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Notes – Chapter 10

Standard Costing and Performance Measures

I. Standard Costing
   a. Get from the budget to the product.
   b. Eighty per cent or more firms use some form of standard costing.

II. Control Systems
   a. Work toward achieving some desired end.
   b. "Controller" is the title of an accounting manager.
      i. Establish standards
      ii. Take measurements
      iii. Make corrections
   c. Example: Thermostat
      i. The standard is the temperature set on the dial.
      ii. Measurements are taken of the real temperature.
      iii. Corrective action is taken by turning on (or off) the furnace.
   d. Process
      i. Set Standard
      ii. Take Measurements
      iii. Calculate Variance
      iv. Analyze Variance
      v. Take Corrective Action

III. Standard Cost
   a. Standard cost is just the budget for the production of a single unit.
      i. Define a standard price for material and for labor.
      ii. Define a standard quantity of material and labor needed.
      iii. Standard Price * Standard Quantity = Standard Cost
   b. How to set standards
      i. Look at historical data
      ii. Perfection
         1. Define the prices based on the perfect production standard.
         2. Set the bar as high as possible and let production be (hopefully) brought up to that level.
      iii. Practical
         1. Acknowledge that perfection can't really be achieved.
         2. This lowers the bar a little.
         3. This is probably the more reasonable and appropriate option.
   c. Advantages
      i. Gives a benchmark by which performance can be gauged
      ii. Allows management by exception (see below)
      iii. Stable costs can be used in the system; separate accounting for variance.
      iv. It's cheaper relative to actual and normal systems.
      v. There's more than one way to do it!
   d. Disadvantages
      i. It's too aggregate
      ii. It's too late!
      iii. To really understand the variances that may be observed takes too much work.
      iv. There's too much focus on direct labor.
         1. Modern manufacturing has too much automation.
         2. Labor is no longer as significant.
         3. Labor isn't a cost driver anymore, so why consider it in variances?
      v. It requires a stable production environment.
      vi. Total cost

vii. Cost minimization. A favorable variance getting introduced in one area may spark hidden cost increases in other areas. (Consider the examples about quality below.)

IV. Variance Analysis
- a. Information needed: actual price, actual quantity, standard price, and standard quantity.
- b. It's easy to calculate the total variance. How much would one be expected to spend on the production of *x* units, and how much was actually spent?
- c. The trick is to determine what part of the variance comes from deviation in price, and what part comes from deviation in quantity.
- d. Material Variances
  - i. → Price Variance = AQ(AP – SP) ←
  - ii. → Quantity Variance = SP(AQ – SQ) ←
- e. The point is to disaggregate the variance into its component pieces.
- f. Causes and Responsibility
  - i. The important thing is not just to account for the variance, but to find its causes.
  - ii. Example: A lapse in material quality can affect the amount of material needed to make a product (more waste)
- g. Labor Variance
  - i. Rate Variance = AQ(AP – SP)
  - ii. Efficiency Variance = SP(SQ – SQ)
  - iii. Contributing Factors
    1. Quality of material
    2. Training of workers
    3. Supervision of workers
    4. Maintenance of equipment
- h. Management by Exception
  - i. Which variances are important?
  - ii. Not all variances demand action.
  - iii. Factors to Consider
    1. Absolute Amount
       - a. Define a cutoff point
       - b. "More than $10,000 is significant."
    2. Percentage of Total
       - a. $10,000 may have a tiny impact on total costs.
       - b. Look instead at the variance as a percentage of the total expenditure.
    3. Trends
       - a. If similar variances occur every period, consider them significant.
       - b. Praise consistent favorable trends (and correct them), and find the cause in either case.
    4. Controllability.
       - a. Only variances over which management can exert some control are worth consideration.
       - b. Don't spend more money researching something that can't be changed anyway.
    5. Cost-Benefit
       - a. An offshoot of the previous case.
       - b. If the cost of researching (or taking action against) a variance is greater than the variance itself, don't bother.

V. Journal Entries
- a. Three approaches to costing
  - i. Actual
    1. Collect costs, then record.

2. This offers the greatest accuracy
3. There's no real ability to wait for production to finish – there's no time.

ii. Normal
1. Predetermined Overhead Rate
2. No need to wait for production to finish.
3. The downside is in its accuracy

iii. Standard
1. Define cost using standard costs.
2. As product flows through the system, it always flows at standard costs.

b. Example Figures (used in journal entries below)
i. SMP = $1.40 / kg
ii. SMQ = 5 kg / unit
iii. SLR = $20 / hr (remember that this includes fringe benefits)
iv. SLQ = 0.5 hr / unit
v. Material: AQ = 12,500 kgs @ $17.750
vi. Material Used: 10,250 kgs
vii. Production: 2,000 units
viii. Labor: 980 hours @ $21 / hr
ix. Standard Material: $7, Standard Labor: $10

c. Flow
i. Raw Material → Raw Material Inventory
ii. Raw Material Inventory → WIP
iii. Labor → WIP
iv. WIP → FG → COGS
v. Everything flows at standard prices

d. Entries
i. Purchase of Raw Material

1.	DR Direct Material Inventory	17,500	
2.	DR Material Price Variance	250	
3.	CR A/P		17,750

ii. Use of Material

1.	DR WIP	14,000	
2.	DR Material Quantity Variance	350	
3.	CR Raw Material Inventory		14,350

iii. Use of Labor

1.	DR WIP	20,000	
2.	DR Labor Rate Variance	980	
3.	CR Wages Payable		20,580
4.	CR Labor Efficiency Variance		400

iv. Goods Completed

1.	DR Finished Goods	34,000	
2.	CR WIP		34,000

v. Goods Sold

1.	DR COGS	34,000	
2.	CR Finished Goods		34,000

vi. Recognize Variances

1.	DR COGS	1,180	
2.	DR Labor Efficiency Variance	400	
3.	CR Labor Rate Variance		980
4.	CR Material Quantity Variance		350
5.	CR Material Price Variance		250

VI. Measuring Operational Performance
a. Major Considerations
i. Evaluation

ii. Control
iii. Behavior

b. Performance Measurement System Model
   i. Metrics are at the core.
   ii. Protocol surrounds that.
      1. Who takes the measurements?
      2. Who gets the results?
   iii. Around that is Infrastructure
      1. How will the measurements be taken?
      2. Provides the means to get down to the metrics.
   iv. Measurement System Structural Conditioners
      1. "How?" determines "What?"
      2. Cause → Effect
      3. Example
         a. What: Need to increase market value
         b. How: Increase earnings.
         c. How: Increase top line.
         d. How: Product Innovation & Customer Service
      4. Each what→how pair suggests a metric
   v. Strategy and measurement are inextricably linked.

c. Process Perspective
   i. Inputs go into some process; some outputs result.
   ii. Efficiency = Actual Input / Standard Input
   iii. Productivity = Actual Output / Actual Input
   iv. Effectiveness = Actual Output / Standard Output

VII. Operational Performance Measurement Metrics

a. Time
   i. Order Fulfillment Time
      1. Time taken from receiving order to shipping it.
      2. What matters to the customer
   ii. Manufacturing Cycle Time
      1. Time taken from beginning of production to shipping
      2. Includes processing, inspecting, moving, and waiting.
   iii. Manufacturing Cycle Efficiency
      1. Manufacturing Cycle Time / Order Fulfillment Time
      2. How much time was wasted before production even began?

b. Quality
   i. "Perfect" order percentage
      1. Send the right items
      2. Send them on-time by the customer's expectations
      3. Completeness
      4. Accurate documentation
   ii. Can treat each measure separately but all are important factors that determine "quality."

c. Cost
   i. Quality
      1. Cost of Prevention
         a. Make the process "idiot-proof."
         b. The easier it is for workers to get it right, the less money has to be spent later correcting it.
      2. Cost of Inspection
         a. Considered a waste of time.
         b. Also wastes a lot of labor.
      3. Cost of Failure
         a. The biggest cost.
         b. If something goes wrong, how can it be fixed?

c. Meeting warranty requirements is relatively easy to gauge
d. Loss of future customers is much more difficult.

ii. Material Acquisition
1. PPV (MPV)
2. Freight (Inbound)
3. Vendor lead-time, on-time delivery
4. Savings generated by collaborative initiatives with suppliers
5. Defects in material
6. Purchasing efficiency

iii. Manufacturing
1. Expect to see MQV, LPV, LEV.
2. Overhead variances

iv. Inventory Carrying Cost
1. Opportunity costs
2. Obsolescence
3. Shrinkage
4. Warehousing, Insurance, Taxation

d. Customer Satisfaction
i. Much more subjective than any other category.
ii. Send out surveys and listen to complaints.

e. Other
i. Aggregate Productivity (sales per employee, perhaps)
ii. Asset Efficiency (inventory turnover)
iii. Asset Utilization
iv. Flexibility
1. How quickly can a customer's request be accepted?
2. How quickly can a new line be established in response to demand?

v. Innovation & Learning

VIII. The Balanced Scorecard

a. Kaplin and Norton at Harvard in 1992.
b. Generic approach to measurement systems.
c. Top-Levl
d. Four Perspectives
i. Financial (owners)
ii. Customer
iii. Innovation & Learning
iv. Internal Operations

e. Considerations
i. Short Term vs. Long Term
ii. Qualitative vs. Quantitative
iii. Outcomes vs. Drivers
1. Outcome is the score of the game
2. Drivers are those factors influencing each play