

The A-B-C's of Cost Allocation



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The ABCs of Cost Allocation

Responsibility-center accounting is a two-stage process. In the previous article, we defined two classifications of responsibility centers—*cost centers* and *profit centers*—and described the first accounting step: posting all indirect expenses to the cost centers. This article describes the procedure for allocating cost centers to profit centers and products.

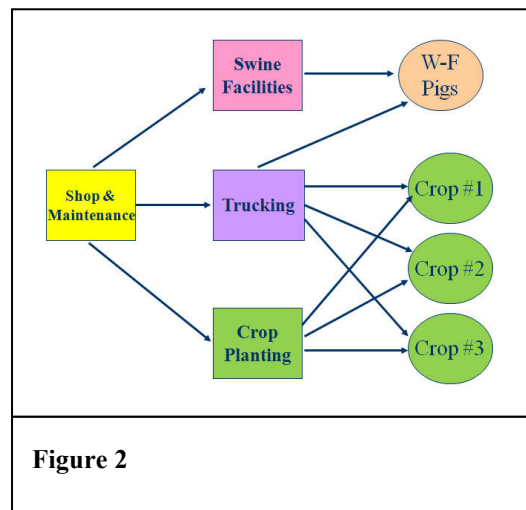
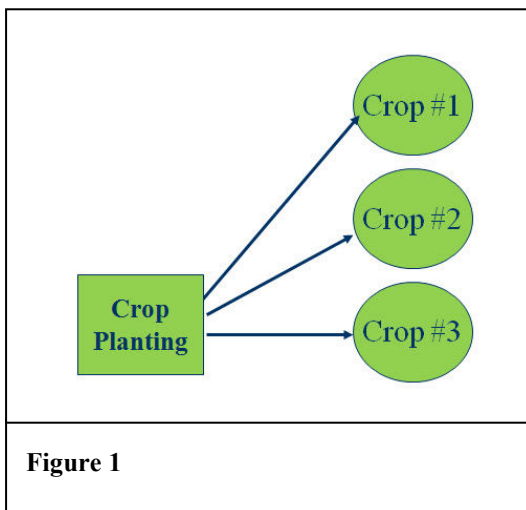
Traditionally, managers have assigned indirect costs to products using either percentage or per-unit allocation. The underlying assumption behind this practice is that *producing products* is what causes costs to occur.

Activity-Based Costing (ABC), on the other hand, assumes that *activities* create costs. ABC systems determine *why* costs occur and *how* they are absorbed into “cost objects” (either products or other cost centers), rather than simply allocating what has already been spent.

Allocation Decisions

As previously described, each cost center is associated with measurable physical activities. The extent and attributes of those activities will determine *where* and *how* costs will be transferred. Allocation decisions involve answering three questions regarding each activity:

1. Which cost and/or profit centers will be “serviced” by this activity? The easiest way to visualize these cost flows is to trace them in a flow chart. For example, a *Crop Planting Activity* cost center will, by definition, exclusively service *Crop Production* centers (*Figure 1*). On the other hand, a *Trucking* cost center can provide services for feeder pigs as well as crops, and a *Shop and Maintenance* “service” center can support other cost centers through a second level of allocation (*Figure 2*).



2. Which cost drivers are most appropriate? *Cost drivers* are based on the premise that consumption of resources is “driven” by a measurable activity. In selecting a cost driver, the manager should consider:

- The cost of capturing extra detail.
- Which measurement or output correlates most closely with the consumption of the resource. In effect, ABC converts the *fixed* and *variable costs* originally assigned to the cost center into *variable, direct costs* allocated to the cost object. (See *Figure 3*.)

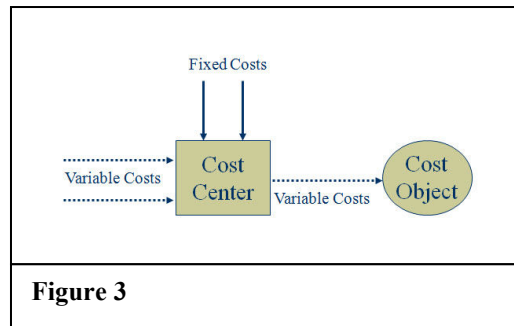


Figure 3

- The “lowest common denominator” among the cost objects. Sometimes, as with the example *Trucking* cost center that services both livestock and crops, there may be no satisfactory lowest common denominator. That means that two cost drivers may need to be used simultaneously.

Figure 4 lists suggested cost drivers for common cost centers.

Cost Centers	Trip Acres	Hours	Days	Miles	Planted Acres	Harvested Acres	Quantity Produced	Quantity Out/In	Average Inventory	Acre Inch	Percent Moisture	Weight Produced	Weight Out/In	Animal Days	Animal Capacity	Tons of Feed	Dollars In	Dollars Out	Percent of Assets	Percent of Expenses	Percent of Revenue
Crop Production	√	√			√																
Crop Harvesting	√	√				√	√														
Crop Processing							√	√			√										
Crop Storage			√				√	√	√												
Tractors	√	√																			
Transportation		√		√				√					√			√					
Irrigation	√	√							√												
General	√	√			√		√		√			√	√	√							
Production Labor		√					√	√	√			√	√	√							
Production Management		√			√				√			√	√	√			√	√			
Sites/Facilities			√				√	√	√			√		√	√						
Professional Services		√			√		√	√	√												
Nutrition		√					√	√	√			√	√			√					
Feed Processing												√	√			√					
Nutrient Management	√							√	√			√	√								
Shop & Maintenance	√	√		√	√	√	√	√	√					√							
Boar Stud								√	√												
Marketing					√	√	√	√													
G&A																	√	√	√	√	√
Financing																	√	√	√	√	√

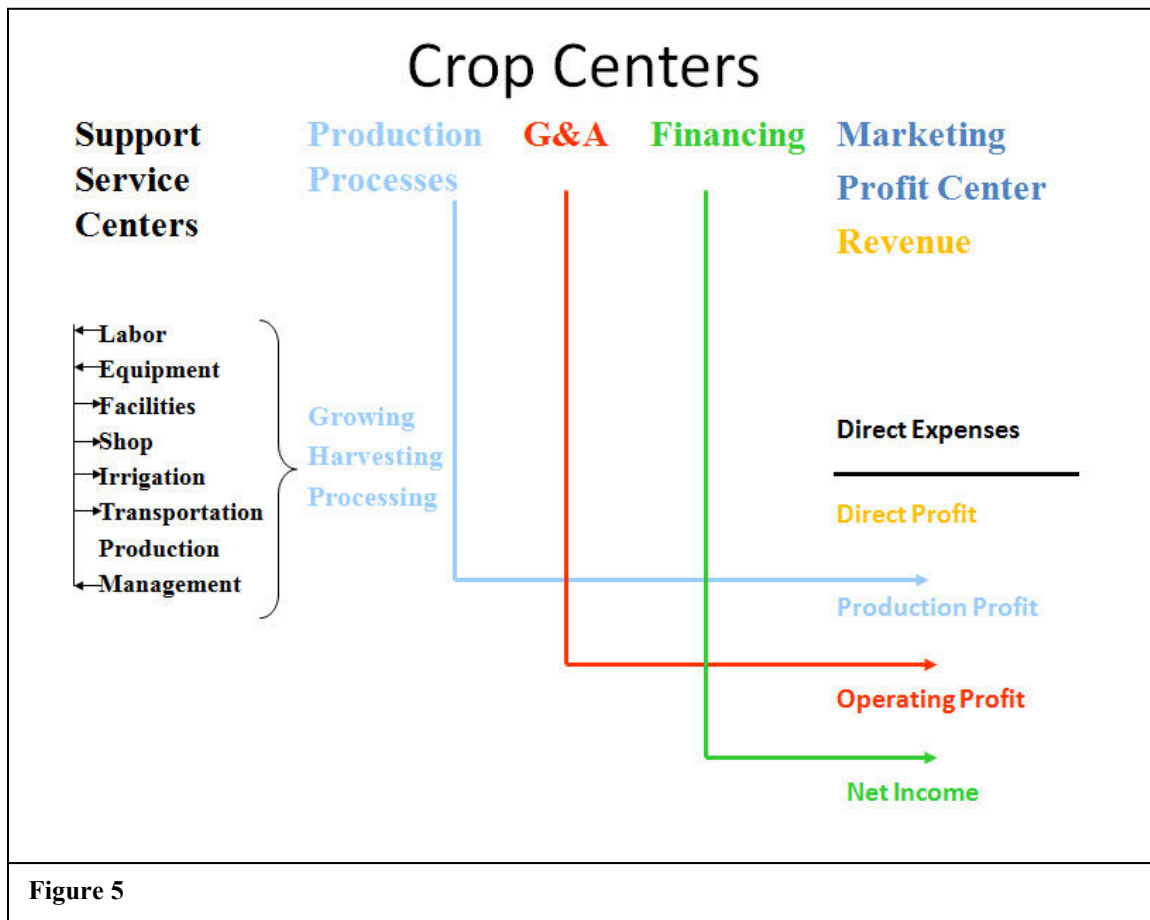
Figure 4

3. What standard rate should be used? Allocations are normally posted using predetermined *standard* rates. At first, this may appear to be counter-intuitive; after all, managers have already assigned *actual* costs into the cost centers, so why allocate these costs out to cost objects using predetermined standards? Here are a few of the reasons accountants do this:

- Indirect costs can be allocated at the same time as direct costs, instead of waiting for the accounting period to close.
- Indirect costs, like repairs, come in “lumps” that have no correlation with short-term production.
- Production costs can be better anticipated, allowing more timely market pricing decisions.
- The system is much easier to maintain because overhead rates do not have to be recalculated for each period.
- Most importantly, standard rates provide managers access to one of the most valuable benefits of responsibility-center accounting: *overhead variance analysis*. (See *Analysis* section.)

The initial selection of cost drivers and standard rates will, by necessity, be based on estimates (*projected total center costs / projected total cost driver units*). Some systems will perform “test runs” with historical production and accounting data to determine baseline rates. Standards can later be adjusted based on “actual” results and through a *flexible budget* that accounts for different levels of output.

So far, we’ve emphasized cost centers that are ultimately allocated to *products*. That means that these costs are included in *cost of production* and *work in process inventories*. However, two classes of cost centers are never allocated to production costs or inventories: *General and Administrative (G&A)* and *Financing*. Rather they are expensed in the period they occur and are allocated directly to profit centers. *Figure 5* represents the Farm Financial Standards Council’s depiction of cost center-profit center allocations and reporting. Note that G&A Cost Center allocations are added only at the *Operating Profit* level and Financing Cost Center allocations at the *Net Income* level.



Analysis

Activity-Based Costing returns both obvious and unexpected benefits:

- Greater reliability in product cost accounting, inventory valuation, marginal cost analysis and financial reporting, because indirect costs are more accurately allocated
- Simplified data entry/automatic allocations
- Internal and external services can be “rolled up” to equivalent levels and evaluated at equivalent rates
- Costs, personnel and performance can be monitored within each responsibility center

This last example is where *overhead variance analysis* comes into play. Remember that cost center allocations are normally based on predetermined rates. Therefore, there will always be variances between those standard allocations and period costs within a cost center (see *Figure 6*). If the difference is small, those costs simply “fall through” the income statement in the time period. However, significant variances send a message to management that further analysis is required. The two sources of variance are *cost/price (spending)* and *volume*. They are calculated using these formulas:

$$\begin{array}{ll} \text{Cost/Price (Spending)} & (\text{SP} - \text{AP}) \times \text{AQ} \\ \text{Volume} & (\text{SQ} - \text{AQ}) \times \text{SP} \\ \text{Total variance} & (\text{SP} \times \text{SQ}) - (\text{AP} \times \text{AQ}) \end{array}$$

Where:

- SP = *Standard Price*
- AP = *Actual Price*
- SQ = *Standard Quantity*
- AQ = *Actual Quantity*

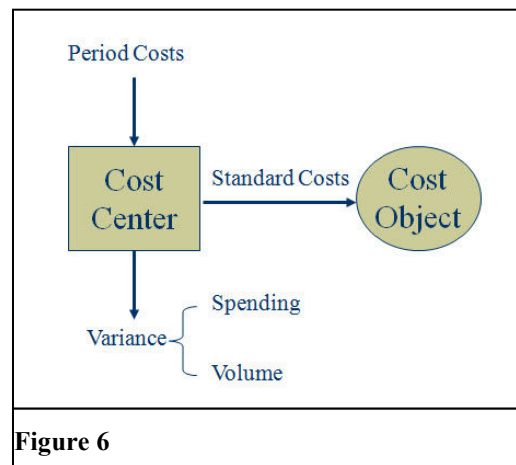


Figure 6

Using variance analysis, managers can continuously control costs, monitor throughput, and optimize efficiency within each cost center, rather than “burying” this valuable information within products.

Implementation

Adopting ABC—or even responsibility-center accounting—is not just difficult, it’s next to impossible unless the accounting software is designed to:

- Allow multiple levels of allocation and responsibility center “roll-up.”
- Integrate cost drivers with production records.
- Perform work-in-process (WIP) and inventory adjustments
- Retain cost center detail after those costs are allocated to products.
- Automate all of these processes.

Specialized software alone is not the answer. The CPA you rely on for tax accounting can become your trusted guide for every phase of this unfamiliar, but vital accounting mission.

Time is of the essence simply because it takes so long to produce most agricultural products. That means that if you start today, it will be a year or longer before you begin experiencing the full benefits of responsibility-center accounting and ABC. Producers who have implemented this system eventually realize that the “journey *is* the destination”—as with each production cycle, they discover and explore new dimensions of their operation.