Lecture (8) Week (9)

4 April 2020

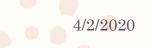8 Flexible Budgets, Overhead Cost Variances, and Management Control

Objective (1):

Explain the similarities and differences in planning variable and fixed overhead costs -

Objective (2): Develop budgeted variable overhead cost rates

And budgeted fixed overhead cost rates

Standard Costing at Webb Company

- Webb uses standard costing. Chapter 7 explained how the **standards** for Webb's **direct manufacturing** costs were **developed**.

- This chapter explains **how** the **standards** for Webb's **manufacturing overhead costs** are developed.

- **Standard** costing is a costing system that:

- (1) **traces direct** costs to output produced by multiplying the **standard prices** or rates by the **standard quantities** of inputs allowed for **actual** outputs produced, and

- (2) **allocates** overhead costs on the basis of the **standard overhead** cost **rates** times the **standard quantities** of the allocation bases allowed for the **actual outputs** produced.

- The **standard** cost of Webb's **jackets** can be **computed** at the start of the **budget** period.

- This feature of standard costing **simplifies recordkeeping** because **no** record is needed of the **actual** overhead costs or of the **actual** quantities of the cost-allocation **bases** used for making the jackets.

- Therefore, what managers *do* **need** are the **standard** overhead cost **rates** for Webb's **variable** and **fixed** overhead.

- Management accountants **calculate** these cost **rates** based on the **planned amounts** of **variable** and **fixed** overhead and the **standard quantities** of the allocation **bases**.

- We describe these **computations** next.

Developing Budgeted Variable Overhead Rates

Throughout the chapter, we use the broader term *budgeted* *rate* rather than *standard*

Budgeted variable overhead cost-allocation rates can be developed in four steps.

- **Step 1**: Choose the Period to Be Used for the Budget.

- **Step 2**: Select the Cost-Allocation Bases to Use in Allocating the Variable Overhead Costs to the Output Produced..

- **Step 3**: Identify the Variable Overhead Costs Associated with Each Cost-Allocation Base.

- **Step** 4**:** Compute the Rate per Unit of Each Cost-Allocation Base Used to Allocate the Variable Overhead Costs to the Output Produced.

Step 1: Choose the Period to Be Used for the Budget.

Webb uses a 12-month budget period.

There are **two** reasons for using annual overhead rates rather than, say, monthly rates:

The **first**: relates to the numerator, such as reducing the influence of seasonality on the firm's cost structure. (**Because numerator is represented in form of amount of money -i.e. firm's costs- which might vary from one month to another; so it is fine to use annual costs to reduce the effect of seasonality**).

The **second** relates to the denominator, such as reducing the effect of varying output and number of days in a month. (**Because denominator is represented in form of number of outputs i.e. machine hours which might vary from one month to another; so it is fine to use annual units to reduce variety among the outputs of each month**).

In **addition**, setting overhead rates once a year rather than 12 times a year **saves** managers time.

Select the Cost-Allocation **Bases** to Use in Allocating the **Variable** Overhead Costs to the **Output** Produced

– Webb's operating managers select **machine-hours** as the cost-allocation base because they believe that the number of **machine-hours** is the sole cost **driver** of **variable** overhead.

– Based on an engineering study, Webb **estimates** it will take **0.40** of a machine hour **per** actual **output** unit.

– For its budgeted output of **144,000** jackets in 2017,

– Webb budgets **57,600 machine-hours** as a **base** to calculate the rate

– (**0.40 machine-hour / a unit of output** × **144,000 units of output= 57,600 machine-hours**)

Identify the Variable Overhead Costs Associated with Each Cost-Allocation Base.

Webb **groups** all of its **variable** overhead **costs**, including:

- o The costs of energy,

- o Machine maintenance,

- o Engineering support,

- o Indirect materials, and

- o Indirect manufacturing labor, in a **single** cost **pool**.

❖ Webb's *total* budgeted variable overhead costs for 2017 are **$1,728,000.**

Step 4:

– **Compute the Rate per Unit of Each Cost-Allocation Base Used to Allocate the Variable Overhead Costs to the Output Produced.**

– Dividing the amount in **Step 3** (**$1,728,000**) by the amount in **Step 2** (**57,600 machine-hours**), **Webb** estimates a rate of **$30** per standard machine-hour for **allocating** its **variable** overhead costs.

– When **standard** costing is used, the **variable** overhead rate per unit of the cost allocation base ($**30** per **machine-hour** for **Webb**) is generally expressed as a standard rate per output unit.

– Webb calculates the budgeted variable overhead cost **rate per output** unit as follows:
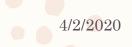
$$\text{Budgeted variable overhead cost rate per output unit} = \boxed{\text{Budgeted input allowed per output unit}} \times \boxed{\text{Budgeted variable overhead cost rate per input unit}} -$$

$$= \boxed{\text{0.40 hour per jacket}} \times \boxed{\text{\$30 per hour}}$$

$$= \$12 \text{ per jacket}$$

$30 per standard machine-hour

- The $**12-per-jacket** rate is the **budgeted variable** overhead cost rate in Webb's **static budget** for 2017.

- The $**12-per-jacket** rate represents the **amount** by which **managers** expect Webb's **variable** overhead costs to **change** when the amount of **output changes**.

- As the number of jackets **manufactured increases**, the **variable** overhead costs allocated to **output** (for inventory costing) **increase** at the **rate** of $**12** per jacket.

- The $**12** per jacket **constitutes** the firm's total **variable** overhead costs per **unit** of output, including the **costs** of **energy**, **repairs**, **indirect** labor, and so on.

- Managers **control** variable overhead costs by **setting** a budget for each of these line **items** and then **investigating** the possible **causes** of any significant **variances**.

Developing Budgeted Fixed Overhead Rates

- Fixed overhead costs are, by definition, a lump sum of costs that remains unchanged for a given period, despite wide changes in a firm's level of activity or output.

- Webb's monthly fixed overhead costs of $276,000 are the same in the static budget as they are in the flexible budget.

- Do not assume, however, that these costs can never be changed.

- Managers can reduce them by selling equipment or laying off employees, for example.

- But the costs are fixed in the sense that, unlike variable costs such as direct material costs, fixed costs do not increase or decrease with the level of activity within the relevant range.

- The process of developing the budgeted fixed overhead rate is the same as the one for calculating the budgeted variable overhead rate. The steps are as follows:

Step: 1
Choose the Period to Use for the Budget.

As with variable overhead costs, the budget period for fixed overhead costs is typically one year, to help smooth out seasonal effects.

Step: (2) Select the Cost-Allocation **Bases** to Use in Allocating the **Fixed** Overhead **Costs** to the **Output** Produced.

o Webb uses <u>machine-hours</u> as the **only** cost-allocation base for the firm's <u>fixed</u> overhead **costs**.

o The number of **machine-hours** is the <u>denominator</u> in the budgeted fixed overhead rate **computation** and is called the <u>denominator</u> level.

o For simplicity, we assume Webb **expects** to operate at capacity in **fiscal** year 2017, with a **budgeted** usage of <u>57,600</u> <u>machine-hours</u> for a budgeted output of <u>144,000</u> jackets.

Step: (3) Identify the Fixed Overhead **Costs** Associated with **Each** Cost-Allocation **Base**.

Because Webb identifies a **single** cost-allocation **base—machine-hours—to** allocate fixed overhead costs, it groups all such costs into a **single** cost **pool**.

Costs in this pool include:

- o **Depreciation** on plant and equipment,
- o Plant and equipment **leasing** costs, and
- o The plant manager's **salary**.

Webb's fixed overhead budget for 2017 is *$3,312,000.*

Step: (4):Compute the Rate per Unit of Each Cost-Allocation Base Used to Allocate Fixed Overhead Costs to the Output Produced.

By dividing the $**3,312,000** from **Step 3** by the **57,600** machine-hours from **Step 2.**

Webb estimates a fixed overhead cost rate **of $57.50** per **machine-hour**:

$$\frac{\text{Budgeted fixed overhead cost per unit of cost-allocation base}}{} = \frac{\text{Budgeted total costs in fixed overhead cost pool}}{\text{Budgeted total quantity of cost-allocation base}} = \frac{\$3,312,000}{57,600} = \$57.50 \text{ per machine-hour}$$

4/2/2020

– Under standard costing, the $57.50 fixed overhead cost per machine-hour is usually expressed as a standard cost per output unit.

– Recall that Webb's engineering study estimates that it will take *0.40* machine-hour *per* output *unit*.

– Webb can now *calculate* the *budgeted* fixed overhead cost *per output* unit as follows:

$$\begin{aligned} \text{Budgeted fixed overhead cost per output unit} &= \begin{pmatrix} \text{Budgeted quantity of cost-allocation base allowed per output unit} \end{pmatrix} \times \begin{pmatrix} \text{Budgeted fixed overhead cost per unit of cost-allocation base} \end{pmatrix} \\ &= \boxed{0.40} \text{ of a machine-hour per jacket} \times \boxed{\$57.50} \text{ per machine-hour} \\ &= \boxed{\$23.00 \text{ per jacket}} \end{aligned}$$

– When preparing monthly budgets for 2017, Webb divides the $3,312,000 annual total fixed costs into 12 equal monthly amounts of $276,000.

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Variable Overhead Cost Variances

END OF LECTURE