

Introduction to Activity - Based Costing

Enabling

Better

Management

Decisions

WHAT IS ABC?

ABC was developed as a practical tool to solve a problem faced by most companies today. Traditional cost accounting systems have evolved primarily to serve the function of inventory valuation (satisfying the GAAP standards of “objectivity, verifiability, and materiality”), for external audiences such as the SEC, IRS, creditors and investors. However, these traditional systems have many failings, especially when used for internal management purposes. Two especially important failings are:

- 1) Their inability to report individual product costs to a reasonable level of accuracy.
- 2) Their inability to provide useful feedback to management for the purpose of operational control.

As a result, managers of companies selling multiple products are making important decisions about pricing, product mix, and process technology based on inaccurate and inappropriate cost information.

Traditional cost systems focus on the product in the costing process. Costs are traced to the product, because each product item is assumed to consume the resources in proportion to the volume produced. Therefore, volume attributes of the product item, such as the number of direct labor hours, machine hours, or material dollars, are used as the “drivers” to allocate overhead costs.

These volume drivers, however, fail to account for product diversity in the form of size or complexity. Also, there is not a direct relationship between production volume and cost consumption.

By contrast, ABC focuses on activities in the costing process. Costs are traced from activities to products, based on the product’s demand for these activities during the production process. Therefore, activity attributes such as hours of set-up time, number of ECO’s, or number of times handled, are used as the “drivers” to allocate overhead costs.

As the number of activity measures used increases, ABC is better able to capture the underlying economics of the company’s operation, and the reported product costs become more accurate.

Another important distinction between traditional cost systems and ABC is the scope of operations. Traditional systems, being concerned primarily with inventory valuation, track only those costs incurred within the factory wall. ABC theory contends that, because virtually all of a company’s activities exist to support production and delivery of today’s goods and services, they should all be included as product costs. Examples of these factory and corporate support costs, which can all be split apart and traced to individual products or product families, are:

Activity-based accounting unbundles the traditional cost view by responsibility center and restates costs according to the way resources are consumed.

FROM: GENERAL LEDGER			TO: ABC DATABASE	
CHART-OF-ACCOUNTS VIEW			ACTIVITY-BASED VIEW	
Process Engineering Department			Process Engineering Department	
Salaries	\$600,000	Use Resource Cost Drivers	Create BOMs	\$31,500
Equipment	150,000		Maintain BOMs	121,000
Travel Expense	60,000		Create routings	32,500
Supplies	40,000		Maintain routings	101,500
Use and occupancy	30,000		Process special orders	83,000
Total	\$880,000		Improve processes	45,000
			Study capacities	119,000
		Design tooling	145,500	
		Train employees	43,000	
		Administer department	158,000	
		Total	\$880,000	

WHAT IS SPENT

HOW RESOURCES ARE SPENT

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- Logistics
- Production
- Marketing and Sales
- Service
- Technology
- Financial Administration
- General Administration
- Distribution
- Information Resources

Conventional economic theory and management accounting systems treat costs as a variable only if they change with short-term fluctuations in output. ABC theory contends that many important cost categories vary not with short-term changes in output, but with changes (over a period of years) in the design, mix and range of a company's products and customers. These costs of complexity must be identified and assigned to products.

THE NEED FOR ABC — A CASE EXAMPLE

Product cost distortions occur in virtually all organizations producing and selling multiple products or services. To understand why, consider two hypothetical plants turning out a simple product, ball-point pens. The factories are the same size and have the same capital equipment. Every year, Plant I makes one million blue pens. Plant II also produces blue pens, but only 100,000 per year. To fill the plant, keep the work force busy, and absorb fixed costs, Plant II also produces a variety of similar products: 60,000 black pens, 12,000 red pens, 10,000 lavender pens, and so on. In a typical year, Plant II produces up to 1,000 product variations with volumes ranging between 500 and 100,000 units. Its aggregate annual output equals the one million units of Plant I, and it requires the same total standard direct labor hours, machine hours, and direct material.

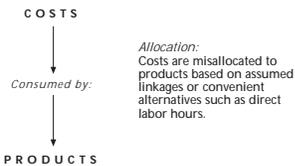
Despite the similarities in product and total output, a visitor walking through the two plants would notice dramatic differences. Plant II would have a much larger production support staff—more people to schedule machines, perform setups, inspect items after setup, receive and inspect incoming materials and parts, move inventory, assemble and ship orders, expedite orders, rework defective items, design and implement engineering change orders, negotiate with vendors, schedule materials

and parts receipts, and update and program the much larger computer-based information system. Plant II would also operate with considerably higher levels of idle time, overtime, inventory, rework and scrap.

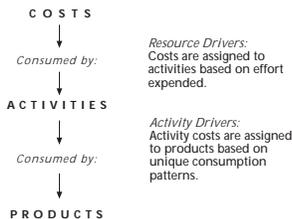
Plant II's extensive factory support resources and production inefficiencies generate cost system distortions. Most companies allocate factory support costs in a two step process. First, they collect the costs into categories that correspond to responsibility centers (Production Control, Quality Assurance, Receiving, etc.) and assign these costs to operating departments. Many companies do this first step very well. But the second step—tracing costs from the operating departments to specific products—is done simplistically. Many companies still use direct labor hours as an allocation base. Others, recognizing the declining role of direct labor, use two additional allocation bases. Materials-related expenses (costs to purchase, receive, inspect, and store materials) are allocated direct to products as a percentage mark-up over direct material costs. And machine hours, or processing time, are used to allocate production costs in highly automated environments.

Traditional product costing simplistically *allocates* costs.
ABC *traces* costs based on cause and effect.

TRADITIONAL PRODUCT COSTING



ACTIVITY-BASED COSTING



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Whether Plant II uses one or all of these approaches, its cost system invariably—and mistakenly—reports production costs for the high volume product (blue pens) that greatly exceed the costs for the same product built in Plant I. One does not need to know much about the cost system or production process in Plant II to predict that blue pens, which represent about 10% of output, will have about 10% of the factory costs allocated to them. Similarly, lavender pens, which represent 1% of Plant II's output, will have about 1% of the factory's costs allocated to them. In fact, if the standard output per unit of direct labor hours, machine hours, and materials quantities are the same for blue pens as for lavender pens, which are ordered, fabricated, packaged, and shipped in much lower volumes, then lavender pens consume far more overhead per unit.

Think of the strategic consequences. Over time, the market price for blue pens, as for most high volume products, will be determined by focused and efficient producers like Plant I. Managers of Plant II will notice that their profit margin on blue pens is lower than on their specialty products. The price for blue pens is lower than for than for lavender pens, but the cost system reports that blue pens are as expensive to make as the lavender.

While disappointed with the low margins on blue pens, Plant II's managers are pleased they're a full line producer. Customers are willing to pay premiums for specialty products like lavender pens, which are apparently no more expensive to make than commodity-type blue pens.

The logical strategic response? De-emphasize blue pens and offer an expanded line of differentiated products with unique features and options.

In reality, of course, this strategy will be disastrous. Blue pens in Plant II are cheaper to make than lavender pens—no matter what the cost system reports. Scaling back on blue pens and replacing the lost output by adding new models will further increase overhead. Plant II's managers will simmer with frustration as total costs rise and profitability goals remain elusive. An activity based cost system would not generate distorted information and misguided strategic signals.

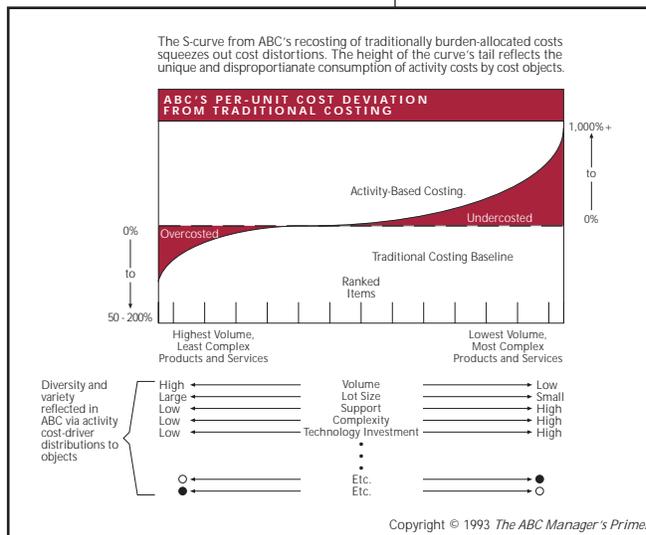
WHAT GAVE RISE TO ABC?

Many managers understand intuitively that their accounting systems distort product costs, so they make informal adjustments to compensate. However, as the case example illustrated, few managers can predict the magnitude and impact of the adjustments they should be making.

ABC was first developed as a solution to these problems by two professors at Harvard, Robin Cooper and Robert Kaplan. They identify three independent but concurrent factors as the prime reasons behind the need for, and the practicality of, ABC:

- 1) The cost structure process has changed dramatically. At the turn of the century, direct labor accounted for about 50% of total product costs, with material being 35% and overhead 15%. Now, overhead typically comprises about 60% of product costs, with material being 30%, and direct labor less than 10%.

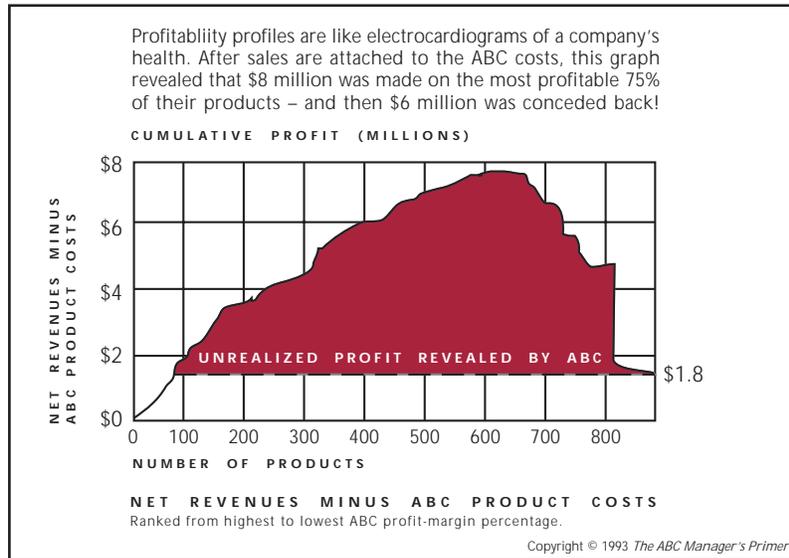
Obviously, using direct labor hours as the allocation basis made sense 90 years ago, but it has no validity at all given today's cost structure.



- 2) The level of competition that most firms face has increased dramatically. Today's fast-changing and global competitive environment is not a cliché, it is a troubling reality for many American firms.

Knowing what your real product costs are is a key to surviving in this new competitive situation.

- 3) The cost of measurement has fallen as information processing technology has improved.



Even twenty years ago, it would have been cost prohibitive to accumulate, process, and analyze the data necessary to run an ABC system. Today, however, such activity measurement systems are not only affordable, but much of the data already exists in some form within the organization.

Therefore, ABC can be extremely valuable to an organization, because it provides information on the range, cost and consumption of operating activities. Specific benefits of, and strategic uses for, this information are:

- 1) More accurate product costs enable better strategic decisions regarding:
 - (a) Product pricing.
 - (b) Product mix.
 - (c) Make versus buy.
 - (d) Investments in R&D, process automation, promotion, etc.
- 2) Increased visibility of the activities performed (because ABC maps the activities, and traces costs to them) enables a company to:
 - (a) Focus more on the management of activities, such as improving the efficiency of high cost activities.
 - (b) Identify and reduce non-value added activities.

In summary, while there is a strong need to manage and allocate overhead, traditional cost accounting systems are simply not effective. The time for ABC is now!



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