

18

Customer Profitability Analysis, Sales Performance Evaluation, and Income Reporting

Student Tutorial

Chapter Organization

This chapter has been subdivided into three independent sections.


Click the section below that you wish to study, or press “Enter” to proceed linearly through the chapter.

- ① [Customer Profitability Analysis](#)
- ② [Sales Variance Analysis](#)
- ③ [Income Reporting Effects of Alternative Product-Costing Approaches](#)



Customer Profitability Analysis

Using ABC to determine the activities, costs, and profit associated with serving particular customers.



For various reasons, some customers simply are less profitable than others.



Customer Profitability Analysis

Using ABC to determine the activities, costs, and profit associated with serving particular customers.

For various reasons, some customers simply are less profitable than others.

For Example

Customer makes frequent order changes.

Customer needs special parts.

Customer is difficult to please.



Customer Profitability Analysis

Once we know which customers are the least profitable, we can modify our relationship to improve profitability.

Examples:

I hate to do this, but we just can't continue doing business with you.



Customer Profitability Analysis

Once we know which customers are the least profitable, we can modify our relationship to improve profitability.

Examples:

We'll send a team to your plant next week and help you set up an ordering system that gives us more lead time.



Customer Profitability Analysis

Once we know which customers are the least profitable, we can modify our relationship to improve profitability.

Examples:

If you ask for fewer changes, we can charge you less!



Customer Profitability Analysis

To determine customer profitability, Use ABC based on the customer-related activity units used by each customer in question.

Typical Customer-Related Activities Include:

- Processing Orders
- Sales Contacts
- Sales Visits
- Processing Shipments
- Billing
- Engineering/Design Changes
- Special Packaging
- Special Handling

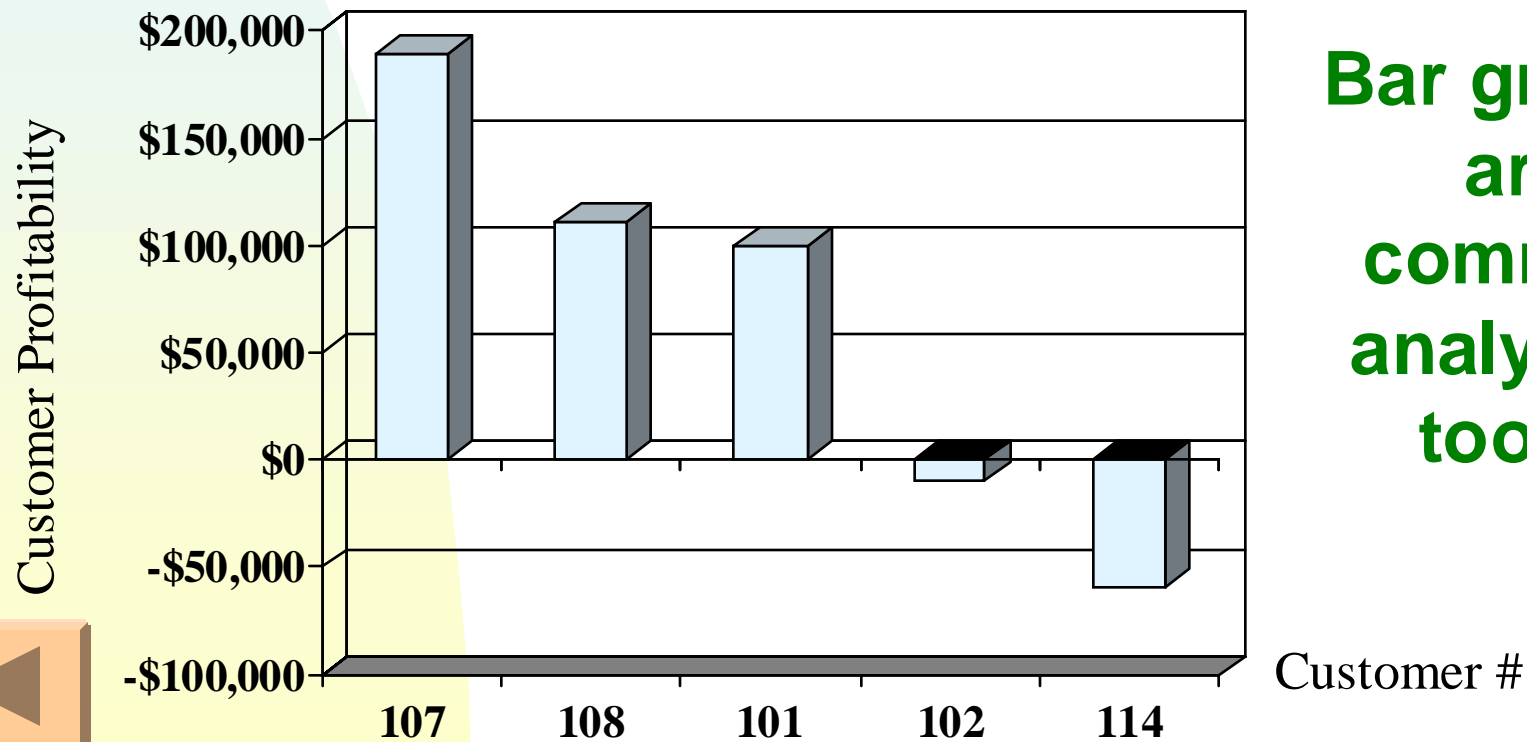




Customer Profitability Analysis

Example

Recall from the example in your text, Koala Camp Gear looked at 5 customers.



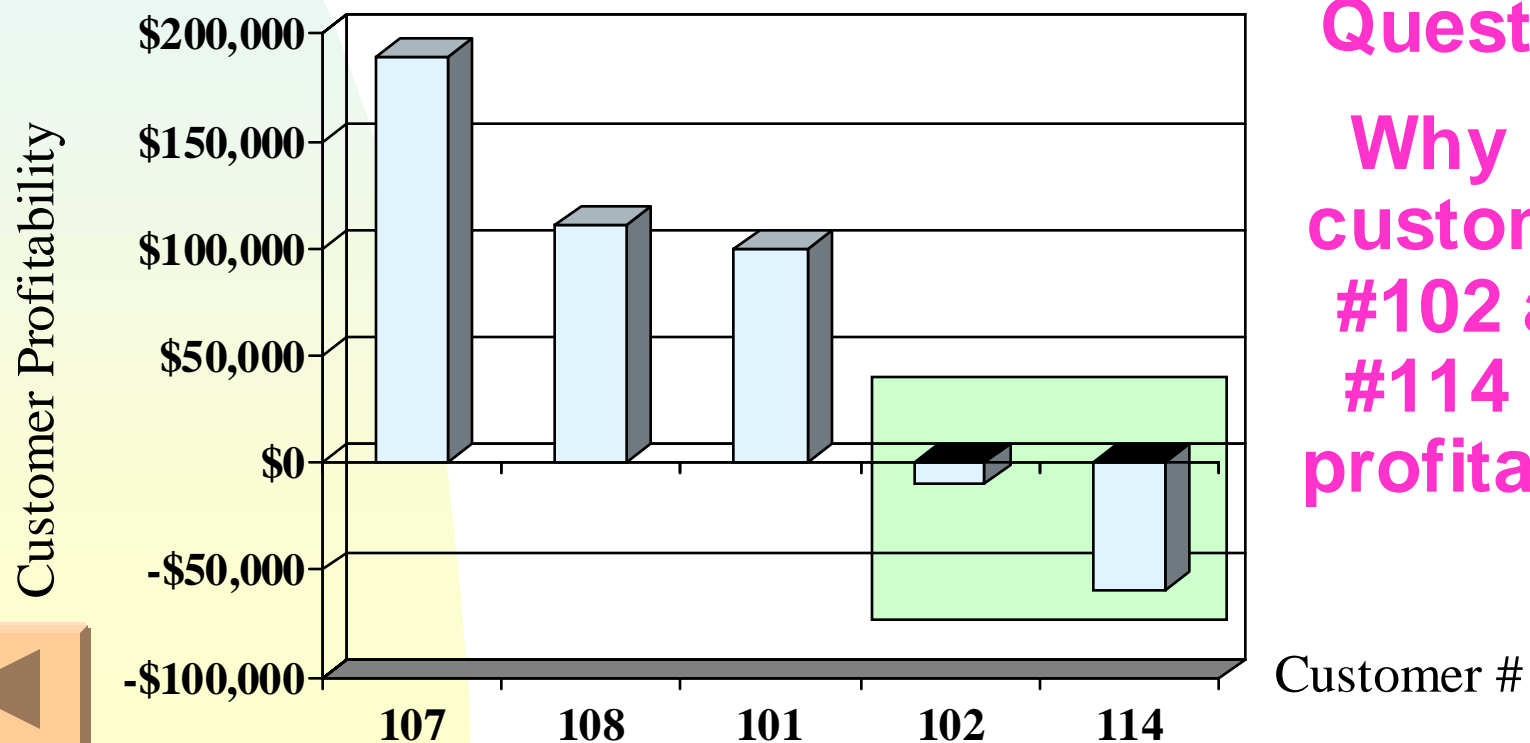
Bar graphs
are
common
analytical
tools.



Customer Profitability Analysis

Example

Note that attention should be focused on customer #102 and #114.



Question:
Why are customers #102 and #114 not profitable?



Customer Profitability Analysis

Example

Comparing the customer-related costs for each customer to established “norms” should reveal helpful insights.

For Customer #102, costs of order processing, engineering/design changes, and special handling are above normal.



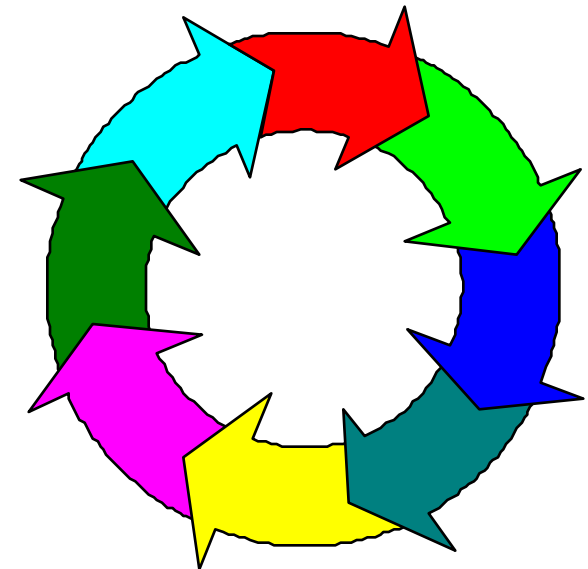
For Customer #114, the cost of special packaging is 4x the norm. The cost for special handling is 6x the norm.



Product Life-Cycle Costs

Product Life-Cycle Costs include all costs incurred over all phases of a product's life cycle.

- ① Product planning and concept design.
- ② Preliminary design.
- ③ Detailed design and testing.
- ④ Production.
- ⑤ Marketing, distribution, and customer service.



A cartoon illustration of a person with dark hair and glasses, wearing a light green long-sleeved shirt, sitting at a desk and looking at a computer monitor. The monitor displays the text 'Let's Look at Sales Variances.' in blue, underlined font. The person's right hand is on the keyboard. The background is a light blue and yellow gradient.

Let's Look at Sales Variances.



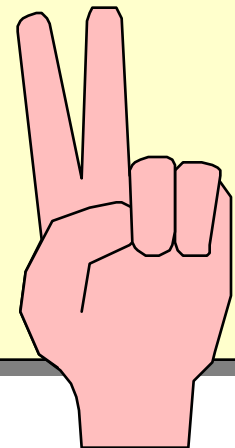
Sales Variance Analysis

The company's overall sales performance can be analyzed two ways:

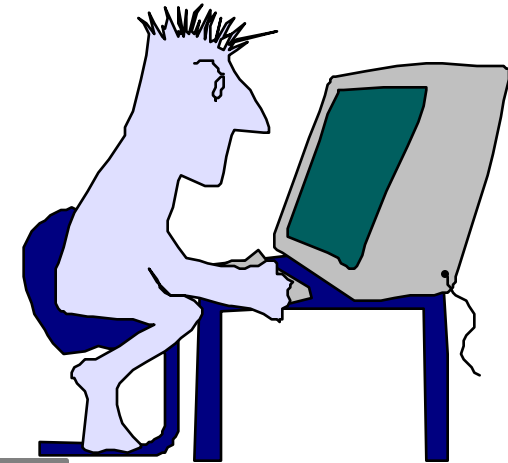
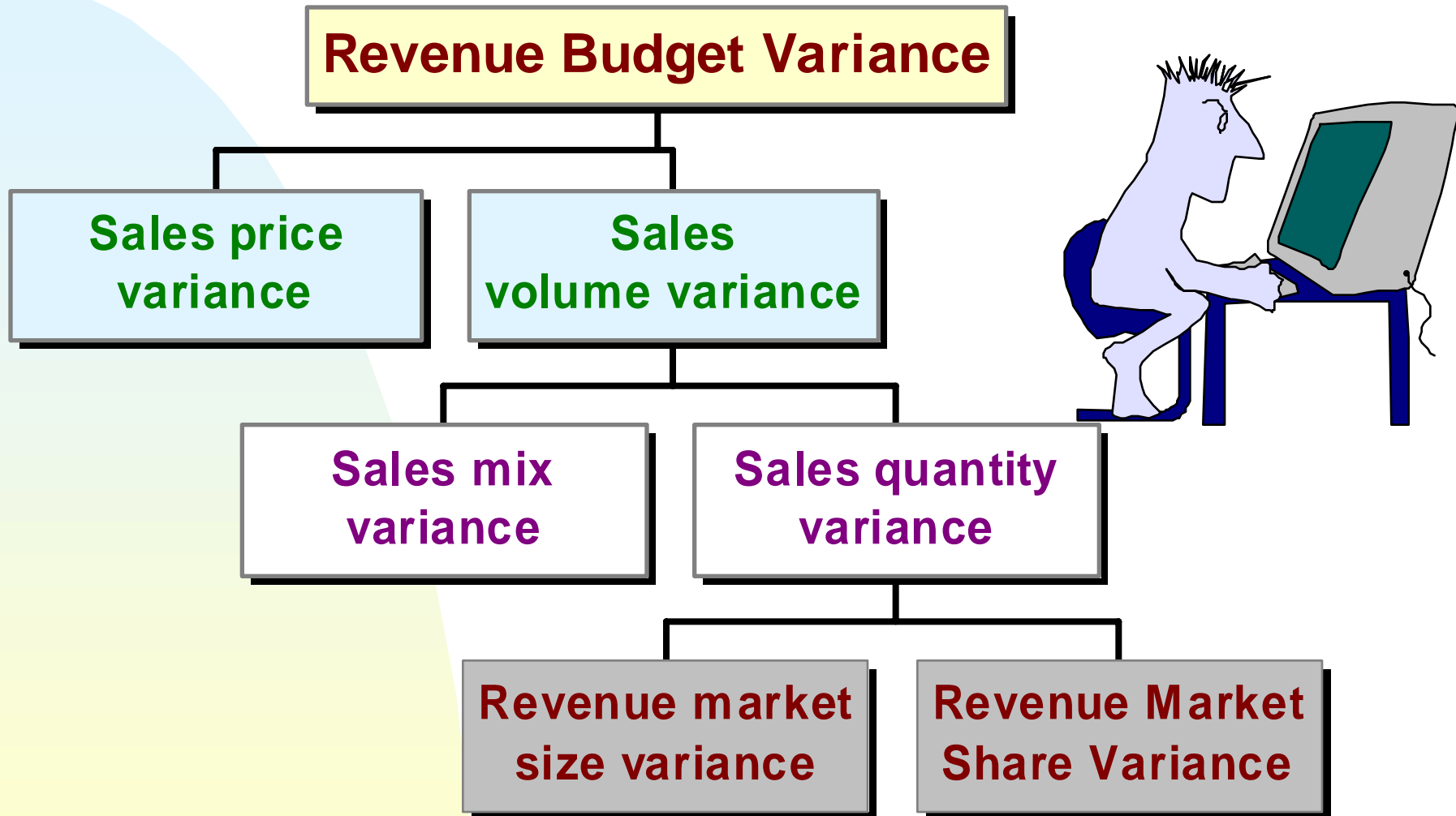
1. *Focus on sales revenue* by analyzing the variance between actual and budgeted sales revenue.

Or

2. *Focus on contribution margin.*



Sales Revenue Variance Analysis



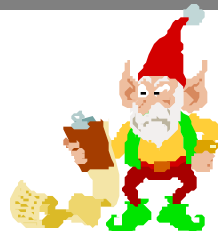
Revenue Budget Variance

$$\text{Revenue budget variance for product x} = \left(\text{Actual sales revenue for product x} - \text{Budgeted sales revenue for product x} \right)$$

Example

Elf, Inc. sells artificial trees. Budgeted sales for 2001 are 65,000 units @ \$120. Koala actually sold 69,000 trees at an average sales price of \$110.

Compute the Revenue Budget Variance.





Revenue Budget Variance

Example

$$\begin{aligned}
 &\text{Revenue budget variance for product x} = \left(\begin{array}{cc} \text{Actual sales revenue for product x} & - \\ & \text{Budgeted sales revenue for product x} \end{array} \right) \\
 &\text{\textcolor{red}{\$210,000 U}} = \left(\begin{array}{cc} \$7,590,000 & - \\ & \$7,800,000 \end{array} \right)
 \end{aligned}$$

Because actual revenue < budgeted revenue, the variance is **UNFAVOURABLE**.

Next, compute the sales price variance and the sales volume variance for the Tree Line Tents.





Sales Price Variance Model

$$\text{Sales price variance for product x} = \left(\text{Actual sales price for product x} - \text{Budgeted sales price for product x} \right) \times \text{Actual sales volume for product x}$$

The Sales Price Variance is a measure of how much of the total variance results from the difference between the BUDGETED sales price and the ACTUAL sales price.





Sales Price Variance

Example

Elf's budgeted sales for 2001 are 65,000 units @ \$120. Koala actually sold 69,000 trees at an average sales price of \$110. What is Elf's Sales Price Variance.

- A. \$ 10 Unfavourable
- B. \$ 650,000 Unfavourable
- C. \$ 480,000 Unfavourable
- D. \$ 690,000 Unfavourable

**Click on the
correct Answer!**





Sales Price Variance Example

Elf's budgeted sales for 2001 are 65,000 units @ \$120. Koala actually sold 69,000 trees at an average sales price of \$110. What is Elf's Sales Price Variance.

- A. \$ 10 Unfavourable
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You are on
the right
track, but you
need to try
again!





Sales Price Variance

Example

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- D. \$ 690,000 Unfavourable

**Try again.
Ask yourself
if you should
multiply by
actual sales
or budgeted
sales.**





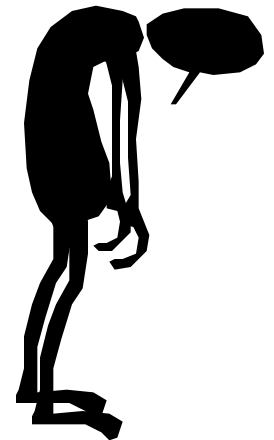
Sales Price Variance

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You are WAY
off base!
Look at the
model and
then try
again.





Sales Price Variance

Example

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Sales Price Variance Model

$$\begin{array}{l} \text{Sales} \\ \text{price} \\ \text{variance} \\ \text{for} \\ \text{product x} \end{array} = \left(\begin{array}{l} \text{Actual} \\ \text{sales} \\ \text{price for} \\ \text{product x} \end{array} - \begin{array}{l} \text{Budgeted} \\ \text{sales} \\ \text{price for} \\ \text{product x} \end{array} \right) \times \begin{array}{l} \text{Actual} \\ \text{sales} \\ \text{volume} \\ \text{for} \\ \text{product x} \end{array}$$

**Click here to return
to the problem**



Sales Volume Variance Model

$$\text{Sales Volume Variance} = \left(\begin{array}{c} \text{Actual} \\ \text{unit sales} \\ \text{volume} \\ \text{for} \\ \text{product x} \end{array} - \begin{array}{c} \text{Budgeted} \\ \text{unit sales} \\ \text{volume} \\ \text{for} \\ \text{product x} \end{array} \right) \times \begin{array}{c} \text{Budgeted} \\ \text{sales} \\ \text{price for} \\ \text{product x} \end{array}$$

This variance measures how much of the total revenue variance is due to unit sales differing from budgeted unit sales.





Sales Volume Variance

Example

Elf's budgeted sales for 2001 are 65,000 units @ \$120. Koala actually sold 69,000 trees at an average sales price of \$110. What is Elf's Sales Volume Variance.

- A. \$ 4,000 favourable
- B. \$ 440,000 favourable
- C. \$ 480,000 favourable
- D. \$ 690,000 Unfavourable

**Click on the
correct Answer!**





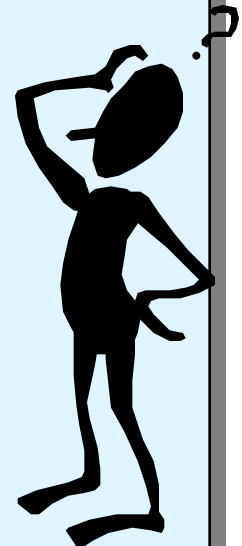
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D. \$ 690,000 Unfavourable

Try again. Ask yourself if you should multiply by actual price or budgeted price.





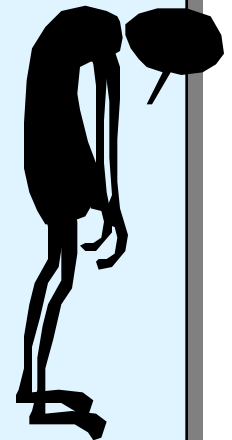
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Sales Volume Variance

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Congrats!





Sales Volume Variance Model

$$\text{Sales Volume Variance} = \left(\begin{array}{c} \text{Actual} \\ \text{unit sales} \\ \text{volume} \\ \text{for} \\ \text{product x} \end{array} - \begin{array}{c} \text{Budgeted} \\ \text{unit sales} \\ \text{volume} \\ \text{for} \\ \text{product x} \end{array} \right) \times \begin{array}{c} \text{Budgeted} \\ \text{sales} \\ \text{price for} \\ \text{product x} \end{array}$$

**Click here to return
to the problem**



Sales Mix Variance

For the **Sales Mix Variance**, sum the sales mix variances for each product.

$$\text{Sales Mix Variance} = \text{Budget sales price} \times \left(\text{Actual sales mix \%} - \text{Budget sales mix \%} \right) \times \text{Actual total unit sales}$$

Example - Refer to the text

Koala originally budgeted for Tree Line Tents to comprise 60% of sales. By the end of the period, Tree Line Tents represented only 55% of sales. Total unit sales for the period was 55,000 units.





Sales Mix Variance

For the **Sales Mix Variance**, sum the sales mix variances for each product.

$$\begin{aligned}
 \text{Sales Mix Variance} &= \text{Budget sales price} \times \left(\text{Actual sales mix \%} - \text{Budget sales mix \%} \right) \times \text{Actual total unit sales} \\
 \$495,000 \text{ U} &= \$180 \times \left(55\% - 60\% \right) \times 55,000
 \end{aligned}$$

The variance is UNFAVOURABLE, because Tree Line Tents were a smaller portion of total sales than originally planned.





Sales Quantity Variance

For the **Sales Quantity Variance**, sum the sales quantity variances for each product.

$$\text{Sales Quantity Variance} = \text{Budget sales price} \times \left(\text{Actual unit sales} - \text{Budget unit sales} \right) \times \text{Budget Sales \%}$$

Example

Koala originally budgeted for Tree Line Tents to comprise 60% of sales. Koala planned to sell 50,000 Tree Line Tents, but actually sold 55,000 Tree Line Tents. Budgeted Sales Price is \$180.





Sales Quantity Variance

For the **Sales Quantity Variance**, sum the sales quantity variances for each product.

$$\begin{aligned} \text{Sales Quantity Variance} &= \text{Budget sales price} \times \left(\text{Actual unit sales} - \text{Budget unit sales} \right) \times \text{Budget Sales \%} \\ \$540,000 \text{ F} &= \$180 \times \left(55,000 - 50,000 \right) \times 60\% \end{aligned}$$

The variance is FAVOURABLE, because Tree Line Tents sold more units that originally planned.





Revenue Market Size Variance

Base the Revenue Market Size Variance on total production and budgeted market share.

$$\text{Revenue market size variance} = \text{Budget weighted avg. unit sales price} \times \left(\text{Actual total market unit sales} - \text{Budget total market unit sales} \right) \times \text{Budget market share \%}$$

The resulting variance is favourable, or unfavourable, simply as a function of how the industry, as a whole, did compared to expectations.

Revenue Market Share Variance

$$\text{Revenue market share variance} = \text{Budget weighted avg. unit sales price} \times \left(\text{Actual market share \%} - \text{Budget market share \%} \right) \times \text{Actual total market unit sales}$$

Example

Koala's budgeted market share is 5%. However, Koala only achieved a market share of 4%. Weighted average unit sales price for Koala's three types of tents is \$199. Total industry sales were 1,375,000 units.



Revenue Market Share Variance

Example

$$\text{Revenue market share variance} = \text{Budget weighted avg. unit sales price} \times \left(\text{Actual market share \%} - \text{Budget market share \%} \right) \times \text{Actual total market unit sales}$$

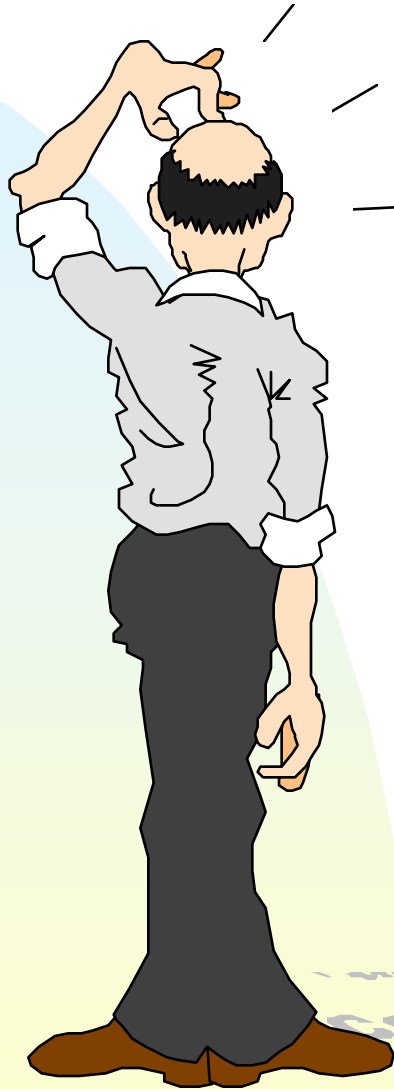
$$= \$199 \times (4\% - 5\%) \times 1,375,000$$

$$= \underline{\$2,736,250 \text{ U}}$$



Koala's market share is down. This particular variance is likely to be of great concern to management.

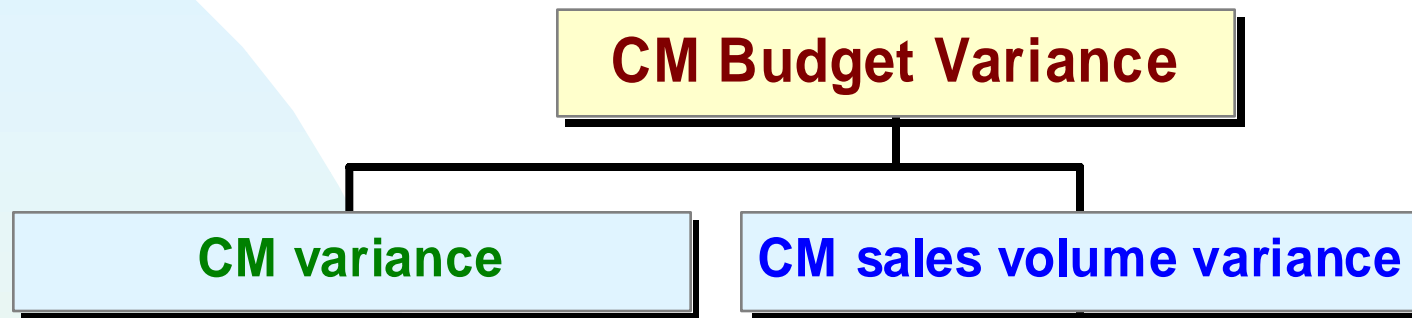




Let's focus
now on
**CONTRIBUTION
MARGIN**



CM Variance Analysis

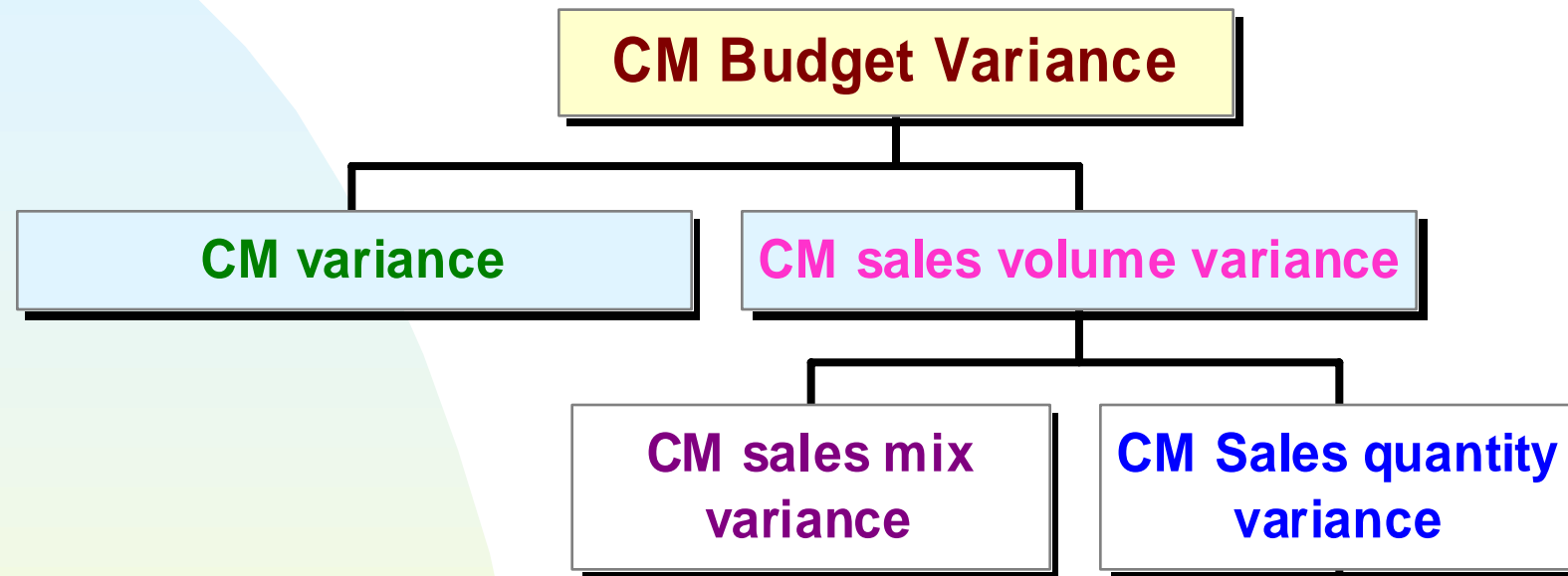


Each of these variances is computed the same way as its revenue counterpart.

Use CM instead of sales price.



CM Variance Analysis

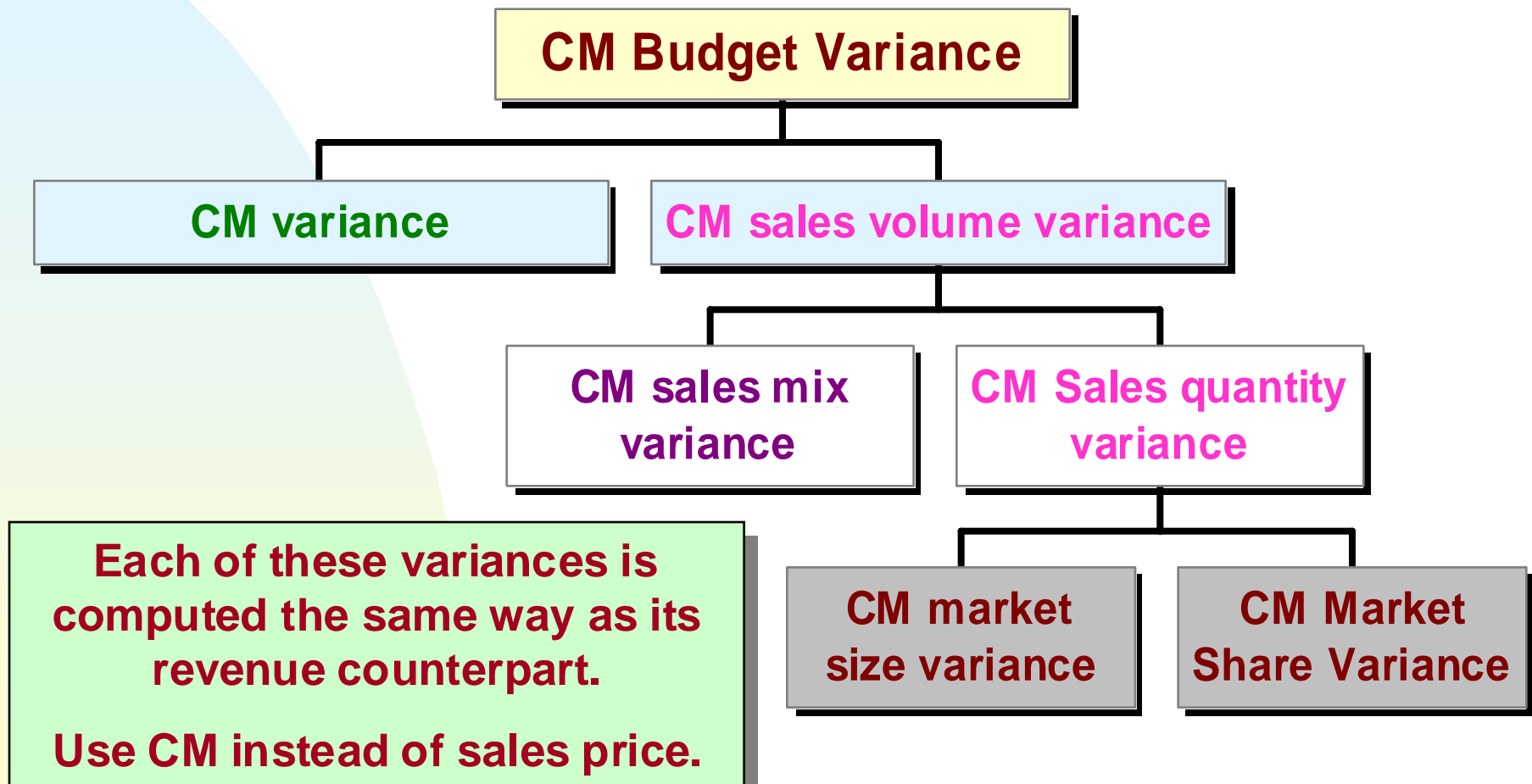


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Use CM instead of sales price.

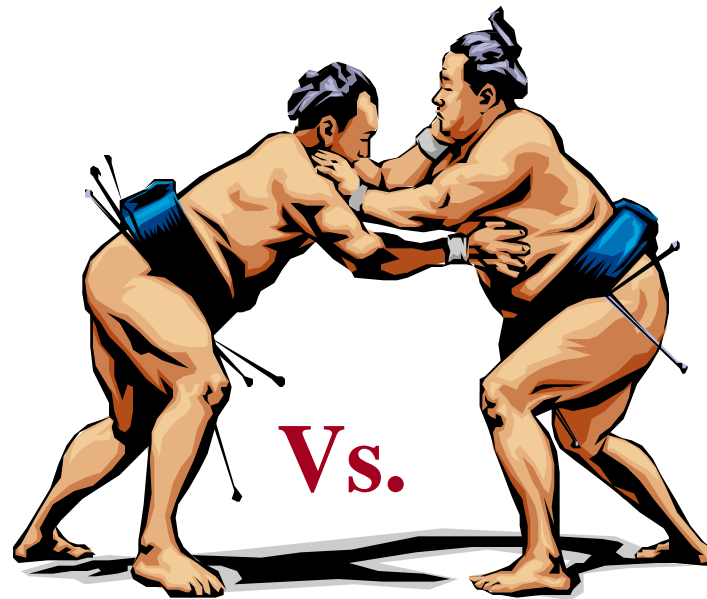


CM Variance Analysis



Income Reporting Effects of Alternative Product-Costing Approaches

**Absorption
Costing**



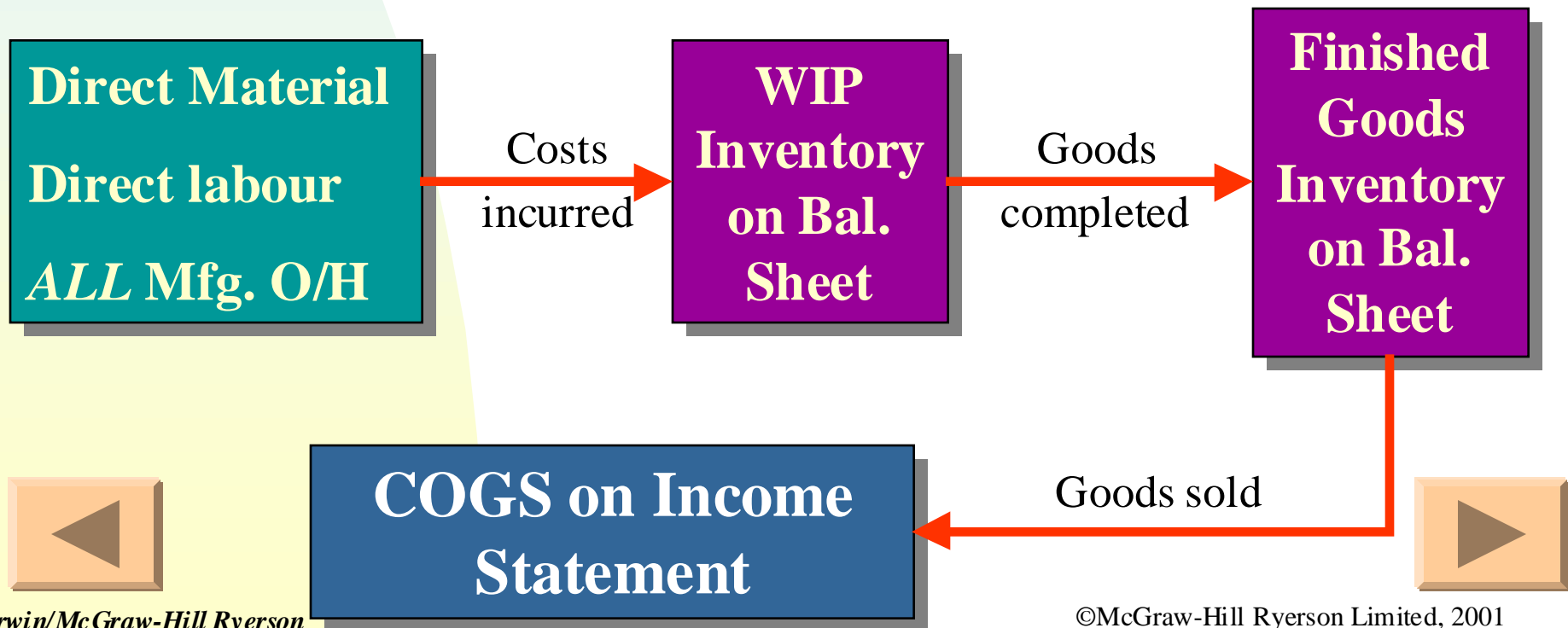
Vs.

**Variable
Costing**



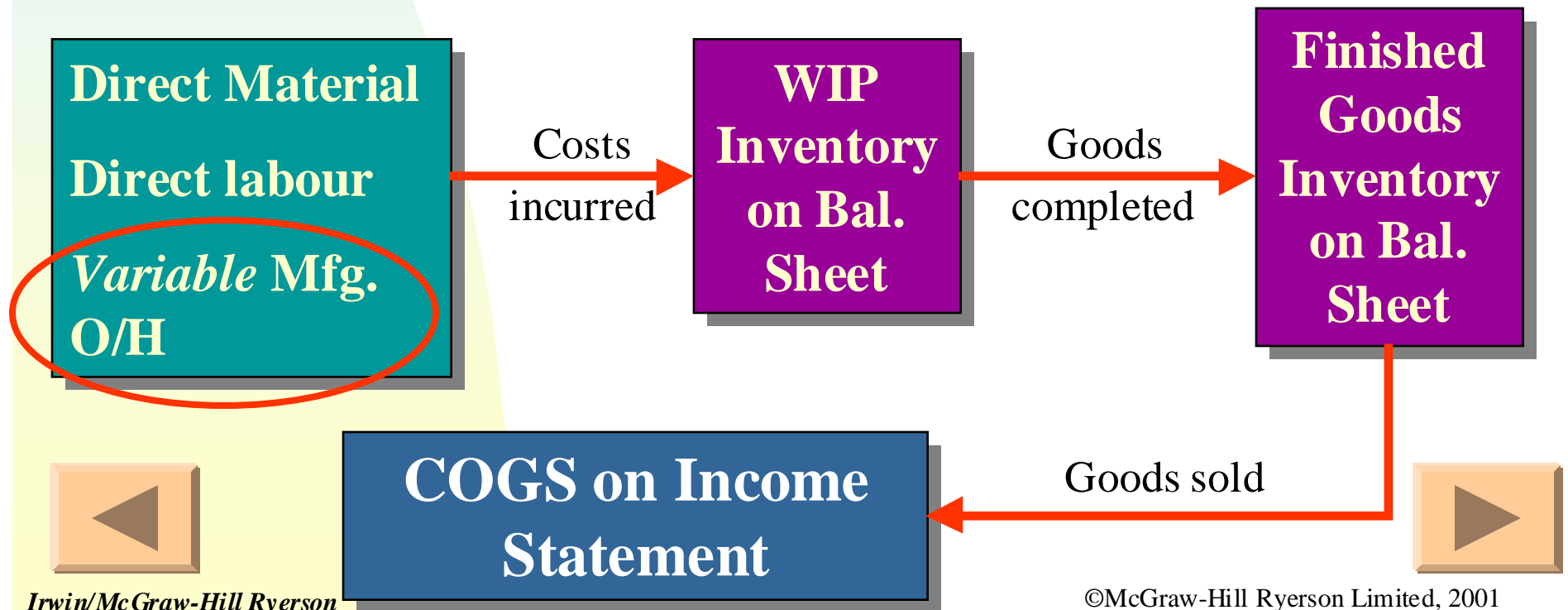
Absorption Costing

Product cost includes both variable and fixed manufacturing overhead, in addition to direct materials (variable) and direct labour (variable).



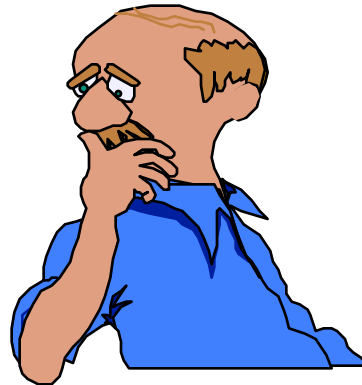
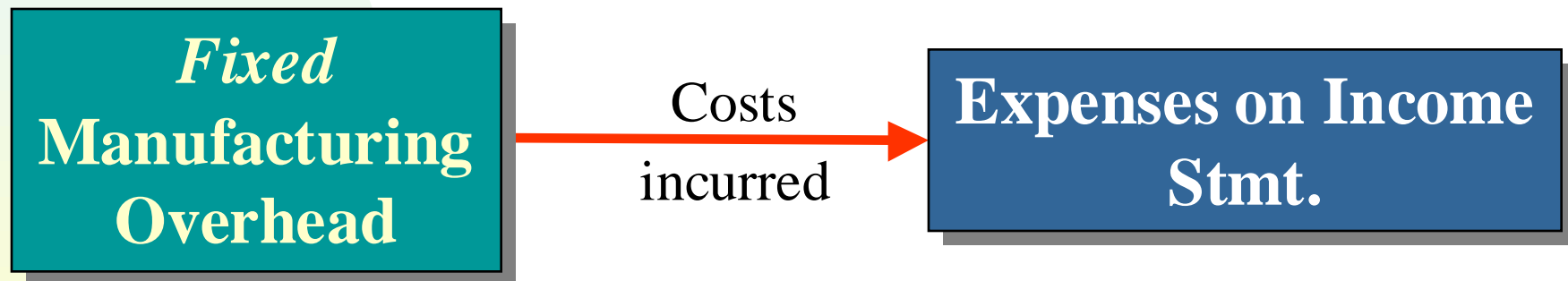
Variable Costing

Variable costing uses only the *variable* portion of manufacturing overhead when computing product cost.



Variable Costing

With Variable Costing, the *Fixed* manufacturing overhead is charged directly to expenses on the income statement.



Alternative Product-Costing

Absorption costing will often result in different net income than variable costing. Remember, the only difference is in how we treat **FIXED manufacturing overhead.**



Koala Cooking Gear needs to know how net income would differ under absorption costing and variable costing. Use the information in the following table to prepare income statements for both absorption costing and variable costing.



Alternative Product-Costing Example



Production and Inventory data:

Beginning Inventory	0
Units Produced	18,000
Units Sold	13,500
Ending Inventory	4,500

Revenue and Cost data:

Sales Price per Unit	\$34
Direct Material Cost per Unit	\$12
Direct Labour Cost per Unit	\$4
Variable Manufacturing Overhead per Unit	\$7
Variable SG&A	\$3
Fixed Manufacturing Overhead	\$81,000
Fixed SG&A	\$45,000



Absorption Costing

Example



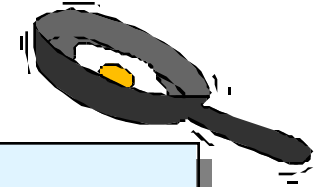
**Step 1: Compute Fixed Overhead Rate
per Unit of Production**

**Budgeted
annual
fixed
overhead** **÷** **Planned
annual
production** **=** **Fixed
Overhead
Rate**

\$81,000 ÷ 18,000 = \$4.50



Absorption Costing Example



Step 2: Compute Absorption Cost per Unit

Direct Materials Cost per Unit	\$12.00
Direct Labour Cost per Unit	4.00
Variable Overhead Cost per Unit	7.00
Fixed Overhead Cost per Unit*	4.50
TOTAL COST PER UNIT**	<u>\$27.50</u>

* Computed in Step 1

** Use to prepare Income Statement



Absorption Costing Example



Koala Cooking Gear

Absorption Costing Income Statement

Revenue	(13,500 × \$34.00)	\$ 459,000
COGS	(13,500 × \$27.50)	(371,250)
Gross Margin		<hr/> \$ 87,750
SG& A Expenses		
Variable	(13,500 × \$3.00)	(40,500)
Fixed		(45,000)
NET INCOME		<hr/> <hr/> \$ 2,250



Absorption Costing Example



Koala Cooking Gear

Absorption Costing Income Statement

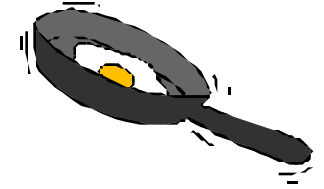
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COGS	(13,500 × \$27.50)	(371,250)
Gross Margin		<hr/> \$ 87,750
SG& A Expenses		
Variable	(13,500 × \$3.00)	(40,500)
Fixed		(45,000)
NET INCOME		<hr/> <hr/> \$ 2,250

COGS includes only part of the fixed overhead incurred during the period.



Variable Costing

Example



Koala Cooking Gear

Variable Costing Income Statement

Revenue	(13,500 × \$34.00)	\$ 459,000
COGS	(13,500 × \$23.00)	\$(310,500)
Variable SG&A	(13,500 × \$3.00)	(40,500)
Contribution Margin		<u>\$ 108,000</u>
Fixed Expenses		
SG&A		(45,000)
Mfg. Overhead		(81,000)
NET INCOME		<u><u>\$ (18,000)</u></u>



Variable Costing

Example



Koala Cooking Gear

Variable Costing Income Statement

Revenue	(13,500 × \$34.00)	\$ 459,000
COGS	(13,500 × \$23.00)	\$(310,500)
Variable SG&A	(13,500 × \$3.00)	(40,500)
Contribution Margin		<u>\$ 108,000</u>
Fixed Expenses		
SG&A		(45,000)
Mfg. Overhead		(81,000)
NET INCOME		<u><u>\$ (18,000)</u></u>

Includes direct material (\$12), direct labour (\$4) and variable overhead (\$7)



Variable Costing Example



Koala Cooking Gear

Variable Costing Income Statement

Revenue	(13,500 × \$34.00)	\$ 459,000
COGS	(13,500 × \$23.00)	\$(310,500)
Variable SG&A	(13,500 × \$3.00)	(40,500)
Contribution Margin		<u>\$ 108,000</u>

Fixed Expenses

SG&A

Mfg. Overhead

NET INCOME

This includes
ALL the fixed
overhead for the
period.

(45,000)
(81,000)
<u>\$ (18,000)</u>



Absorption vs. Variable Costing

Reconciling Income

Period-to-Period Income Comparison	Income Comparison
No Change in Inventory	Absorption = Variable
Increase in Inventory	Absorption > Variable
Decrease in Inventory	Absorption < Variable

$$\begin{array}{l}
 \text{Difference in Fixed} \\
 \text{Overhead Expensed} \\
 \text{Under Absorption and} \\
 \text{Variable Costing} \\
 \text{Methods}
 \end{array}
 =
 \begin{array}{l}
 \text{Change in} \\
 \text{Inventory} \\
 \text{Units}
 \end{array}
 \times
 \begin{array}{l}
 \text{Predetermined} \\
 \text{Fixed-Overhead} \\
 \text{Rate Per Unit}
 \end{array}$$



End of Chapter 18

**I can't stand
it anymore!
Please make
it stop!**

