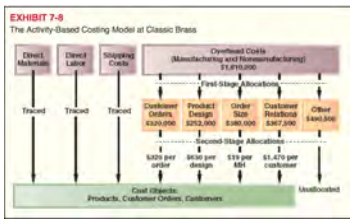
Variable Costing: unit product cost = DM+DL+VOH
Uses Contribution Margin Format (Mgmt internal decision)
Sales
-Var (# units sold x unit product cost)
CM
-fixed mfg oh
-fixed selling
=NI
-Fixed MFG OH costs are considered period costs & are expensed immediately to the income statement
CVP analysis – separates variable from fixed
-holding sales constant, # of units produced doesn't affect NI → when sales go up/down, NI goes up/down → easy to read and not distorted
-Clearly shows the effect of changes in volume on changes in income

Absorption Costing: External use
unit product cost = DM+DL+VOH+FOH (Fixed MFG OH/# of units produced)
Sales
-COGS (# of units sold x unit product cost)
Gross Margin
-Var selling ($var x # of units)
-Fixed selling
=NI
-Allocates a portion of Fixed MFG OH to each unit of product
-A portion of the periods fixed MFG OH costs is assigned to each unit that is produced. If the unit is not sold during the period, the fixed MFG OH assigned to the unit is part of the inventories on the balance sheet rather than COGS on income statement → costs are deferred in inventories
1. Units Produced = Units Sold → No change in inventories → Absorption NI = Variable NI
2. Units Produced > Units Sold → Inventories increases → Absorption NI > Variable NI
3. Units Produced < Units Sold → Inventories decrease → Absorption NI < Variable NI
*this is bc fixed MFG OH that had been deferred in inventories during a prior period flows through to the current period's income statement together withal of the fixed MFG OH incurred during the current period
-Fixed MFG OH deferred (dollar difference in NI) = # of units not sold (produced – sold) x FOH (Fixed MFG OH/# of units produced) → this $ amount was included in period cost & expensed in variable costing but wasn't expensed in absorption & was kept in inventory
*managers should be alert to changes in inventory levels
*in Absorption costing, unit product costs are more expensive because fixed MFG OH is included, making managers believe it is too expensive to make a certain product or want to drop a line that is actually profitable
-The sometimes erratic movement of operating income under absorption costing, and the differences in operating income between absorption and variable costing, arise because of changing levels of inventory
Whichever method is used, ***all selling and administrative expenses*** are considered expenses of the period being reported, the same way under either method.
A **segmented income statement** is a contribution format income statement that compares the performance of two or more segments of an organization.
Traceable Fixed Costs: a cost incurred bc of the existence of the segment – if the segment were eliminated, the fixed cost would disappear (salary of product manager, maintenance cost of building used to make product, liability insurance)
Common Fixed Costs: a cost that supports the operations of more than one segment but is not traceable in whole or in part to any one segment → if a segment were entirely eliminated, there would be no change in common fixed costs (salary of CEO, cost of heating entire store)
Segment Margin: represents the margin available after a segment has covered all of its own costs → if a segment cant cover its own costs, that segment should probably be dropped
Sales
-Var Costs
=CM
-Traceable fixed costs
=Segment margin
-common fixed costs
=NI
Best gauge of long-term profitability of a segment
CM most useful in decisions involving short-term changes in volume using existing capacity
*Common fixed costs are NEVER ALLOCATED TO A SEGMENT → they will remain if a segment is dropped
-Traceable fixed expenses can become common when divisions are segmented
Break-Even Analysis:
Dollar sales for company = traceable fixed + common fixed/Overall CM %
Dollar sales for segment = segment traceable fixed/segment CM ratio
*when making segmented income statement based on break-even dollar sales, CM will be the same as the traceable and then to find variable expense you do sales – CM

SEGMENTS can break even, while the COMPANY AS A WHOLE suffers a loss, because the segments do not provide any segment margin to recover the company's common fixed costs.

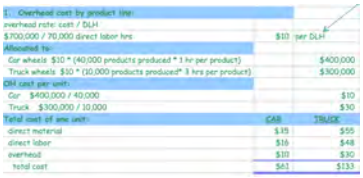
Errors in segment reporting:
-Omitting variable costs that could be traced to segments because they are not product costs (ex. selling & admin costs)
-Failing to assign traceable fixed costs to segments
-Allocating non-traceable fixed costs to segments
-Allocating fixed costs to segments using a cost driver that does not reflect what actually causes the cost to be spent.
How to do problems:
COGS for year 3: unit product cost year 3 x units produced + unit product cost year 2 x left over products unsold year 2
Easy way to find absorption costing NI → look at ending inventory and multiply that by (fixed MFG OH/# of units produced) and then subtract that from NI found from variable costing Income Statement

Activities are events that cause overhead to be spent
Both MFG and non-MFG costs can be traced to products
POHR = estimated overhead cost/number of units (ex. Labor hours, machine hours)
Plant-wide overhead rate or departmental overhead rates
As MFG gets more complicated, company might begin to think that its not assigning costs to products in a way that reflects how products are actually causing them to spend indirect costs
-ABC overhead will go to smaller jobs while accounting system puts overhead on larger jobs
Product diversity. The products vary in type, and complexity. (A PC versus a hand-held four-function calculator)
Volume diversity. Some "bread and butter" products are sold in large numbers, whereas other more specialized products are sold in far fewer numbers, as many customers don't need their specialized features.
Process diversity. The company employs a number of production processes, but not all products go through every process.
-In addition, managers realize that although many indirect costs may change, not all vary with product (output) volume
Activity Cost Pool: a group of costs –overhead line items- that are all related to one activity
Unit level activities are done every time one unit of product is made.
Batch level activities are performed each time a *batch* of product – a number of units – is handled or processed, no matter how many units are in a batch. Thus large-volume products, which by default would probably be produced in larger batches – use batch level activities more efficiently than low-volume products, produced in smaller batches.
Product level activities relate to an entire specific product line, regardless of how many batches or units are produced – engineers designing new product
Customer level activities relate to a specific customer, not to any product or group of products.
Organization-sustaining activities are carried out without regard to which customers are served, or which products, or how many units, are produced. They give the company the *ability* to produce – capacity – regardless of how much is used. → NOT USED
Steps in designing activity-based system:
1.Define activities, activity cost pools, activity measures (cost drivers)
2.Assign indirect costs to activities
3.Calculate **activity rates:** total cost in activity pool/total units of cost driver for entire company
4.Allocate overhead (indirect) costs to cost objects (products) using the activity rates calculated
5. Calculate product costs: DM+DL+ activity-based overhead (indirect) cost

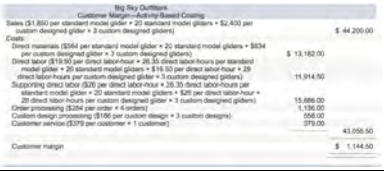


Product Margin: Difference between selling price and the direct & indirect costs caused by that product
Customer Margin: the profit earned from sales to one particular customer, and the cost of those sales, including customer-related activities
A traditional allocation system and an activity-based system may show different amounts of product margin for the same product because:
1.A traditional system allocates ALL overhead, regardless of whether the product causes those costs or not. Some costs are customer related, not caused by the product. Others are organization sustaining and will continue regardless of the volume of the product.
2.Traditional systems use volume related cost drivers. ABC recognizes that not all costs are driven by volume, and chooses cost drivers appropriate to what actually drives the cost.
3.ABC may assign some costs traditionally considered non-product costs, because ABC recognizes that these costs, such as shipping, *are caused* by the product.
ABC Limitations:
-Substantial resources required to implement and maintain
-Resistance to unfamiliar numbers and reports
-Desire to fully allocate all costs to products
-Potential misinterpretation of unfamiliar numbers
-Doesn't conform to GAAP → 2 costing systems may be eeded
*ABC vs traditional costing: in activity-based costing, nonmanufacturing AND manufacturing costs may be assigned to products. And, some manufacturing costs—including the costs of idle capacity—may be excluded from product costs. An activity-based costing system typically includes a number of activity cost pools, each of which has its unique measure of activity. These measures of activity often differ from the allocation bases used in traditional costing systems.

How to do problems:
Find total cost of activities and divide that by # produced to get overhead assigned to one product



Finding customer margin:



A ***relevant cost*** is one that is a <u>future cost</u> that will <u>differ between the alternatives</u> available to you.

Differential cost differs between alternatives.

Incremental cost the <u>additional</u> cost of one unit.

Opportunity cost: the benefit forgone when one alternative is selected over another.

Sunk cost a past cost – already incurred – that is never relevant to a decision.

Avoidable cost can be eliminated by choosing one of the alternatives.

		WILL THE COST DIFFER DEPENDING ON THE ALTERNATIVE I CHOOSE?	
		YES	NO
WHEN WILL THE COST OCCUR?	FUTURE	Relevant Avoidable	Not relevant Not avoidable
	PAST	Not relevant Sunk	Not relevant Sunk

#1: Adding or Dropping Product Lines
Lost: CM $(xxx)
-Avoided
=Net advantage or disadvantage
*depreciation (sunk cost) or allocated gen. admin is never avoided
(compare lost CM with saved fixed costs)

#2: Make or Buy?

Relevant Costs to Make	vs.	Buy
DM		New Price
+DL		
+VAR OH		
+whatever else it tells you is avoided		
+ opportunity cost		

*indifferent at the price you get for relevant cost to make

#3: Process Further
Inc Revenue: new price – old price
-Inc Cost: cost of processing

Joint costs are sunk costs

#4: Special Order
Inc. Revenue: new price
-Inc. Cost: DM
DL
VAR MFG OH
Whatever else it tells you
Special item price/# of units

#5: Constrained Resource
CM per unit / hrs it takes = CM of constraint
Want to produce product with higher CM of constraint so make as many units of that product you have demand for first → multiply how many in demand x hrs it takes to make that product → then subtract that number from how many hours in capacity to get how many hours left over to make second product → divide the hours left by how many hours it takes to make second product to get how many to make → sales mix

<u>Promotional costs</u>: ***increased CM – incremental FC***