

Accounting for Managers

Prepared by Dr. Emad Zaher

Assistant Professor of Accounting

MGM341

Lecture (9)

**Standard costs & Balanced score
card**



Standard Costs and Balanced Scorecard

Learning Objectives

- LO 1** Describe standard costs.
- LO 2** Determine direct materials variances.
- LO 3** Determine direct labor variances.
- LO 4** Prepare variance reports and balanced scorecards.

Standard Costs

Distinguishing Between Standards and Budgets

Both standards and budgets are **predetermined** costs, and both contribute to management **planning** , **control** and **performance evaluation** .

There is a difference:

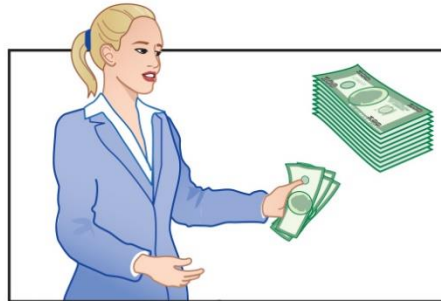
- A standard is a **unit** amount.
- A budget is a **total** amount.

Advantages

Advantages of Standard Costs



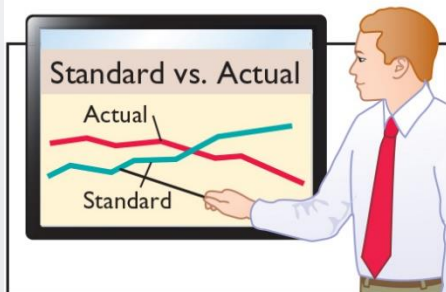
Facilitate management planning



Promote greater economy by making employees more “cost-conscious”



Useful in setting selling prices



Contribute to management control by providing basis for evaluation of cost control

[illegible]

Useful in highlighting variances in management by exception



Simplify costing of inventories
and reduce clerical costs

Setting Standard Costs

Setting standard costs requires **input** from all persons who have **responsibility** for **costs** and **quantities**.

Standards should change whenever managers determine that the existing standard is not a good measure of performance.

Setting Standard Costs

Ideal versus Normal Standards

Companies set standards at one of two levels:

- **Ideal standards** represent optimum levels of performance under **perfect** operating conditions.
- **Normal standards** represent efficient levels of performance that are attainable under **expected** operating conditions.

Properly set, normal standards should be **rigorous but attainable**.

ETHICS NOTE

When standards are set too high, employees sometimes feel pressure to consider unethical practices to meet these standards.

Setting Standard Costs

Question

Most companies that use standards set them at a(n):

- a. optimum level.
- b. ideal level.
-  c. normal level.
- d. practical level.

Setting Standard Costs

A CASE STUDY

To establish the standard cost of producing a product, it is necessary to establish standards for **each** manufacturing cost element—

- ◆ direct materials,
- ◆ direct labor, and
- ◆ manufacturing overhead.

The standard for each element is derived from the standard **price** to be paid and the standard **quantity** to be used.

Setting Standard Costs

Direct Materials

Direct materials price standard is the cost per finished unit of direct materials that should be incurred.

Item	Price
Purchase price, net of discounts	€2.70
Freight	0.20
Receiving and handling	0.10
Standard direct materials price per kilogram	€3.00

Setting Standard Costs

Direct Materials

The **direct materials quantity standard** is the quantity of direct materials that should be used per unit of finished goods.

Item	Quantity (Kilograms)
Required materials	3.5
Allowance for waste	0.4
Allowance for spoilage	0.1
Standard direct materials quantity per unit	4.0

Standard direct materials cost is €12.00 (€3.00 x 4.0 Kilograms).

Setting Standard Costs

Direct Labor

Alternative Terminology

The direct labor price standard is also called the *direct labor rate standard*.

The **direct labor price standard** is the rate per hour that should be incurred for direct labor (see Alternative Terminology).

Item	Price
Hourly wage rate	€12.50
COLA	0.25
Payroll taxes	0.75
Fringe benefits	1.50
Standard direct labor rate per hour	€15.00

Setting Standard Costs

Direct Labor

Alternative Terminology

The direct labor quantity standard is also called the *direct labor efficiency standard*.

The **direct labor quantity standard** is the time that should be required to make one unit of the product (see Alternative Terminology).

Item	Quantity (Hours)
Actual production time	1.5
Rest periods and cleanup	0.2
Setup and downtime	0.3
Standard direct labor hours per unit	2.0

The standard direct labor cost is €30 (€15.00 x 2.0 hours).

Setting Standard Costs

Total Standard Cost Per Unit

The total standard cost per unit is the sum of the standard costs of direct materials, direct labor, and manufacturing overhead.

<u>Product: Xonic Tonic</u>		<u>Unit Measure: Liter</u>		
<u>Manufacturing Cost Elements</u>	<u>Standard Quantity</u>	×	<u>Standard Price</u>	= <u>Standard Cost</u>
Direct materials	4 kilograms		€ 3.00	€12.00
Direct labor	2 hours		€15.00	30.00
Manufacturing overhead	2 hours		€ 5.00	10.00
				<u>€52.00</u>

The total standard cost per liter

DO IT! 1 | Standard Costs

Zafn Enterprises accumulated the following standard cost data concerning product Cty31.

Direct materials per unit: 1.5 kilograms at NT\$120 per kilogram.

Direct labor per unit: 0.25 hours at NT\$390 per hour.

Manufacturing overhead: Predetermined rate is of NT\$468 per direct labor hour.

Compute the standard cost of one unit of product Cty31.

<u>Manufacturing Cost Element</u>	<u>Standard Quantity</u>	×	<u>Standard Price</u>	=	<u>Standard Cost</u>
Direct materials	1.5 kilograms		NT\$120.00		NT\$180.00
Direct labor	0.25 hours		NT\$390.00		97.50
Manufacturing overhead	0.25 hours				
Total					

Direct Materials Variances

Analyzing and Reporting Variances

In business, the term *variance* is also used to indicate differences between total budgeted and total actual costs.

Variances are the differences between total actual costs and total standard costs (see Alternative Terminology).

$$\text{variance} = \text{Actual costs} - \text{Standard costs.}$$

$$\text{Actual cost} = \text{Actual Quantity} \times \text{Actual Price} \\ (\text{AQ}) \times (\text{AP})$$

$$\text{Standard cost} = \text{Standard Quantity} \times \text{Standard Price} \\ (\text{SQ}) \times (\text{SP})$$

Actual costs < Standard costs = **Favorable** variance.

Actual costs > Standard costs = **Unfavorable** variance.

Variance must be **analyzed** to determine the underlying factors.

Analyzing and Reporting Variances

Question

A variance is favorable if actual costs are:

- a. less than budgeted costs.
-  b. less than standard costs.
- c. greater than budgeted costs.
- d. greater than standard costs

Analyzing and Reporting Variances

Direct Materials Variances

In completing the order for **1,000 liters** of Tonic, Tonic used **4,200** kilograms of direct materials and the **standard quantity** is **4,000** kilograms of direct materials . These were purchased at a cost of **€3.10** per unit. **Standard** price is **€3**.

Actual Quantity x Actual Price (AQ) x (AP)	-	Standard Quantity x Standard Price (SQ) x (SP)	=	Total Materials Variance (TMV)
€13,020 (4,200 x €3.10)	-	€12,000 (4,000 x €3.00)	=	€1,020 U

Analyzing and Reporting Variances

Direct Materials Variances

Next, the company analyzes the total variance to determine the amount attributable to price (costs) and to quantity (use). The **materials price variance** is computed from the following formula.

$$\begin{array}{rcl} \text{Actual Quantity} & & \text{Actual Quantity} \\ \times \text{Actual Price} & - & \times \text{Standard Price} \\ \text{(AQ) x (AP)} & & \text{(AQ) x (SP)} \\ & & = \\ & & \text{Materials Price} \\ & & \text{Variance} \\ & & \text{(MPV)} \end{array}$$

$$\begin{array}{rcl} \text{€13,020} & - & \\ \text{(4,200 x €3.10)} & & \end{array}$$

$$\begin{array}{rcl} \text{€12,600} & = & \\ \text{(4,200 x €3.00)} & & \end{array}$$

$$\text{€420 U}$$

Analyzing and Reporting Variances

Direct Materials Variances

The **materials quantity variance** is determined from the following formula.

$$\begin{array}{rcl} \text{Actual Quantity} & & \text{Standard Quantity} \\ \times \text{Standard Price} & - & \times \text{Standard Price} \\ \text{(AQ) x (SP)} & & \text{(SQ) x (SP)} \end{array} = \begin{array}{l} \text{Materials Quantity} \\ \text{Variance} \\ \text{(MQV)} \end{array}$$

$$\begin{array}{rcl} \text{€12,600} & - & \text{€12,000} \\ \text{(4,200 x €3.00)} & & \text{(4,000 x €3.00)} \end{array} = \text{€600 U}$$

Materials price variance	€ 420 U
Materials quantity variance	600 U
Total materials variance	€1,020 U

Computing Direct Materials Variances

1

Actual Quantity
× Actual Price
(AQ) × (AP)

$$4,200 \times \text{€}3.10 = \text{€}13,020$$

2

Actual Quantity
× Standard Price
(AQ) × (SP)

$$4,200 \times \text{€}3.00 = \text{€}12,600$$

3

Standard Quantity
× Standard Price
(SQ) × (SP)

$$4,000 \times \text{€}3.00 = \text{€}12,000$$

Price Variance

1 - 2

$$\text{€}13,020 - \text{€}12,600 = \text{€}420 \text{ U}$$

Quantity Variance

2 - 3

$$\text{€}12,600 - \text{€}12,000 = \text{€}600 \text{ U}$$

Total Materials Variance

1 - 3

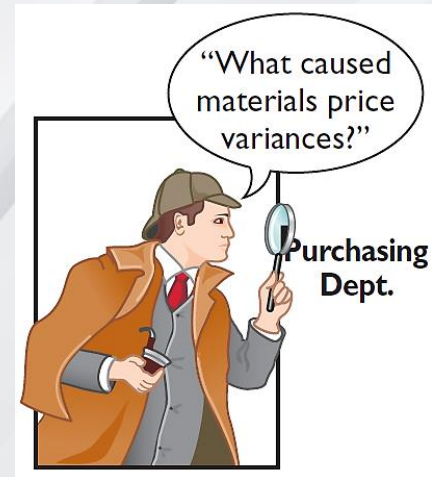
$$\text{€}13,020 - \text{€}12,000 = \text{€}1,020 \text{ U}$$

Analyzing and Reporting Variances

CAUSES OF MATERIALS VARIANCES

Materials price variance – factors that affect the price paid for **raw materials** include the

- ▶ availability of quantity and cash discounts
- ▶ quality of the materials requested
- ▶ delivery method used.

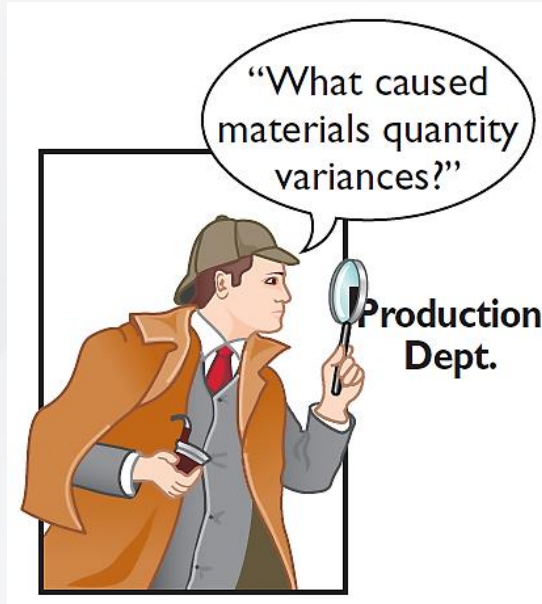


To the extent that these factors are considered in setting the price standard, the **purchasing department** is responsible.

Analyzing and Reporting Variances

CAUSES OF MATERIALS VARIANCES

Materials quantity variance – if the variance is due to inexperienced workers, faulty machinery, or carelessness, the **production department** is responsible.



DO IT! 2 | Direct Materials Variances

The standard cost of Wonder Walkers includes two units of direct materials at ~~¥~~\$8,000 per unit. During July, the company buys 22,000 units of direct materials at ~~¥~~\$7,500 and uses those materials to produce 10,000 units. Compute the total, price, and quantity variances for materials.

Standard quantity =

Substituting amounts into the formulas, the variances are:

Total materials variance =	—	=
Materials price variance =	—	=
Materials quantity variance =	—	=

Direct Labor and Manufacturing Overhead Variances

Direct Labor Variances

In completing the Xonic Tonic order, Xonic incurred **2,100** direct labor hours at an average hourly rate of **€14.80**. The **standard hours** allowed for the units produced were **2,000 hours** (1,000 liters x 2 hours). The **standard** labor rate was **€15** per hour. The **total labor variance** is computed as follows.

Actual Hours x Actual Rate (AH) x (AR)	-	Standard Hours x Standard Rate (SH) x (SR)	=	Total Labor Variance (TLV)
€31,080 (2,100 x €14.80)	-	€30,000 (2,000 x €15.00)	=	€1,080 U

Direct Labor Variances

Direct Labor Variances

Next, the company analyzes the total variance to determine the amount attributable to price (costs) and to quantity (use). The **labor price variance** is computed from the following formula.

Actual Hours
x **Actual** Rate
(AH) x (AR)

-

Actual Hours
x **Standard** Rate
(AH) x (SR)

=

**Labor Price
Variance
(LPV)**

€31,080
(2,100 x €14.80)

-

€31,500
(2,100 x €15.00)

=

€420 F

Analyzing and Reporting Variances

Direct Labor Variances

The **labor quantity variance** is determined from the following formula.

$$\begin{array}{rcl}
 \text{Actual Hours} & & \text{Standard Hours} \\
 \times \text{Standard Rate} & - & \times \text{Standard Rate} \\
 (\text{AH}) \times (\text{SR}) & & (\text{SH}) \times (\text{SR}) \\
 \hline
 \text{€31,500} & - & \text{€30,000} \\
 (2,100 \times \text{€15.00}) & & (2,000 \times \text{€15.00}) \\
 \hline
 & = & \text{€1,500 U}
 \end{array}$$

**Labor Quantity
Variance
(LQV)**

Labor price variance	€ 420 F
Labor quantity variance	1,500 U
Total direct labor variance	<u>€1,080 U</u>

Analyzing and Reporting Variances

1

Actual Hours
× Actual Rate
(AH) × (AR)

$$2,100 \times \text{€}14.80 = \text{€}31,080$$

2

Actual Hours
× Standard Rate
(AH) × (SR)

$$2,100 \times \text{€}15.00 = \text{€}31,500$$

3

Standard Hours
× Standard Rate
(SH) × (SR)

$$2,000 \times \text{€}15.00 = \text{€}30,000$$

Price Variance

1**2**

$$\text{€}31,080 - \text{€}31,500 = \text{€}420 \text{ F}$$

Quantity Variance

2**3**

$$\text{€}31,500 - \text{€}30,000 = \text{€}1,500 \text{ U}$$

Total Labor Variance

1**3**

$$\text{€}31,080 - \text{€}30,000 = \text{€}1,080 \text{ U}$$

Analyzing and Reporting Variances

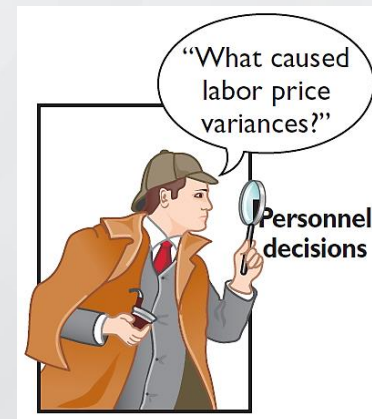
CAUSES OF LABOR VARIANCES

Labor price variance – usually results from two factors:

1. paying workers **different wages than expected**, and
2. **misallocation of workers**.

When workers are not unionized, the **manager** who authorized the wage increase is responsible for the higher wages.

Production department generally is responsible for labor price variances resulting from **misallocation of the workforce**.

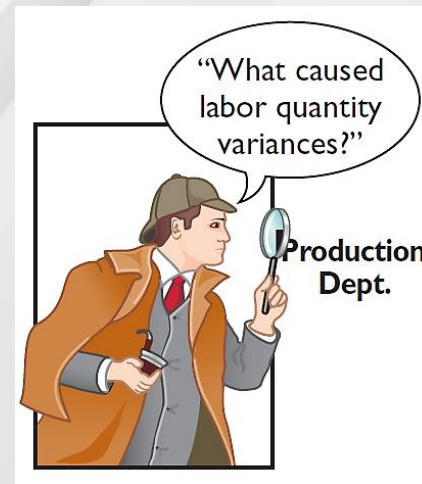


Analyzing and Reporting Variances

Causes of Labor Variances

Labor quantity variances

- ▶ Relates to the efficiency of workers.
- ▶ The cause of a quantity variance generally can be traced to the **production department**.



Variance Reports and Balanced Scorecards

Reporting Variances

- ◆ All variances should be reported to appropriate levels of management as soon as possible.
- ◆ The form, content, and frequency of variance reports vary considerably among companies.
- ◆ Facilitate the principle of “management by exception.”
- ◆ Top management normally looks for **significant variances**.

Analyzing and Reporting Variances

Income Statement Presentation of Variances

In income statements prepared for management under a standard cost accounting system, cost of goods sold is stated at standard cost and the variances are disclosed separately.

Illustration 26.27

Xonic Income Statement For the Month Ended June 30, 2020		
Sales revenue		€70,000
Cost of goods sold (at standard)		<u>52,000</u>
Gross profit (at standard)		18,000
Variances		
Materials price	€ 420 U	
Materials quantity	600 U	
Labor price	420 F	
Labor quantity	1,500 U	
Overhead	<u>900 U</u>	
Total variance unfavorable		<u>3,000</u>
Gross profit (actual)		15,000
Selling and administrative expenses		<u>3,000</u>
Net income		<u>€12,000</u>

Variance Reports

Question

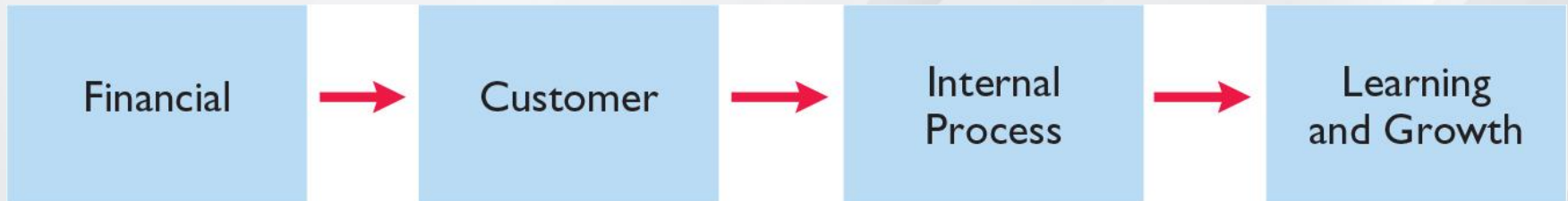
Which of the following is incorrect about variance reports?

- a. They facilitate “management by exception.”
-  b. They should only be sent to the top level of management.
- c. They should be prepared as soon as possible.
- d. They may vary in form, content, and frequency among companies.

Balanced Scorecard

The **balanced scorecard** incorporates financial and non-financial measures in an integrated system that links performance measurement and a company's strategic goals.

The balanced scorecard evaluates company performance from a series of “perspectives.” The four most commonly employed **perspectives** are as follows.



Perspective

Financial



Objective

Return on assets.
Net income.
Credit rating.
Share price.
Profit per employee.

Customer



Percentage of customers who would recommend product.
Customer retention.
Response time per customer request.
Brand recognition.
Customer service expense per customer.

Internal Process



Percentage of defect-free products.
Stockouts.
Labor utilization rates.
Waste reduction.
Planning accuracy.

Learning and Growth



Percentage of employees leaving in less than one year.
Number of cross-trained employees.
Ethics violations.
Training hours.
Reportable accidents.

Industry

Automobiles



Measure

Capacity utilization of plants.
Average age of key assets.
Impact of strikes.
Brand-loyalty statistics.

Computer Systems



Market profile of customer end-products.
Number of new products.
Employee share ownership percentages.
Number of scientists and technicians used in R&D.

Chemicals



Customer satisfaction data.
Factors affecting customer product selection.
Number of patents and trademarks held.
Customer brand awareness.

Regional Banks



Number of ATMs by region.
Number of products used by average customer.
Percentage of customer service calls handled by interactive voice response units.
Personnel cost per employee.
Credit card retention rates.

Source: Financial Accounting Standards Board, *Business Reporting: Insights into Enhancing Voluntary Disclosures* (Norwalk, Conn.: FASB, 2001).

Balanced Scorecard Question

Which of the following would not be an objective used in the customer perspective of the balanced scorecard approach?

- a. Percentage of customers who would recommend product to a friend.
- b. Customer retention.
- c. Brand recognition.
-  d. Earnings per share.

Balanced Scorecard

In summary, the balanced scorecard does the following:

- 1. Employs both financial and non-financial measures.**
- 2. Creates linkages** so that high-level company goals can be communicated all the way down to the shop floor.
- 3. Provides measurable objectives for such non-financial measures** such as product quality, rather than vague statements such as “We would like to improve quality.”
- 4. Integrates** all of the company’s goals into a single performance measurement system, so that **an inappropriate amount of weight will not be placed on any single goal.**

Thank You