Topic 08

Flexible budgets, overhead cost variances and management control

Chapter 12

LEARNING OBJECTIVES

- Explain the similarities and differences in planning variable overhead costs and fixed overhead costs
- Develop budgeted variable overhead cost rates and budgeted fixed overhead cost rates
- Calculate variable overhead flexible-budget variance, the variable overhead efficiency variance and the variable overhead spending variance
- Calculate the fixed overhead flexible-budget variance, the fixed overhead spending variance and the fixed overhead production-volume variance
- Show how the 4-variance analysis approach reconciles the actual overhead incurred with the overhead amounts allocated during the period
- Explain the relationship between sales-volume variance and the production-volume variance
- Examine the use of overhead variances in non-manufacturing settings
- An appraisal of standard costing systems - Criticisms and advantages
FLEXIBLE BUDGET

- Is a budget that is adjusted for changes in the unit level of the cost (or revenue) driver
- Based on a knowledge of how revenue and costs behave over a range of the driver.
- Provides the data for studying patterns of behaviours of revenues and costs.
- Determines what costs should have been, given that particular activity level
- Can be used in an ex-ante sense (before the period)
- Can also be used in an ex-post sense (after the period)
- Is both a planning tool and a control tool.

Planning of variable and fixed overhead costs

- Planning variable overhead costs:
  - variable overhead – efficient planning of essential activities only
  - focus attention on the activities that create a superior product or service
  - activities that do not add value to the product or service must be eliminated.
- Planning fixed overhead costs:
  - fixed overhead – efficient planning of essential activities only
  - fixed costs are predetermined well before the budget period begins

Standard costing

- Standard costing is a costing system that:
  - 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
  - allocates overhead costs on the basis of the standard overhead-cost rates multiplied by the standard quantities of the allocation bases allowed for the actual outputs produced.
Overhead application in a standard costing system

- Overhead application is the method of allocating overhead costs to products.
  - Recorded in the WIP inventory account.
- Overhead is applied to inventory using the standard overhead rate.
  - Based on the standard quantity of input allowed, given actual output.
- The activity chosen for the standard overhead rate should be a cost driver.
  - Any activity or factor that causes costs to be incurred.

Developing budgeted variable overhead cost rates

1. Choose the period to be used for the budget.
2. Select the cost-allocation bases to use in allocating variable overhead costs to output produced.
3. Identify the variable overhead costs associated with each cost-allocation base.
4. Calculate the rate per unit of each cost-allocation base used to allocate variable overhead costs to output produced.

Developing budgeted fixed overhead rates

1. Choose the period to be used for the budget.
2. Select the cost-allocation bases to use in allocating fixed overhead costs to output produced.
3. Identify the fixed overhead costs associated with each cost-allocation base.
4. Calculate the rate per unit of each cost-allocation base used to allocate fixed overhead costs to output produced.
5. Then the budgeted fixed overhead cost per output unit.
Calculating overhead cost variances

- The flexible budget provides a tool for controlling manufacturing overhead costs.
- At the end of an accounting period, the flexible budget can be used to calculate the amount of overhead cost that should have been incurred, given the actual level of activity.
- Four different overhead variances can be calculated to compare the actual overhead cost incurred with the flexible budget.

Price variances and efficiency variances for inputs

Variable overhead cost variances

- **Flexible-budget analysis:**
- The **variable overhead flexible-budget variance** measures the difference between actual variable overhead costs incurred and flexible-budget variable overhead amounts.

\[
\text{Variable overhead flexible budget variance} = \text{Actual costs incurred} - \text{flexible budget amount}
\]
Fixed overhead cost variances

- **Fixed overhead flexible-budget variance** is the difference between actual fixed overhead costs and fixed overhead costs in the flexible budget.
- This is the same amount as for the fixed overhead spending variance.
- [The flexible budget fixed costs = static budgeted fixed costs]

\[
\text{Fixed overhead flexible budget variance} = \text{Actual costs incurred} - \text{flexible budget amount}
\]

Variable overhead cost variances

- The **variable overhead spending variance** is the difference between the actual variable overhead cost and the standard variable overhead cost for the actual inputs.
- The **variable overhead efficiency variance** is the difference between the standard variable overhead cost for the actual inputs and the flexible budget cost allowed for variable overhead based on outputs.

Variable overhead standards and variance
Calculating variable overhead cost variances

• Variable overhead spending variance
  - A measure of the difference between actual and budgeted variable overhead cost per unit of the cost-allocation base, multiplied by actual quantity of variable overhead cost-allocation based used for actual output.

\[ \text{SVR} = (\text{AVO}_{\text{Actual}} - \text{SVR}_{\text{Budgeted}}) \times \text{AV} \]

Where
- \( \text{AVO}_{\text{Actual}} \) = Actual variable overhead cost per unit of cost allocation base
- \( \text{SVR}_{\text{Budgeted}} \) = Budgeted variable overhead cost per unit of cost allocation base
- \( \text{AV} \) = Actual Volume of variable overhead cost allocation base used for actual output

• Variable overhead spending variance
  - Whilst the preceding formula seems complex it is simply a more accurate phrasing of the stand “price” variance.

\[ \text{SVR} = (\text{AP} - \text{SP}) \times \text{AV} \]
\[ = (\text{AVO}_{\text{Actual}} - \text{SVR}_{\text{Budgeted}}) \times \text{AV} \]

Where
- \( \text{AVO}_{\text{Actual}} \) = Actual variable overhead cost per unit
- \( \text{SVR}_{\text{Budgeted}} \) = Budgeted variable overhead cost per unit
- \( \text{AV} \) = Actual Volume of variable overhead cost allocation base

• Variable overhead spending variance
  - Another [easier??] way of calculating the difference between the actual variable overhead and the standard variable overhead rate multiplied by actual activity.

\[ \text{SVR} = \text{AVO} \times (\text{AV} \times \text{SVR}) \]

Where
- \( \text{AVO} \) = Actual variable overhead
- \( \text{AV} \) = actual driver volume (eg direct labour hours)
- \( \text{SVR} \) = standard variable overhead rate
Calculating variable overhead cost variances

- **Variable overhead efficiency variance**
  - A measure of the difference between the actual quantity of the cost-allocation base used and the budgeted quantity of the cost per unit of the cost-allocation base multiplied by the budgeted variable overhead cost per unit of cost-allocation base

\[ \text{Variable overhead efficiency variance} = (AV - SV) \times \text{SVOhR} \]

Where
- AV = actual driver volume (e.g., direct labour hours)
- SV = standard driver volume (e.g., direct labour hours) allowed for actual output
- SVOhR = standard variable overhead rate
- Budgeted variable overhead cost per unit of cost-allocation base

**Journal entries for variable overhead costs and variances**

<table>
<thead>
<tr>
<th>Date</th>
<th>Detail</th>
<th>Reference</th>
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<tr>
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<td>Accounts payable &amp; various @ budget rate</td>
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<td>$X</td>
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<td>Work-in-progress control @ actual cost</td>
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<td></td>
<td>Variable overhead allocated @ actual cost</td>
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<td>$X</td>
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<td>Flexible budget - budgeted quantity allowed for actual output</td>
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<td>Variable overhead efficiency variance - CR (F); DR (U)</td>
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<td>Variable overhead spending variance - CR (F); DR (U)</td>
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</table>

**GENERAL JOURNAL**
Interpreting variable overhead variances

- **Spending variance**
  - Actual cost of variable overhead is greater/less than expected, after adjusting for the actual quantity of cost driver that is used
  - Used to control variable overhead cost
- **Efficiency variance**
  - The cost effects of excessive or minimal use of the particular activity (cost driver)
- The spending variance is the real control variance for variable overhead

Interpreting variable overhead variance

- **An unfavourable spending variance** encompasses all factors that cause actual expenditures to exceed the amount expected for the actual hours and actual volume, including consuming excessive quantities of variable overhead items.
- **A favourable spending variance** results when the actual expenditures are less than expected for the hours worked and volume used.
Interpreting variable overhead variance

- An unfavourable efficiency variance occurs when the quantity of variable overheads used exceeds the quantity allowed for the units produced
  - More waste than provided in standard
  - Lower quality raw materials used
  - Poorly maintained equipment
  - Poorly trained employees for required efficiency levels

- A favourable efficiency variance results when the actual quantity of variable overheads used was less than the quantity allowed for the number of units actually produced
  - Less waste than allowed
  - Higher quality materials
  - Better machine efficiency
  - More efficiency in production

Variable overhead cost variances – web link

- Journal entries along with discussion of variable overheads can be found at: http://www.accountingcoach.com/online-accounting-course/30Xpg04.html#variable-manufacturing-overhead

Fixed overhead cost variances
Fixed overhead variances

- The fixed overhead variances are:
  - The fixed overhead spending/budget variance and
  - The fixed overhead volume variance.
- As these costs are not variable in nature, the calculations and interpretation of the variances are not the same as the direct materials, direct labor, and variable overhead variances.

Calculating fixed overhead variances

- **Fixed overhead spending/budget variance**
  - The difference between actual fixed overhead and budgeted fixed overhead
  - \( = \text{actual fixed overhead} - \text{budgeted fixed overhead} \)
- **Fixed overhead volume variance**
  - The difference between budgeted fixed overhead and fixed overhead applied to production
  - \( = \text{budgeted fixed overhead} - \text{applied fixed overhead} \)

Interpreting fixed overhead variances

- **Fixed overhead budget variance**
  - Used for control
  - Assumes fixed overhead will not change as activity varies
- **Fixed overhead volume variance**
  - Standard cost driver allowed for actual output is more/less than the planned level of production
  - Reconciles the two purposes of costing systems: product costing and cost control
Production-volume variance

• Interpreting the production-volume variance
• Interpretation of this variance is difficult due to the nature of the costs involved and how they are budgeted.
• Fixed costs are by definition somewhat inflexible. While market conditions may cause production to flex up or down, the associated fixed costs remain the same.
• Fixed costs may be set years in advance, and may be difficult to change quickly.
• Contradiction: despite this, examination of the fixed overhead budget formulae reveals that it is budgeted similar to a variable cost.

Production-volume variance – web link

• ‘Fixed overhead volume variance’ fully explained, with worked example and problem, can be found at: http://www.futureaccountant.com/standard-costing-variance-analysis/study-notes/overhead-variances-fixed-overhead-volume-variance.php

Fixed overhead cost variances
### Spending Variances

#### Fixed Overheads Spending Variance

<table>
<thead>
<tr>
<th>Cost Driver Volume</th>
<th>Budgeted Fixed OH Applied</th>
<th>Budgeted Fixed Overhead</th>
<th>Actual Fixed Overhead</th>
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</table>

* The spending variance is the difference between the actual overhead and the budgeted overhead applied, e.g., $200 (U) for volume 2.

### Production Volume Variances

#### Fixed Overheads Volume Variance

<table>
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<tr>
<th>Cost Driver Volume</th>
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* The volume variance is the difference between the budgeted and actual overhead, e.g., $1000 (U) for volume 2.
Spending and production volume variances

**Spending Variance**

- Under applied (Unfavourable)
- Over applied (Favourable)

**Budgeted Fixed OH Applied**

**Actual Fixed Overhead**

**Cost Driver Volume**

**Budgeted Fixed OH Applied**

**Actual Fixed Overhead**

**Spending Variance**

- Under applied (Unfavourable)
- Over applied (Favourable)

**Production-volume variance**

**Price AP**

**SQ x AP**

**SP**

**SQ x SP**

**AQ x SP**

**Refer to page 13 variances_extended.pdf**
Fixed overhead cost variances – web links

- YouTube lecture 'Fixed overhead variance' can be found at:
  http://www.youtube.com/watch?v=1W-amz5uhvA

- Standard Costing, Part 5, 'Fixed Mfg Overhead: Standard Cost, Budget Variance, Volume Variance' can be found at:
  http://www.accountingcoach.com/online-accounting-course/30Xpg05.html

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<td>Fixed overhead control $X</td>
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</tr>
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</table>

*EOP/EOY = End of Period

Journal entries for fixed overhead costs and variances – web link

- ‘Fixed overhead cost variance’, fully explained with worked example and problem, can be found at: http://www.futureaccountant.com/standard-costing-variance-analysis/study-notes/overhead-variances-fixed-overhead-cost-variance.php
Integrated analysis of overhead cost variances

- The variance calculations for variable overhead and fixed overhead differ:
  - variable overhead has no production-volume variance
  - fixed overhead has no efficiency variance.

Integrated analysis of overhead cost variances

- 4-Variance analysis
  - 4-variance analysis provides the same level of information as the variance analysis for variable overhead and fixed overhead separately, but it does so in a unified presentation that also indicates those variances that are never present.

Integrated analysis of overhead cost variances

- Combined variance analysis
  - Detailed 4-variance analyses are most common in large, complex businesses.
  - The detailed analyses help managers identify and focus attention on the areas not operating as expected.
  - In 2-variance and 3-variance analyses, variances are combined so some information is lost.
Integrated analysis of overhead cost variances

Production-volume variance and sales-volume variance

- The sales-volume variance has two components:
  - a difference between the static-budget operating income and budgeted operating profit – this is the operating-profit volume variance
  - a difference between the budgeted operating income and the flexible budget operating income – this difference arises because fixed costs are treated as if they behave in a variable manner. The difference between the allocated and budgeted fixed costs is the production-volume variance.

Production-volume variance and sales-volume variance – web link

- YouTube lecture 'Variable overhead analysis – 4 column can be found at:
  [http://www.youtube.com/watch?v=dtUxOOGxk](http://www.youtube.com/watch?v=dtUxOOGxk)
Overhead variances in non-manufacturing and service settings

- Industries in which distribution costs are high, such as vehicles, consumer durables, and cement and steel, may use standard costing to give reliable and timely information on variable distribution overhead spending variances and efficiency variances.
- Service-sector companies and retail business which have high-capacity fixed costs can use fixed overhead variances to help manage capacity effectively.

Financial and non-financial performance measures

- Both financial and non-financial performance measures are used to evaluate the performance of managers.
- Exclusive reliance on either is always too simplistic because each gives a different perspective on performance.