

#### **PowerPoint Presentation by**

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#### MANAGEMENT ACCOUNTING 8<sup>th</sup> EDITION BY HANSEN & MOWEN

#### **9** STANDARD COSTING

#### LEARNING OBJECTIVES

After studying this chapter, you should be able to:

#### LEARNING OBJECTIVES

- 1. Tell how unit standards are set; why standard costing systems are adopted.
- 2. State the purpose of a standard cost sheet.
- 3. Describe basic concepts underlying variance analysis & explain how they are used for control.

Continued

#### LEARNING OBJECTIVES

- Compute materials & labor variances; explain how they are used for control.
  Calculate variable & fixed overhead variances & give their definitions.
  Prepare journal entries for variances
  - . Prepare journal entries for variances *(Appendix)*.

Click the button to skip Questions to Think About

#### What motivated Rosita to implement a more formal cost control system?



Why does a standard cost system provide more detailed control information?



# What type of control is being exercised with the use of standards?



# How can standards be used to control costs?



#### LEARNING OBJECTIVE

1

Tell how unit standards are set; why standard costing systems are adopted.

#### QUANTITY STANDARDS: Definition

Tell the amount of input that should be used per unit of output. LO 1

#### **PRICE STANDARDS:** Definition

Tell the amount that should be paid for the quantity of input used.

LO 1

Where do quantity & price standards come from?

Quantity standards come from experience, studies, & personnel. Price standards come from operations, purchasing, personnel, & accounting.

LO 1

What is the difference between ideal and attainable standards?

> Ideal standards only work under perfect conditions. Attainable standards can be achieved under efficient operating conditions.

## STANDARD COST SYSTEMS

Why adopt a standard cost system? ✤For planning & control \* To improve performance measures \* To give manager more information by decomposing total variances into price & usage variances **<sup>∗</sup>** For product costing \* To use unit cost system that is readily available in pricing

LO 1

## **COST ASSIGNMENT**

	Manufacturing Costs		
	Direct Materials	Direct Labor	Overhead
Actual costing system Normal costing system Standard costing system	Actual Actual Standard	Actual Actual Standard	Actual Budgeted Standard

Standard costs are readily available for product costing in a standard cost system.

LO<sub>1</sub>

**Exhibit 9-1** Cost Assignment Approaches



#### LEARNING OBJECTIVE

## State the purpose of a standard cost sheet.

#### STANDARD COST PER UNIT: Definition

Is the sum of standards costs for direct materials (DM), direct labor (DL), & overhead.

### **BLUECHITO COST SHEET**

Description	Standard Price	Standard Usage	Standard Cost*	Subtotal
Direct materials:				
Blue corn	\$ 0.006	18 oz.	\$0.108	
Cooking oil	0.031	2 oz.	0.062	
Salt	0.005	1 oz.	0.005	
Lime	0.400	0.01 oz.	0.004	
Bags	0.044	1 bag	0.044	
Total direct materials				\$0.223
Direct labor:				
Inspectors	7.000	0.0070 hr.	\$0.049	
Machine operators	10.000	0.0008 hr.	0.008	
Total direct labor				0.057
Overhead:				
Variable overhead	3.850	0.0078 hr.	\$0.030	
Fixed overhead	32.050	0.0078 hr.	0.250**	
Total overhead				0.280
Total standard unit cost				<u>\$0.560</u>
*Calculated by multiplying p **Rounded	rice times usage.			

Standard cost sheet provides details for standard cost measures.

LO 2

\*\*Rounded

Exhibit 9-2 Standard Cost Sheet for Bluechitos



#### LEARNING OBJECTIVE

Describe basic concepts underlying variance analysis & explain how they are used for control.

#### TOTAL BUDGET VARIANCE: Definition

Is the difference between **actual** cost & **planned** cost of production. LO<sub>3</sub>

#### **FAVORABLE & UNFAVORABLE**

The difference between actual & planned can be **favorable** (actual price or usage < standard) or **unfavorable** (actual price or usage > standard). Does not mean good or <u>bad</u>! LO3

LO 3

What should we do when we find variances?

If variances are <u>significant</u>, that is if they are <u>beyond our control</u> <u>limits</u>, they should be investigated if it is <u>cost beneficial</u> to do so.

## **FORMULA:** Total Variance

*Total variance is Actual cost – Applied cost or Total cost – Standard cost.* 

**Total Variance** 

- $= (\mathbf{AP} X \mathbf{AQ}) (\mathbf{SP} X \mathbf{SQ})$
- = Actual price x Actual quantity
- Standard Price x Standard Quantity

LO 3

How can we make total variances more useful?

Total variances provide more information if they are divided into **Price** variances & **Efficiency** variances.

#### LEARNING OBJECTIVE

Compute materials & labor variances; explain how they are used for control.

#### **FAVORABLE & UNFAVORABLE**

**Repeat:** The difference between actual & planned can be **favorable** (actual price or usage < standard) or **unfavorable** (actual price or usage > standard). <u>Does not mean good or</u> <u>bad</u>! IO4

#### BLUE-CORN FOODS, INC.: Background

Information for **actual** production, cost of corn, & inspectors.

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LO<sub>4</sub>

**Actual** production

48,500 bags corn chips

Actual cost of corn

780,000 ounces @ \$0.0069

Actual cost of inspectors

360 hours @ \$7.35 = \$2,646



## TOTAL MATERIALS & LABOR VARIANCES

Compares **actual costs** with **budgeted costs** at level of production.

LO4

	Actual Costs	Budgeted Costs*	Total Variance
Corn	\$5,382.00	\$5,238.00	\$144.00 U
Inspectors labor	2,646.00	2,376.50	269.50 U

\*The standard quantities for materials and labor are computed as unit quantity standards from Exhibit 9-2: Corn:  $18 \times 48,500 = 873,000$  ounces Labor:  $0.007 \times 48,500 = 339.5$  hours

Multiplying these standard quantities by the unit standard prices given in Exhibit 9-2 produces the budgeted amounts appearing in this column:

Corn: \$0.006 × 873,000 = \$5,238.00 Labor: \$7.00 × 339.5 = \$2,376.50

Exhibit 9-5 Performance Report: Total Variances



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## **MATERIALS VARIANCES**



Decompose total materials variance into **price & usage** variances.

LO<sub>4</sub>

#### FORMULA: Materials Price Variance (MPV)

Materials price variance tells whether a company paid more than expected for raw materials.

BLUE CORN

MPV

$$= (\mathbf{A}\mathbf{Q} \times \mathbf{A}\mathbf{P}) - (\mathbf{A}\mathbf{Q} \times \mathbf{S}\mathbf{P})$$

 $= (\mathbf{AP} - \mathbf{SP})\mathbf{AQ}$ 

= **(\$0.0069 - \$0.0060)** 780,000

LO<sub>4</sub>

Who is responsible for a materials price variance?

#### The Purchasing Agent.



IO4

Limitations on using price variance in performance evaluation: buying lower quality or too much inventory. Results of investigation show shortage of usual grade of corn; purchasing agent has no control over supply.



#### FORMULA: Materials Usage Variance (MUV)

Materials usage variance tells whether a company used more raw materials than expected.

MUV

$$= (\mathbf{AQ} \times \mathbf{SP}) - (\mathbf{SQ} \times \mathbf{SP})$$

= (AQ - SQ)SP

= (780,000 - 873,000) \$0.006



LO 4

34

What is the percentage & source of the favorable MUV?

#### The 10.7% favorable MUV results from higher quality corn.



Who is responsible for a materials usage variance?

#### **The Production Manager.**

### LABOR VARIANCES



Decompose total labor variance into **rate & efficiency** variances.

LO<sub>4</sub>

#### FORMULA: Labor Rate Variance (LRV)

Labor rate variance tells whether a company paid more than expected for labor.

**BLUE CORN** 

LRV

- $= (\mathbf{AH} X \mathbf{AR}) (\mathbf{AH} X \mathbf{SR})$
- = (AR SR)AH
- = (\$7.35 \$7.00) 360

= \$ 126 U

LO<sub>4</sub>

LO 4

What is the percentage & source of the unfavorable LRV?

The 5% favorable MUV results from market forces & unexpected overtime.

#### FORMULA: Labor Efficiency Variance (LEV)

Labor efficiency variance tells whether a company used more labor than expected.

**BLUE CORN** 

LEV

 $= (\mathbf{AH} \times \mathbf{SR}) - (\mathbf{SH} \times \mathbf{SR})$ 

= (AH - SH)SR

= (360 - 339.5) \$7

= **\$ 143.50 U** 

LO<sub>4</sub>

LO 4

What is the percentage & source of the unfavorable LEV?

The 6% favorable LEV resulted from machinery breakdown.

LO 4

Who is responsible for a labor efficiency variance?

#### The Production & Maintenance Managers.

#### LEARNING OBJECTIVE

Calculate variable & fixed overhead variances & give their definitions.

#### VARIABLE OVERHEAD: Background

LO 5

43

Variable overhead rate (standard)	\$3.85 per DLH
Actual variable overhead costs	\$1,600
Actual hours worked (machining & inspection)	400
Bags of chips produced	48,500
Hours allowed for production	378.3
Applied variable overhead	\$1,456



#### FORMULA: Total Variable Overhead Variance

*Total overhead variance is the difference between actual and applied variable overhead.* 

**Total Variable Overhead** 

= Actual – Applied Overhead

LO<sub>5</sub>

44

= \$1,600 - \$1,456

= **\$ 144 U** 



#### VARIABLE OVERHEAD VARIANCE



Decomposes total variable overhead variance into **spending & efficiency** variances.

#### FORMULA: Variable Overhead Spending Variance

Variable overhead spending variance measures aggregate effect of actual variable overhead rate with standard rate.

**Spending Variance** 

- = (AVOR x AH) (SVOR x AH)
- = (AVOR SVOR)AH
- = (\$4.00 \$3.85) 400

= **\$ 60 U** 



## VARIABLE OVERHEAD SPENDING VARIANCE

Variable overhead spending variance arises because prices change. It includes things such as indirect materials, indirect labor, electricity maintenance, etc. Increase or decrease in these items is beyond control of managers.

#### FORMULA: Variable Overhead Efficiency Variance

Variable overhead efficiency variance measures change in variable overhead consumption because relies on direct labor.

**Efficiency Variance** 

- = (AH SH)SVOR
- = **(400 378.3)** \$3.85

= **\$ 84 U** 

BLUE COR

## FIXED OVERHEAD: Background

**Budgeted or Planned Items** 

LO5

Budgeted fixed overhead	\$749,970		
Practical activity	23,400 DLH		
Standard fixed overhead rate	\$32.05		
Actual Results			
Actual production	2,750,000 bags of chips		
Actual fixed overhead cost	\$749,000		
Standard hours allowed for actual production	21,450		
	40		

**BLUE CORN** 

#### FORMULA: Applied Fixed Overhead

LO 5

50

**Applied Fixed Overhead** 

- = SFOR x Standard hours
- = \$32.05 x 21,450
- = \$ 687,473



#### **FORMULA:** Total Fixed Overhead Variance

*Total fixed overhead variance is the difference between actual and applied fixed overhead.* 

**Total Fixed Overhead Variance** 

- = Actual Applied Overhead
- = \$749,000 \$687,473
- = \$ 61,527 Underapplied





#### FIXED OVERHEAD VARIANCES



Decompose total fixed overhead variance into **spending & volume** variances.

LO 5

## FIXED OVERHEAD SPENDING VARIANCE

Fixed overhead spending variance is the difference between actual and budgeted fixed overhead. It includes things such as salaries, depreciation, taxes, and insurance. Increase or decrease in these items is beyond control of managers. LO 5

#### FORMULA: Fixed Overhead Volume Variance

Fixed overhead volume variance measures the effect of actual output differing from output used to compute predetermined standard fixed overhead rate.

#### **Volume Variance**

= Budgeted – Applied fixed overhead

LO5

54

= \$62,497 U



#### LEARNING OBJECTIVE

#### Prepare journal entries for variances (Appendix).

#### **JOURNAL ENTRIES**

LO 6

56

Blue Corn must write journal entries to enter information for variances into accounting records. Variances are closed into Cost of Goods Sold.



#### **CHAPTER 9**

