Chapter- 2

Activity-based Costing

Activity-based costing (**ABC**) is a costing model that identifies activities in an organization and assigns the cost of each activity resource to all products and services according to the actual consumption by each: it assigns more indirect costs (overhead) into direct costs.

In this way, an organization can precisely estimate the cost of individual products and services so they can identify and eliminate those that are unprofitable and lower the prices of those that are overpriced.

In a business organization, the ABC methodology assigns an organization's resource costs through activities to the products and services provided to its customers. It is generally used as a tool for understanding product and customer cost and profitability. As such, ABC has predominantly been used to support strategic decisions such as pricing, outsourcing, identification and measurement of process improvement initiatives.

Historical development

Traditionally cost accountants had arbitrarily added a broad percentage of expenses into the indirect cost.

However, as the percentages of indirect or overhead costs rose, this technique became increasingly inaccurate, because indirect costs were not caused equally by all products. For example, one product might take more time in one expensive machine than another product—but since the amount of direct labor and materials might be the same, additional cost for use of the machine is not being recognized when the same broad 'on-cost' percentage is added to all products. Consequently, when multiple products share common costs, there is a danger of one product subsidizing another.

ABC is based on George Staubus' Activity Costing and Input-Output Accounting. The concepts of ABC were developed in the manufacturing sector of the United States during the 1970s and 1980s. During this time, the Consortium for Advanced Management-International, now known simply as CAM-I, provided a formative role for studying and formalizing the principles that have become more formally known as Activity-Based Costing.

Robin Cooper and Robert S. Kaplan, proponents of the Balanced Scorecard, brought notice to these concepts in a number of articles published in *Harvard Business Review* beginning in 1988. Cooper and Kaplan described ABC as an approach to solve the problems of traditional cost management systems. These traditional costing systems are often unable to determine accurately the actual costs of production and of the costs of related services. Consequently managers were making decisions based on inaccurate data especially where there are multiple products.

Instead of using broad arbitrary percentages to allocate costs, ABC seeks to identify cause and effect relationships to objectively assign costs. Once costs of the activities have been identified, the cost of each activity is attributed to each product to the extent that the product uses the activity. In this way ABC often identifies areas of high overhead costs per unit and so directs attention to finding ways to reduce the costs or to charge more for costly products.

Activity-based costing was first clearly defined in 1987 by Robert S. Kaplan and W. Bruns as a chapter in their book *Accounting and Management: A Field Study Perspective*. They initially focused on manufacturing industry where increasing technology and productivity improvements have reduced the relative proportion of the direct costs of labor and materials, but have increased relative proportion of indirect costs. For example, increased automation has reduced labor, which is a direct cost, but has increased depreciation, which is an indirect cost.

Like manufacturing industries, financial institutions have diverse products and customers, which can cause cross-product, cross-customer subsidies. Since personnel expenses represent the largest single component of non-interest expense in financial institutions, these costs must also be attributed more accurately to products and customers. Activity based costing, even though originally developed for manufacturing, may even be a more useful tool for doing this.

Activity-based costing was later explained in 1999 by Peter F. Drucker in the book *Management Challenges of the 21st Century*. He states that traditional cost accounting focuses on what it costs to *do something*, for example, to cut a screw thread; activity-based costing also records the cost of *not doing*, such as the cost of waiting for a needed part. Activity-based costing records the costs that traditional cost accounting does not do.

Methodology

- Cost allocation
- Fixed cost
- Variable cost
- Cost driver

Direct labor and materials are relatively easy to trace directly to products, but it is more difficult to directly allocate indirect costs to products. Where products use common resources differently, some sort of weighting is needed in the cost allocation process. The

cost driver is a factor that creates or drives the cost of the activity. For example, the cost of the activity of bank tellers can be ascribed to each product by measuring how long each product's transactions (**cost driver**) takes at the counter and then by measuring the number of each type of transaction. Other example, for the running machinery activity, the driver is likely to be machine operating hours. That is, machine operating hours drive labour, maintenance, and power cost during the running machinery activity.

Uses

- It helps to identify inefficient products, departments and activities
- It helps to allocate more resources on profitable products, departments and activities
- It helps to control the costs at an individual level and on a departmental level
- It helps to find unnecessary costs
- It helps fixing the price of a product or service scientifically

Limitations

Even in activity-based costing, some overhead costs are difficult to assign to products and customers, such as the chief executive's salary. These costs are termed 'business sustaining' and are not assigned to products and customers because there is no meaningful method. This lump of unallocated overhead costs must nevertheless be met by contributions from each of the products, but it is not as large as the overhead costs before ABC is employed.

Although some may argue that costs untraceable to activities should be "arbitrarily allocated" to products, it is important to realize that the only purpose of ABC is to provide information to management. Therefore, there is no reason to assign any cost in an arbitrary manner.

Cost

ABC is considered a relatively costly accounting methodology.

Lean accounting methods have been developed in recent years to provide relevant and thorough accounting, control, and measurement systems without the complex and costly methods of ABC. Lean Accounting takes an opposite direction from ABC by working to eliminate cost allocations rather than find complicated methods of allocation.

While lean accounting is primarily used within lean manufacturing, the approach has proven useful in many other areas including healthcare, construction, financial services, governments, and other industries.

Prevalence

Following initial enthusiasm, ABC lost ground in the 1990s, to alternative metrics, such as Kaplan's balanced scorecard and economic value added.

ABC has stagnated over the last five to seven years,

– *Kaplan, 1998*

However, application of an activity based recording may be applied without change to incremental **activity based accounting** not replacing any synoptic and retrospective modeling process with *costing*, but to transform concurrent process accounting to a most authentic approach.

Public sector use

ABC is widely used in the public sector, including by the United States Marine Corps.

Its use by the UK Police has been mandated since the 2003-04 UK tax year as part of England and Wales' National Policing Plan, specifically the Policing Performance Assessment Framework. An independent 2008 report concluded that ABC was an inefficient use of resources: it was expensive and difficult to implement for small gains, and a poor value, and that alternative methods should be used.

Furthermore, the South African government, specifically the National Treasury has tasked specialists to craft a master guideline for local government in South Africa, for purposes of cost optimisation, tariff setting, balanced budget setting and equitable fund allocations

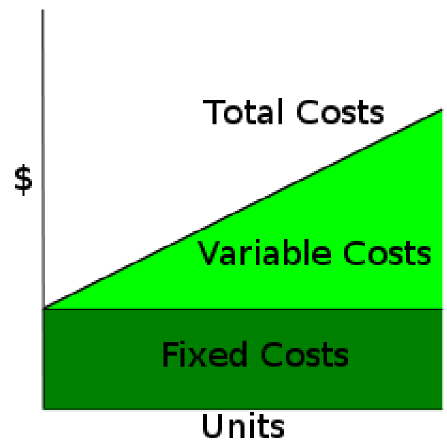
Cost Allocation

Cost allocation is a process of attributing cost to particular cost centres. For example the wage of the driver of the purchasing department can be allocated to the purchasing department cost centre. It is not necessary to share the wage cost over several different cost centers. Cost and services are not identical to each other.

Cost allocation is the assigning of a common cost to several cost objects. For example, a company might allocate or assign the cost of an expensive computer system to the three main areas of the company that use the system. A company with only one electric meter might allocate the electricity bill to several departments in the company.

Allocation implies that the assigning of the cost is somewhat arbitrary. Some people describe the allocation as the spreading of cost, because of the arbitrary nature of the allocation. Efforts have been made over the years to improve the bases for allocation. In manufacturing, the overhead allocations have moved from plant-wide rates to departmental rates, from direct labor hours to machine hours to activity based costing. The goal is to allocate or assign the costs based on the root causes of the common costs instead of merely spreading the costs.

Fixed Cost



Decomposing Total Costs as Fixed Costs plus Variable Costs

In economics, **fixed costs** are business expenses that are not dependent on the level of goods or services produced by the business. They tend to be time-related, such as salaries or rents being paid per month, and are often referred to as overhead costs. This is in contrast to variable costs, which are volume-related (and are paid per quantity produced).

In management accounting, fixed costs are defined as expenses that do not change as a function of the activity of a business, within the relevant period. For example, a retailer must pay rent and utility bills irrespective of sales.

Along with variable costs, fixed costs make up one of the two components of total cost: total cost is equal to fixed costs plus variable costs.

Areas of confusion

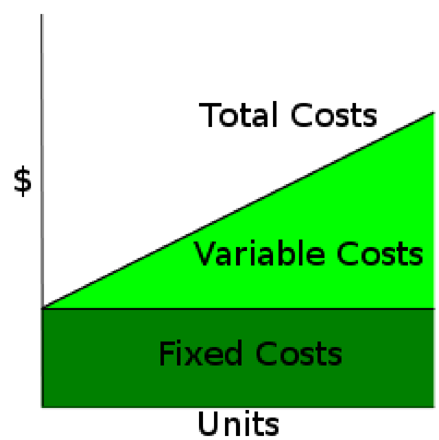
Fixed costs should not be confused with sunk costs. From a pure economics perspective, fixed costs are not permanently fixed; they will change over time, but are fixed in relation to the quantity of production for the relevant period. For example, a company may have unexpected and unpredictable expenses unrelated to production; and warehouse costs and the like are fixed only over the time period of the lease.

By definition, there are no fixed costs in the long run. Investments in facilities, equipment, and the basic organization that can't be significantly reduced in a short period of time are referred to as committed fixed costs. Discretionary fixed costs usually arise from annual decisions by management to spend on certain fixed cost items. Examples of discretionary costs are advertising, machine maintenance, and research & development expenditures.

In business planning and management accounting, usage of the terms fixed costs, variable costs and others will often differ from usage in economics, and may depend on the intended use. Some cost accounting practices such as activity-based costing will allocate fixed costs to business activities, in effect treating them as variable costs. This can simplify decision-making, but can be confusing and controversial.

In accounting terminology, fixed costs will broadly include almost all costs (expenses) which are not included in cost of goods sold, and variable costs are those captured in costs of goods sold. The implicit assumption required to make the equivalence between the accounting and economics terminology is that the accounting period is equal to the period in which fixed costs do not vary in relation to production. In practice, this equivalence does not always hold, and depending on the period under consideration by management, some overhead expenses (e.g., sales, general and administrative expenses) can be adjusted by management, and the specific allocation of each expense to each category will be decided under cost accounting.

Variable Cost



Decomposing Total Costs as Fixed Costs plus Variable Costs

Variable costs are expenses that change in proportion to the activity of a business. Variable cost is the sum of marginal costs over all units produced. It can also be considered normal costs. Fixed costs and variable costs make up the two components of total cost. **Direct Costs**, however, are costs that can easily be associated with a particular cost object. However, not all variable costs are direct costs. For example, variable manufacturing overhead costs are variable costs that are indirect costs, not direct costs. Variable costs are sometimes called unit-level costs as they vary with the number of units produced.

Direct labor and overhead are often called **conversion cost**, while direct material and direct labor are often referred to as **prime cost**.

Explanation

For example, a manufacturing firm pays for raw materials. When activity is decreased, less raw material is used, and so the spending for raw materials falls. When activity is increased, more raw material is used and spending therefore rises. Note that the changes in expenses happen with little or no need for managerial intervention. These costs are variable costs.

A company will pay for line rental and maintenance fees each period regardless of how much power gets used. And some electrical equipment (air conditioning or lighting) may be kept running even in periods of low activity. These expenses can be regarded as fixed. But beyond this, the company will use electricity to run plant and machinery as required. The busier the company, the more the plant will be run, and so the more electricity gets used. This extra spending can therefore be regarded as variable.

In retail the cost of goods is almost entirely a variable cost; this is not true of manufacturing where many fixed costs, such as depreciation, are included in the cost of goods.

Although taxation usually varies with profit, which in turn varies with sales volume, it is not normally considered a variable cost.

For some employees, salary is paid on monthly rates, independent of how many hours the employees work. This is a fixed cost. On the other hand, the hours of hourly employees can often be varied, so this type of labour cost is a variable cost.

Cost Driver

A "cost driver" is the unit of an activity that causes the change of an activity cost. A **cost driver** is any activity that causes a cost to be incurred. The Activity Based Costing (ABC) approach relates indirect cost to the activities that drive them to be incurred. In traditional costing the cost driver to allocate indirect cost to cost objects was volume of output. With the change in business structures, technology and thereby cost structures it was found that the volume of output was not the only cost driver. Some examples of indirect costs and their drivers are: maintenance costs are indirect costs and the possible driver of this cost may be the number of machine hours; or, handling raw-material cost is another indirect cost that may be driven by the number of orders received; or, inspection costs that are driven by the number of inspections or the hours of inspection or production runs. Generally, the cost driver for short term indirect variable costs may be the volume of output/ activity; but for long term indirect variable costs, the cost drivers will not be related to volume of output/ activity. John Shank and Vijay Govindarajan list cost drivers into two categories: Structural cost drivers that are derived from the business strategic choices about its underlying economic structure such as scale and scope of operations, complexity of products, use of technology, etc and Executional cost drivers that are derived from the execution of the business activities such as capacity utilization, plant layout, work-force involvement, etc. To carry out a value chain analysis, ABC is a necessary tool. To carry out ABC, it is necessary that cost drivers are established for different cost pools.

"Cost drivers are the structural determinants of the cost of an activity, reflecting any linkages or interrelationshis that affect it" (M. Porter), therefore we could asume that the cost drivers determine the cost behavior within the activities, reflecting the links that these have with other activities and relationships that affect them.

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Indirect Costs

Indirect costs are costs that are not directly accountable to a cost object (such as a particular function or product). Indirect costs may be either fixed or variable. Indirect costs include taxes, administration, personnel and security costs, and are also known as overhead.

Indirect vs. Direct costs

Direct costs are those for activities or services that benefit specific projects, e.g., salaries for project staff and materials required for a particular project. Because these activities are easily traced to projects, their costs are usually charged to projects on an item-by-item basis.

Indirect costs are those for activities or services that benefit more than one project. Their precise benefits to a specific project are often difficult or impossible to trace. For example, it may be difficult to determine precisely how the activities of the director of an organization benefit a specific project. Indirect costs do not vary substantially within certain production volumes or other indicators of activity, and so are considered to be fixed costs.

It is possible to justify the handling of almost any kind of cost as either direct or indirect. Labor costs, for example, can be indirect, as in the case of maintenance personnel and executive officers; or they can be direct, as in the case of project staff members. Similarly, materials such as miscellaneous supplies purchased in bulk—pencils, pens, paper—are typically handled as indirect costs, while materials required for specific projects are charged as direct costs.

Examples

Costs usually charged directly

- Project staff
- Consultants
- Project supplies
- Publications
- Travel
- Training

Costs either charged directly or allocated indirectly

- Telephone charges
- Computer use
- Project clerical personnel
- Postage and printing
- Miscellaneous office supplies

Costs usually allocated indirectly

- Utilities

- Rent
- Audit and legal
- Administrative staff
- Equipment rental