities Deduction, and the complete metrics framework for manufacturing CFOs.

1.1 Captive vs. Contract Manufacturing: The Financial Tradeoff

Dimension	Captive Manufacturing	Contract Manufacturing	CFO Implication
Fixed Cost Structure	Very high (factory, machinery, labor)	Very low (variable per unit)	Captive requires volume; CM scales flexibly
Gross Margin Potential	Higher at full utilization (own the spread)	Lower (CM retains a margin)	Captive wins at scale; CM wins at low volume
Capital Intensity	Very high (CapEx for facility and equipment)	Near zero (no factory ownership)	Captive ties up capital; CM frees it
Quality Control	Full direct control	Dependent on CM quality systems	Captive reduces product liability risk
Scalability	Limited by facility capacity	Flexible (add CMs as needed)	CM enables rapid scale without capital
Inventory Risk	Full (own WIP and finished goods)	Lower (CM holds WIP; brand holds FG)	Captive carries higher inventory risk
IP Protection	Maximum (production knowledge internal)	Lower (CM may share processes)	Captive protects trade secrets better

SECTION 2

STANDARD COSTING SYSTEMS

Standard Costing: The Language of Manufacturing Finance

Standard costing is the foundation of manufacturing financial management. Under a standard cost system, every product is assigned a predetermined standard cost — the cost the company expects to incur to produce one unit under normal operating conditions. Actual costs are then compared to standard costs, and the differences — called variances — are analyzed to understand where the actual production process diverged from the standard and why. Standard costing enables the CFO to separate inventory valuation (at standard cost) from operational performance measurement (through variance analysis) — a critical discipline in manufacturing finance.

2.1 Standard Cost Components

The standard cost of a manufactured product has three components: direct materials, direct labor, and manufacturing overhead. Each component is established through an engineering and costing process at the beginning of the fiscal year (or when a new product is introduced) and held constant throughout the year unless there is a significant change in the underlying cost structure.

STANDARD COST BUILD FOR ONE UNIT

Direct Materials Standard:

Bill of Materials (BOM) quantity per unit x Standard price per unit of material

Example: 2.5 lbs aluminum x \$3.20/lb = \$8.00 direct material standard

Direct Labor Standard:

Standard hours per unit x Standard labor rate per hour

Example: 0.75 hours x \$22.00/hr = \$16.50 direct labor standard

Manufacturing Overhead Standard:

Standard hours per unit x Overhead absorption rate per hour

Example: 0.75 hours x \$18.00/hr = \$13.50 overhead standard

Total Standard Cost per Unit: \$8.00 + \$16.50 + \$13.50 = \$38.00

Inventory is carried at \$38.00 per unit regardless of actual production cost

2.2 The Overhead Absorption Rate

The overhead absorption rate — also called the predetermined overhead rate or burden rate — is one of the most consequential calculations in manufacturing finance. It determines how much manufacturing overhead is applied (absorbed) to each unit produced, and therefore how much overhead cost flows through COGS (via inventory) versus being recognized as a period cost (under-absorbed overhead) or deferred in inventory (over-absorbed overhead).

The overhead absorption rate is calculated by dividing budgeted total manufacturing overhead by the budgeted activity level (direct labor hours, machine hours, or units produced). The choice of activity base matters: if overhead is driven primarily by machine usage (as in highly automated factories), machine hours is the appropriate base. If overhead is driven primarily by labor (as in labor-intensive assembly), direct labor hours is appropriate.

OVERHEAD ABSORPTION RATE CALCULATION

Predetermined Overhead Rate = Budgeted Manufacturing Overhead / Budgeted Activity

Example using direct labor hours:

Budgeted overhead: \$2,700,000/year

Budgeted direct labor hrs: 150,000 hours/year

Absorption rate: \$2,700,000 / 150,000 = \$18.00 per DLH

Applied Overhead in Period = Actual DLH x \$18.00 per DLH

If 12,000 actual DLH in month: Applied OH = 12,000 x \$18 = \$216,000

Under-absorption: Actual OH > Applied OH -> Period expense (bad news)

Over-absorption: Actual OH < Applied OH -> Inventory benefit (good news at low volume levels, but only because production exceeded sales – inventory is building)

CFO INSIGHT

Under-absorbed overhead is one of the most important and least discussed P&L; items in manufacturing finance. When production volumes fall below the budgeted level used to set the absorption rate, overhead applied to production is less than total overhead incurred — the unabsorbed portion flows directly to the income statement as a period expense. At a facility with \$2.7M in annual overhead and a 10% volume shortfall, under-absorption adds \$270,000 in unplanned expense — pure negative variance with no offset. Model under-absorption scenarios explicitly in the annual plan and the monthly forecast.

SECTION 3**VARIANCE ANALYSIS: UNDERSTANDING ACTUAL VS. STANDARD**

Variance Analysis: The Diagnostic Tool of Manufacturing Finance

Variance analysis — the systematic comparison of actual costs to standard costs to identify and explain the differences — is the primary diagnostic tool of manufacturing financial management. Variances tell the CFO and the operations team exactly where actual performance diverged from expectations: where materials cost more than expected, where labor was less efficient than planned, where overhead was over- or under-absorbed. Without variance analysis, a manufacturing business is flying blind; with it, the CFO can

identify problems, attribute them to their root causes, and track improvement over time.

3.1 Direct Material Variances

DIRECT MATERIAL VARIANCE DECOMPOSITION

Total Material Variance = Actual Cost - Standard Cost for Actual Production

Decomposed into:

Material Price Variance (MPV):

= (Actual Price - Standard Price) x Actual Quantity Purchased

Favorable if actual price < standard; Unfavorable if actual > standard

Example: Actual \$3.45/lb vs. Standard \$3.20/lb; 10,000 lbs purchased

MPV = (\$3.45 - \$3.20) x 10,000 = \$2,500 Unfavorable

Material Usage (Efficiency) Variance (MUV):

= (Actual Quantity Used - Standard Quantity Allowed) x Standard Price

Example: Used 26,000 lbs; Standard allows 2.5 lbs x 10,000 units = 25,000 lbs

MUV = (26,000 - 25,000) x \$3.20 = \$3,200 Unfavorable

3.2 Direct Labor Variances

DIRECT LABOR VARIANCE DECOMPOSITION

Labor Rate Variance (LRV):

= (Actual Rate - Standard Rate) x Actual Hours Worked

Example: Actual \$23.50/hr vs. Standard \$22.00/hr; 7,800 actual hours

LRV = (\$23.50 - \$22.00) x 7,800 = \$11,700 Unfavorable

Labor Efficiency Variance (LEV):

= (Actual Hours - Standard Hours Allowed) x Standard Rate

Standard hours allowed: 0.75 hrs x 10,000 units = 7,500 hours

LEV = (7,800 - 7,500) x \$22.00 = \$6,600 Unfavorable

Total Labor Variance = LRV + LEV = \$11,700 + \$6,600 = \$18,300 Unfavorable

3.3 Overhead Variances

OVERHEAD VARIANCE DECOMPOSITION

Overhead Budget Variance:

$$= \text{Actual Overhead} - \text{Budgeted Overhead}$$

Example: Actual \$235,000; Budgeted \$225,000 -> \$10,000 Unfavorable

Overhead Volume Variance:

$$= (\text{Budgeted Hours} - \text{Standard Hours Allowed for Actual Production}) \times \text{Overhead Absorption Rate}$$

Budgeted: 12,500 hrs; Standard allowed: 0.75 x 10,000 = 7,500 hrs

Volume Variance = (12,500 - 7,500) x \$18.00 = \$90,000 Unfavorable

This is under-absorption: production was far below budgeted level

Total Overhead Variance = \$10,000 + \$90,000 = \$100,000 Unfavorable

Variance Type	Formula	Favorable Signal	Unfavorable Signal
Material Price	(Std Price - Actual Price) x Actual Qty	Better supplier pricing negotiated	Input cost inflation; spot buying at premium
Material Usage	(Std Qty - Actual Qty) x Std Price	Process improvement; lower scrap	Design changes; poor quality materials; waste
Labor Rate	(Std Rate - Actual Rate) x Actual Hours	Favorable skill mix; lower overtime	Overtime premium; higher-skill mix than planned
Labor Efficiency	(Std Hours - Actual Hours) x Std Rate	Better training; process improvement	Equipment downtime; learning curve; quality issues
Overhead Budget	Budgeted OH - Actual OH	Cost control; lower utility/maintenance	Unplanned maintenance; utility cost spike
Overhead Volume	(Budgeted - Std Allowed Hrs) x Rate	Higher volume than planned (over-absorb)	Lower volume than planned (under-absorb)

SECTION 4

THE FACTORY P&L AND MANUFACTURING COST STRUCTURE

The Factory P&L;: Understanding Manufacturing Economics

The factory P&L; — also called the plant P&L; or production cost statement — is the primary financial report for a manufacturing operation. It captures all of the costs incurred to produce goods in the factory in a given period, compares them to the standard costs absorbed by production, and shows the net variances that explain the difference between planned and actual manufacturing cost. The factory P&L; is distinct from the company's income statement: it shows production costs, not COGS of goods sold (which depends on inventory levels), and it is the primary accountability document for the plant manager.

4.1 Factory P&L; Structure

P&L; Line	Description	Management Focus
Units Produced	Actual production volume in period	Utilization of budgeted capacity
Standard Cost of Production	Units produced x Standard cost per unit	Baseline production cost at plan efficiency
Material Price Variance	Actual material price vs. standard	Procurement performance; commodity cost management
Material Usage Variance	Actual material consumption vs. standard BOM	Process efficiency; scrap and yield management
Labor Rate Variance	Actual labor rate vs. standard rate	Workforce mix; overtime management
Labor Efficiency Variance	Actual labor hours vs. standard hours allowed	Production efficiency; equipment uptime
Overhead Budget Variance	Actual overhead vs. budgeted overhead	Overhead cost control; maintenance, utilities
Overhead Volume Variance	Under/over absorption from volume deviation	Capacity utilization — most critical to manage
Total Factory Cost (Actual)	Sum of standard cost + all variances	True cost of production in the period
Factory Gross Margin %	Revenue (if sold externally) - Total Factory Cost	Manufacturing profitability at plant level

4.2 Fixed vs. Variable Cost Structure in Manufacturing

Manufacturing cost structures are heavily weighted toward fixed costs — costs that do not change with production volume in the short run. Factory rent or depreciation, permanent workforce salaries, insurance, and maintenance contracts are all largely fixed. Variable costs — direct materials, direct labor (to the extent it can be flexed), and variable utilities — change with production volume. The ratio of fixed to variable costs determines the degree of operating leverage in the manufacturing business: a high fixed cost business generates dramatically better margins when operating above full capacity, and dramatically worse margins when volumes fall below the break-even utilization rate.

MANUFACTURING BREAK-EVEN ANALYSIS

Break-Even Volume = Total Fixed Costs / (Price - Variable Cost per Unit)

Example: Captive manufacturing operation

Annual fixed costs: \$8,000,000 (facility, permanent workforce, depreciation)

Variable cost per unit: \$22.00 (materials, variable labor, variable utilities)

Selling price (to distribution entity): \$48.00

Contribution margin per unit: \$48.00 - \$22.00 = \$26.00

Break-Even Volume: \$8,000,000 / \$26.00 = 307,692 units

At 350,000 units: Profit = (350K - 307.7K) x \$26 = \$1,100,000

At 250,000 units: Loss = (250K - 307.7K) x \$26 = (\$1,500,000)

Volume risk is acute: a 12% volume decline creates a \$1.5M swing

SECTION 5

INVENTORY COSTING METHODS

Inventory Costing: FIFO, LIFO, and Weighted Average

The choice of inventory costing method — FIFO (first-in, first-out), LIFO (last-in, first-out), or weighted average cost — is one of the most consequential accounting and tax elections a manufacturing company makes. It determines how the cost of inventory sold (COGS) is measured, how ending inventory is valued on the balance sheet, and how much taxable income is reported in periods of rising or falling input costs. Once elected, the method is difficult to change — it requires IRS approval and SEC approval for public companies

— so the initial election deserves careful analysis.

5.1 FIFO vs. LIFO vs. Weighted Average

Method	Assumption	COGS in Rising Cost Environment	Balance Sheet in Rising Cost	Tax Impact
FIFO	Oldest inventory sold first	Lower COGS (older, cheaper costs)	Higher inventory value (recent, higher costs)	Higher taxable income; more tax paid
LIFO	Newest inventory sold first	Higher COGS (recent, higher costs)	Lower inventory value (older, lower costs)	Lower taxable income; tax deferral benefit
Weighted Average	Blended average cost of all inventory	Middle ground between FIFO and LIFO	Middle ground balance sheet value	Middle ground tax impact

5.2 The LIFO Election and the LIFO Reserve

LIFO is unique to US GAAP — it is not permitted under IFRS. Companies that use LIFO for tax purposes must also use LIFO for financial reporting (the LIFO conformity rule). When input costs have been rising over many years — as they have for most manufactured goods categories — LIFO creates a LIFO reserve: the difference between the LIFO inventory value on the balance sheet and what the inventory would be worth under FIFO. This LIFO reserve represents a significant hidden asset — real economic value that is not recognized on the balance sheet.

The LIFO reserve is disclosed in the notes to financial statements (and must be disclosed for public companies). Lenders and sophisticated investors add the LIFO reserve back to the balance sheet inventory when assessing the company's true asset base. However, if the company ever switches from LIFO to FIFO — or if Congress eliminates LIFO (as has been proposed repeatedly in tax reform discussions) — the LIFO reserve becomes a taxable LIFO recapture, generating a potentially enormous one-time tax liability. The CFO must model this LIFO recapture risk annually and assess whether the cumulative tax deferral benefit outweighs the recapture risk.

LIFO RESERVE AND RECAPTURE RISK

$\text{LIFO Reserve} = \text{FIFO Inventory Value} - \text{LIFO Inventory Value}$

Example: \$12M FIFO value vs. \$8M LIFO value -> \$4M LIFO Reserve

Tax Benefit of LIFO (annual): $\text{Additional COGS} \times \text{Tax Rate}$

If LIFO adds \$500K to annual COGS vs. FIFO: $\text{Tax savings} = \$500\text{K} \times 21\% = \$105\text{K}/\text{yr}$

LIFO Recapture Risk (if eliminated): $\$4\text{M Reserve} \times 21\% = \$840,000$ one-time tax

Break-even analysis: $\$840\text{K recapture risk} / \$105\text{K annual savings} = 8\text{-year payback}$

If LIFO eliminated before year 8 -> net cost of having elected LIFO

SECTION 6**TAX ISSUES FOR MANUFACTURING BUSINESSES**

Tax Architecture: Manufacturing's Substantial Tax Opportunities

Manufacturing businesses have access to the most generous set of tax incentives in the US tax code. The combination of accelerated depreciation on capital equipment, R&D; tax credits for process improvement activities, Section 199A deductions (for pass-through entities), bonus depreciation, and state and local manufacturing tax incentives can reduce the effective tax rate on manufacturing income to well below the statutory 21% federal rate. The CFO who actively manages the manufacturing tax strategy can generate substantial value — not by avoiding taxes, but by claiming every incentive the legislature has made available to support domestic manufacturing.

6.1 Bonus Depreciation and Section 179

Bonus depreciation allows manufacturers to immediately deduct a percentage of the cost of qualifying new equipment and machinery in the year of purchase, rather than depreciating it over the asset's useful life. The Tax Cuts and Jobs Act of 2017 set bonus depreciation at 100% for property placed in service between September 27, 2017 and December 31, 2022. This percentage has since phased down: 80% for 2023, 60% for 2024, 40% for 2025, and 20% for 2026 (unless Congress acts to extend or restore 100% bonus

depreciation, which has been actively debated).

Section 179 allows manufacturers to elect to expense (immediately deduct) the cost of qualifying property up to a dollar limit (\$1,160,000 in 2023, indexed for inflation) in the year the property is placed in service. Unlike bonus depreciation, Section 179 cannot create or increase a net operating loss — it is limited to taxable income. For manufacturers making significant capital equipment purchases, the combination of bonus depreciation and Section 179 can dramatically reduce or eliminate current-year cash taxes.

BONUS DEPRECIATION TAX IMPACT

Equipment Purchase: \$5,000,000 CNC machining center (7-year property)

Without Bonus Depreciation (MACRS straight-line):

Year 1 depreciation: $\$5M \times (1/7) \times 50\%$ (half-year convention) = \$357,143

Year 1 tax deduction: \$357,143 | Tax savings at 21%: \$75,000

With 60% Bonus Depreciation (2024):

Bonus deduction: $\$5M \times 60\%$ = \$3,000,000

Remaining MACRS: $(\$5M - \$3M) / 7 \times 50\%$ = \$142,857

Total Year 1 deduction: \$3,142,857 | Tax savings at 21%: \$660,000

Cash Tax Benefit of Bonus Depreciation: \$660,000 - \$75,000 = \$585,000 in Year 1

6.2 R&D; Tax Credits for Manufacturing Process Improvement

Manufacturing process improvement activities frequently qualify for the Section 41 R&D; Tax Credit — a credit that many manufacturing companies overlook because they do not think of themselves as technology companies. The four-part test for qualifying research requires that the activity be undertaken to discover new technical information, involve a process of experimentation, relate to a new or improved product or process, and not be funded by another party. Activities such as developing new manufacturing processes, testing new materials or compounds, building and testing prototypes, improving product quality or yield, and reducing production costs through engineering experimentation frequently satisfy this test.

For a manufacturer spending \$3M annually on engineering and process improvement activities, a well-documented R&D; credit study might identify \$1.5M to \$2M in qualifying research wages and supplies, generating a federal credit of \$210,000 to \$280,000 annually (at the 14% alternative simplified credit rate). Add state R&D; credits (available in most manufacturing states) and the total credit value can approach \$350,000 to \$450,000 — paid for by the government to reward domestic manufacturing investment.

6.3 Transfer Pricing for Intercompany Manufacturing

Many manufacturing businesses operate through an intercompany structure where a manufacturing entity produces goods and sells them to a related distribution or sales entity. The transfer price — the price charged between related entities — determines how profit is allocated between the manufacturing entity and the sales entity, each of which may be subject to different tax rates (particularly if they are in different states or countries). The transfer price must be set at arm's length under IRC Section 482 and state equivalents.

The most commonly used transfer pricing method for manufactured goods is the cost-plus method: the manufacturing entity charges the distribution entity the standard cost of production plus a markup that represents an arm's-length manufacturing margin. The markup percentage should be benchmarked against the margins earned by independent contract manufacturers providing comparable services. A markup of 5% to 15% on total manufacturing cost is typical for routine contract manufacturing services; more complex or proprietary manufacturing may justify higher markups.

SECTION 7

ACCOUNTING ISSUES FOR MANUFACTURING

Manufacturing Accounting: From Standard Costs to Financial Statements

Manufacturing accounting sits at the intersection of cost accounting (standard costs, variance analysis, overhead absorption), GAAP financial reporting (ASC 330 for inventory, ASC 840/842 for plant leases, ASC 360 for PP&E;), and operational reporting (factory P&Ls;., product line margins, plant efficiency reports). The CFO of a manufacturing business must be proficient in all three domains and must ensure that the cost accounting system feeds accurate, timely data into both the operational and financial reporting systems.

7.1 Inventory Valuation Under ASC 330

ASC 330 (Inventory) requires that inventory be measured at the lower of cost or net realizable value (NRV). Net realizable value is the estimated selling price in the ordinary course of business minus the estimated costs of completion and the estimated costs necessary to make the sale. For most manufactured goods, NRV exceeds cost, and the inventory is carried at its standard (or actual) cost. However, when market conditions deteriorate — when the selling price of the finished good falls below the cost to produce it — the inventory must be written down to NRV in the period the decline is identified.

The NRV test for manufactured goods applies at the individual item level (not at the portfolio level). A manufacturer with a diverse product line cannot offset a loss on slow-moving items against gains on profitable items — each item must pass the NRV test independently. The CFO must establish an inventory NRV review process that is triggered quarterly by any significant decline in selling prices, and must ensure that write-downs are recorded promptly when NRV falls below carrying cost.

NRV WRITE-DOWN CALCULATION

Net Realizable Value = Estimated Selling Price - Costs to Complete - Selling Costs

Example: Component with \$28 standard cost

Estimated selling price of finished good: \$55

Cost to complete (assembly): \$8

Selling costs (commission, freight): \$5

NRV of component: \$55 - \$8 - \$5 = \$42 -> No write-down needed (\$42 > \$28)

If market price falls to \$38:

NRV: \$38 - \$8 - \$5 = \$25 -> Write-down: \$28 - \$25 = \$3 per unit

At 50,000 units: \$150,000 write-down to cost of goods sold

7.2 Capital Equipment: CapEx vs. Expense and Impairment

Manufacturing businesses make substantial capital investments in plant and equipment — purchases that must be capitalized and depreciated over their useful lives rather than expensed in the period of purchase. The determination of whether a cost is a capital expenditure (capitalize and depreciate) or a repair and maintenance expense (expense immediately) is one of the most frequently reviewed accounting judgments in manufacturing audits. The IRS capitalization regulations (the Tangible Property Regulations, effective 2014) provide specific tests — the RABI test (Restoration, Adaptation, Betterment, or Improvement) — for distinguishing capital expenditures from deductible repairs.

Impairment of long-lived manufacturing assets (plant, equipment, tooling) is governed by ASC 360 (Property, Plant, and Equipment). When events or changes in circumstances indicate that the carrying amount of a long-lived asset may not be recoverable, the company must perform a recoverability test: compare the undiscounted future cash flows expected from the asset's use and eventual disposal to its carrying amount. If the undiscounted cash flows are less than the carrying amount, the asset is impaired and must be written down to fair value. For manufacturing facilities facing volume declines or product obsolescence, impairment testing may be triggered more frequently than the CFO expects.

SECTION 8

COMPLETE MANUFACTURING METRICS FRAMEWORK

The Manufacturing CFO Metrics Framework

The manufacturing metrics framework spans four domains: production efficiency (utilization and throughput), cost performance (variance analysis), quality and delivery performance, and financial health. The CFO owns the cost and financial metrics directly and must maintain visibility into efficiency and quality metrics as leading indicators of financial performance.

8.1 Production Efficiency Metrics

Metric	Formula / Definition	Benchmark
Capacity Utilization Rate	Actual Units Produced / Rated Capacity	>85% excellent; <70% generates under-absorption risk
Overall Equipment Effectiveness (OEE)	Availability x Performance x Quality rates	>85% world-class; <65% improvement opportunity
Throughput Rate	Units produced per hour of production time	Track vs. standard; improvement trend is the goal
Cycle Time	Total production time / Units produced	Must decline over time with process improvement
Scrap Rate	Scrap units / Total units produced	<2% target; >5% signals quality or material issue
First Pass Yield	Units passing QC on first attempt / Total units	>98% excellent; <95% indicates process instability
Changeover Time (SMED)	Time to switch production line between products	Minimize; reduce with SMED methodology

8.2 Cost Performance Metrics

Metric	Formula / Definition	Benchmark
Total Variance as % of Standard Cost	Total variance / Standard cost of production	Target: <3% favorable or unfavorable; >5% investigate
Material Price Variance	(Actual Price - Std Price) x Actual Qty	Track by commodity; favorable = procurement success
Material Usage Variance	(Actual Qty - Std Qty Allowed) x Std Price	Track by product; unfavorable = yield/scrap issue
Labor Rate Variance	(Actual Rate - Std Rate) x Actual Hours	Track overtime premium as % of labor cost
Labor Efficiency Variance	(Actual Hrs - Std Hrs Allowed) x Std Rate	Declining unfavorable = productivity improvement
Overhead Absorption Rate %	Applied Overhead / Budgeted Overhead	>95% absorption = strong volume; <85% = concern
Unit Manufacturing Cost vs. Standard	Actual cost per unit / Standard cost per unit	Must trend toward or below 1.0x over time

8.3 Financial Health Metrics

Metric	Formula / Definition	Benchmark
Gross Margin (Manufacturing)	(Revenue - Manufacturing COGS) / Revenue	Varies by industry; track vs. plan and prior year
Value Added per Employee	(Revenue - Materials Cost) / Manufacturing Headcount	Rising = productivity improvement; benchmarks vary by industry
Asset Turnover	Revenue / Average Total Assets	Higher is better; declining signals idle capacity
Return on Assets (ROA)	Net Income / Average Total Assets	Track vs. cost of capital; ROA > WACC = value creation
Inventory Turns	COGS / Average Inventory	Varies by industry; higher = better working capital efficiency
CapEx as % of Revenue	Capital Expenditures / Revenue	5%–15% for capital-intensive manufacturing
CapEx / Depreciation Ratio	Capital Expenditures / Depreciation Expense	>1.0x = growing asset base; <0.8x = possible underinvestment

SECTION 9

MANUFACTURING CFO OPERATING CHECKLIST

The Manufacturing CFO Checklist

The following checklist covers the minimum capabilities the CFO of a manufacturing company must maintain across cost accounting, inventory, capital management, and tax disciplines.

Standard Costing and Variance Analysis

- Standard cost update process completed annually (or upon material input cost changes): direct material standards updated for current purchase prices; labor standards updated for current wage rates; overhead absorption rate recalculated using current-year budgeted overhead and activity.
- Monthly variance analysis prepared and presented to operations leadership within 10 business days of month-end close: MPV, MUV, LRV, LEV, overhead budget, and overhead volume variances calculated by product line and by plant.
- Overhead absorption rate sufficiency reviewed quarterly: under-absorption or over-absorption greater than 10% of budgeted overhead triggers immediate review of production volume forecast.
- Factory P&L; prepared monthly for each production facility: standard cost of production, all variances, and actual factory cost reconciled to management accounts.
- Standard cost restatement (remeasurement) policy documented for significant input cost changes mid-year: thresholds established for when standards are updated vs. managed through variance.

Inventory Management

- Inventory costing method (FIFO, LIFO, weighted average) documented and consistently applied; LIFO reserve calculated and disclosed quarterly; LIFO recapture tax risk modeled annually.
- NRV (net realizable value) test performed quarterly for all inventory categories; write-downs recorded in the period identified; impaired inventory flagged for disposal or pricing action.
- Physical inventory count completed at least annually (perpetual count programs preferred); cycle count program operational with 100% SKU coverage annually.
- Inventory obsolescence reserve policy documented by age bucket; review performed quarterly; reserve updated based on actual aging and expected sell-through.
- WIP (Work-in-Process) cut-off verified at each month-end: units in process as of month-end correctly valued at partially completed standard cost; cut-off errors are a frequent audit finding.

CapEx and Asset Management

- CapEx approval process operational: all purchases above threshold require finance sign-off with business case including payback period and IRR calculation.
- Capitalization policy documented and consistently applied: RABI test applied to all repair and maintenance expenditures; CapEx vs. expense determination documented for each significant expenditure.
- PP&E; schedule maintained at the asset level: acquisition date, cost, useful life, accumulated depreciation, and net book value updated monthly; fully depreciated assets reviewed for continued use.
- Impairment indicators monitored quarterly under ASC 360: significant volume declines, product obsolescence, facility closures, or market price declines trigger formal impairment review.
- Bonus depreciation election reviewed annually: qualifying property identified; Section 179 election evaluated; basis adjustments for bonus depreciation documented in fixed asset subledger.

Tax and Incentives

- Section 41 R&D; credit study commissioned annually: qualifying manufacturing process improvement, prototype, and testing activities identified; qualified research wage and supply documentation maintained.
- Bonus depreciation and Section 179 elections made at tax filing; estimated tax payments adjusted to reflect current-year depreciation benefits; cash tax model updated quarterly.
- Transfer pricing documentation current for all intercompany manufacturing transactions; cost-plus markup benchmarked against contract manufacturer comparables; annual study updated.
- State and local manufacturing tax incentives reviewed annually: property tax exemptions, enterprise zone credits, workforce training credits, and job creation credits assessed for applicability.

Closing Perspective: The Manufacturing CFO as Operations Partner

Manufacturing finance is the most operationally embedded CFO role in this series. Unlike a SaaS CFO who can build a financial model from a spreadsheet, or a marketplace CFO who works primarily with data and algorithms, the manufacturing CFO must understand the factory floor — the machines, the materials, the labor, the waste streams, and the quality systems — well enough to interpret what the financial data is telling

them and to communicate that interpretation to people who think in physical units rather than dollars.

The standard costing system is the bridge between the physical reality of the factory and the financial reality of the income statement. Variance analysis is the diagnostic tool that makes that bridge useful. The CFO who can walk into a plant manager's office with a variance report, explain exactly what the numbers mean in operational terms, and have a productive conversation about root causes and corrective actions is the CFO who earns the credibility to influence production decisions, capital allocation choices, and pricing strategy.

The tax incentives available to manufacturing businesses — bonus depreciation, R&D; credits, Section 199A, and state incentive programs — are substantial and chronically underutilized. The CFO who actively pursues these incentives, documents the qualifying activities rigorously, and builds them into the capital allocation framework is generating real economic value. A \$500,000 annual R&D; credit is equivalent to \$500,000 in additional revenue at a zero marginal cost. That is the financial impact of one well-executed tax credit claim.

Part 13 examines the Franchise Model — royalty revenue recognition under ASC 606, initial franchise fee deferral, area development agreements, advertising fund accounting, franchisee unit economics, refranchising, and the financial disclosure requirements of the Franchise Disclosure Document (FDD).

End of Part 12: Manufacturing (Contract and Captive) | Financial Architecture of Different Business Models

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