Strategic Cost Accounting

M. Com (Semester IV)
Topic- Activity Based Costing

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What is Activity Based Costing?

The activity-based costing (ABC) system is a method of accounting you can use to find the total cost of activities necessary to make a product. The ABC system assigns costs to each activity that goes into production. It is a costing method that identifies activities in an organization and assigns the cost of each activity to all products and services according to the actual consumption by each. The Institute of Cost & Management Accountants of Bangladesh (ICMAB) defines activity-based costing as an accounting method which identifies the activities which a firm performs and then assigns indirect costs to cost objects.

ABC is used to improve the accuracy of cost analysis by improving the tracing of costs to products or to individual customers. It is a system which focuses on activities performed to produce product. In this system, first costs are traced to activities and then to products, where as in traditional system, costs are first traced not to activities but to an organisational unit, such as department or plant and then to products. In ABC system, activity means a unit of work; here cost driver is a factor, such as the level of activity or volume that affects costs. Cost drivers signify factors, forces or events that determine the costs of activities. This system brings accuracy and reliability in product cost determination by emphasizing on cause and effect relationship in the cost incurrence.

Objectives of Activity Based Costing

The major objectives of Activity Based Costing are as follows-

- ✓ To identify value added activities in transactions.
- ✓ To focus high cost activities.
- ✓ To distribute overheads on the basis of activities.
- ✓ To identify the opportunities for improvements and reduction of costs.
- ✓ To validate the success of the quality drive with ABC.
- ✓ To ensure accurate product costing for decision making.
- ✓ To use information to improve product mix and pricing decisions.

Steps in ABC System

For allocating/absorbing overheads to products/services under Activity-Based Costing, the following steps are to be taken:

1. **Identifying Activities:** The first stage is to identify the functional areas or major activities involved in the production. Examples of activities include machine related activities, divert labour related activities and various support activities like ordering, receiving, material handling, packing, despatching etc. Various activities are identified

by carrying out activity analysis. The activities may be basically fall into four categories as suggested by Cooper and Kaplan'.

a) **Unit Level Activities or Primary Activities:** The cost of primary activities (like use of indirect materials and consumables, testing of every item produced) may be correlated to number of units produced (i.e. on volume-basis).
b) **Batch Level Activities:** These are manufacturing support activities (like material ordering, machine set-up costs, inspection of products etc). The cost of such activities is driven by number of batches of units produced.
c) **Product Level Activities:** Activities like designing of the product, keeping technical drawings of product, activities up to date, advertising of a specific product are called product level. The cost of these activities is driven by the creation of a new product line and its maintenance.
d) **Facility Level Activities:** Certain activities cannot be related to a particular product, instead may be related to certain facilities like maintaining the building, security of plant, salaries of production manager, advertisement to promote organisation etc.

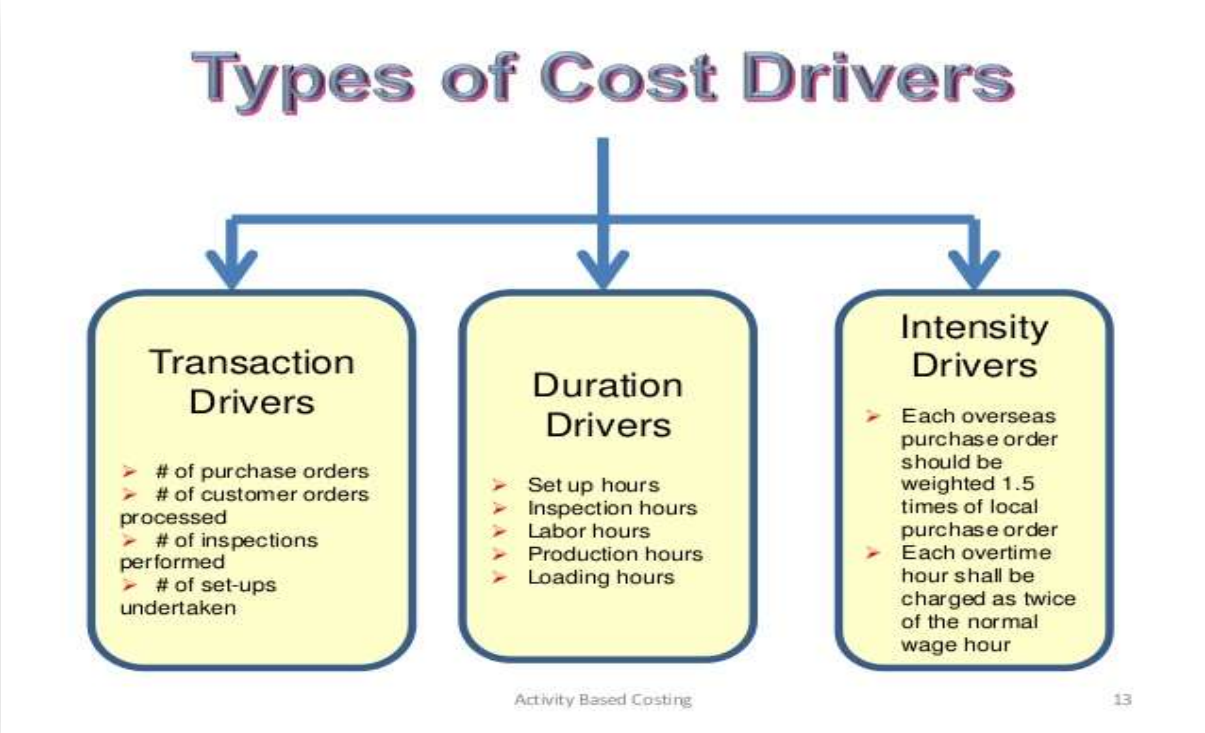
It may be noted that unit level activities and facility level activities are the same as those in traditional absorption costing which will be allocated on physical volume basis, ABC will be more useful if there is significant size of batch level and product level activities.

2. **Assigning Costs to Activity Cost Centres:** The second stage requires that a cost centre (also called a cost pool) be created for each activity. After the activities have been identified the cost of resources consumed over a specified period must be assigned to each activity. These costs will have to be apportioned on some suitable basis. For example, the total costs of all set ups might constitute one cost centre for all setup related costs.
3. **Selecting Appropriate Cost Drivers:** The third stage of designing ABC system is to identify the factors that influence the cost of a particular activity. The term cost-driver is used to describe the significant determinant of the cost of the activity. The most suitable cost driver in each activity under functional areas should be identified. A cost driver is any factor that influences costs.
4. **Assigning the Cost of the Activities to Products:** The final stage is to trace the cost of the activities to products according to each product's demand for these activities using cost drivers as a measure of demand. A product's demand for the activities is measured by the number of transactions it generates for the cost driver. The cost driver should be measurable in a way that enables it to be identified with individual products.

Cost Driver

Activity based information may be non-financial but concerns activities across the entire chain of value adding process and focuses the attention of managers on activities that cause rather than the costs themselves. These activities are known as cost drivers.

Cost drivers are used to describe the events or forces that are the significant determination of the cost activities, e.g., production scheduling cost is generated by the number of productions runs that each product generates. Thus, cost drivers are factors that drive consumption of resources. Therefore, management of cost drivers is essential to manage costs.

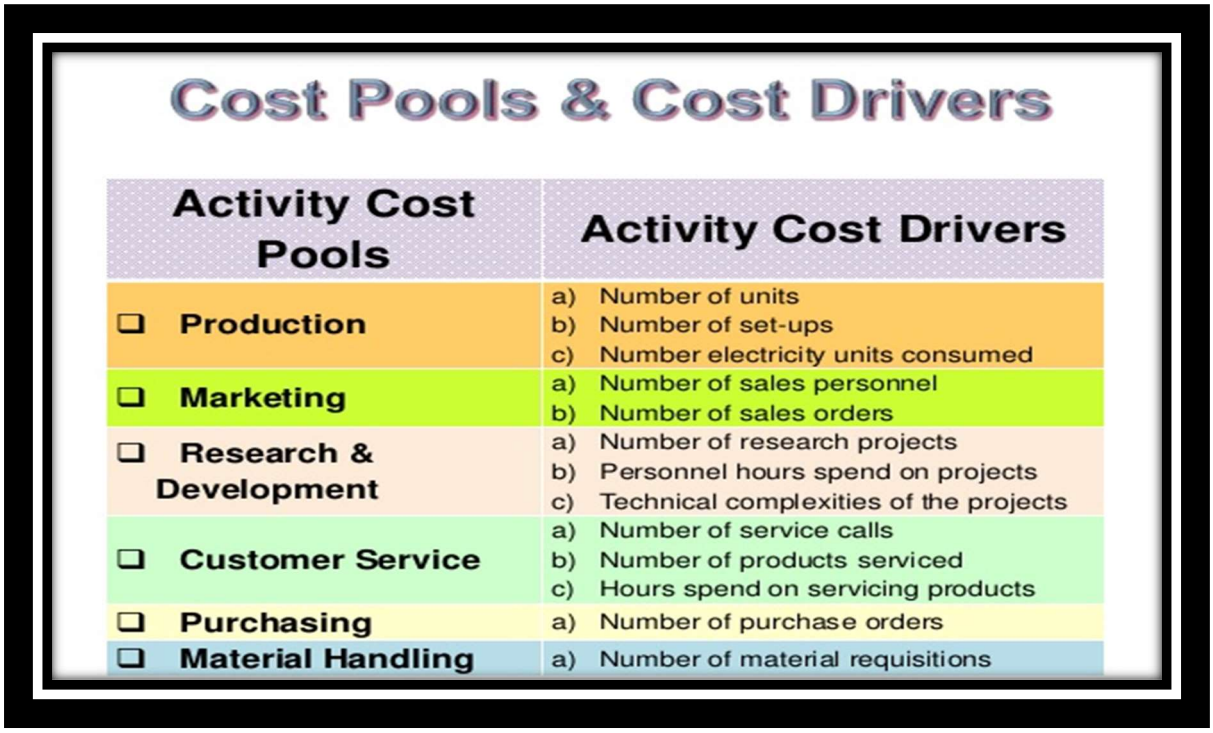


Cost Pools/Centres

A cost pool is a grouping of individual costs, typically by department or service centre. Cost allocations are then made from the cost pool. For example, the cost of the maintenance department is accumulated in a cost pool and then allocated to those departments using its services.

Cost pools are commonly used for the allocation of factory overhead to units of production, as required by several accounting frameworks. They are also used in activity-based costing to allocate costs to activities. An activity cost pool is an aggregate of all the costs associated with performing a particular business task, such as making a particular product. By pooling all costs incurred in a particular task, it is simpler to get an accurate estimate of the cost of that task. A business that wants to allocate costs at a highly-refined level may choose to do so using a number of cost pools.

A clear picture has been depicted in the following image of cost pools and cost drivers-



What benefits does ABC provide?

Activity-based costing provides a more accurate method of product/service costing, leading to more accurate pricing decisions. It increases understanding of overheads and cost drivers; and makes costly and non-value adding activities more visible, allowing managers to reduce or eliminate them. ABC enables effective challenge of operating costs to find better ways of allocating and eliminating overheads. It also enables improved product and customer profitability analysis. It supports performance management techniques such as continuous improvement and scorecards.

ABC has been accepted as very useful for product costing where production overheads are high in relation to direct cost, where there is diversity in the product range, where products consume different amount of overhead and where consumption of overhead is not basically driven by their volume.

In brief following are main benefits of using ABC technique:

1. ABC helps to reduce costs by providing meaningful information for cost-management. It helps in making the right decision.
2. ABC technique provides due importance to non-manufacturing cost which constitute a substantial portion of total cost. Traditionally non-manufacturing costs have been allocated under volume basis and thus, high volume products have been overvalued.
3. ABC technique provides accurate and reliable cost information. This cost information is essential for recent approaches in productivity improvement like Total Quality Management (TQM) and Business Process Reengineering.
4. ABC enables the management in formulating an effective pricing policy while fixing prices.

5. Cost of each activity is determined with the help of ABC. There is accuracy in indirect cost-allocation to products. This technique is helpful in make or buys decisions and transfer pricing.

Reasons for adopting Activity Based Costing System

The fundamental advantage of using an ABC system is to more precisely determine how overhead is used. Once you have an ABC system, you can obtain better information about the following issues:

- **Activity costs.** ABC is designed to track the cost of activities, so you can use it to see if activity costs are in line with industry standards. If not, ABC is an excellent feedback tool for measuring the ongoing cost of specific services as management focuses on cost reduction.
- **Customer profitability.** Though most of the costs incurred for individual customers are simply product costs, there is also an overhead component, such as unusually high customer service levels, product return handling, and cooperative marketing agreements. An ABC system can sort through these additional overhead costs and help you determine which customers are actually earning you a reasonable profit. This analysis may result in some unprofitable customers being turned away, or more emphasis being placed on those customers who are earning the company its largest profits.
- **Distribution cost.** The typical company uses a variety of distribution channels to sell its products, such as retail, Internet, distributors, and mail order catalogues. Most of the structural cost of maintaining a distribution channel is overhead, so if you can make a reasonable determination of which distribution channels are using overhead, you can make decisions to alter how distribution channels are used, or even to drop unprofitable channels.
- **Make or buy.** ABC provides a comprehensive view of every cost associated with the in-house manufacture of a product, so that you can see precisely which costs will be eliminated if an item is outsourced, versus which costs will remain.
- **Margins.** With proper overhead allocation from an ABC system, you can determine the margins of various products, product lines, and entire subsidiaries. This can be quite useful for determining where to position company resources to earn the largest margins.
- **Minimum price.** Product pricing is really based on the price that the market will bear, but the marketing manager should know what the cost of the product is, in order to avoid selling a product that will lose a company money on every sale. ABC is very good for determining which overhead costs should be included in this minimum cost, depending upon the circumstances under which products are being sold.
- **Production facility cost.** It is usually quite easy to segregate overhead costs at the plant-wide level, so you can compare the costs of production between different facilities.

Clearly, there are many valuable uses for the information provided by an ABC system. However, this information will only be available if you design the system to provide the

specific set of data needed for each decision. If you install a generic ABC system and then use it for the above decisions, you may find that it does not provide the information that you need. Ultimately, the design of the system is determined by a cost-benefit analysis of which decisions you want it to assist with, and whether the cost of the system is worth the benefit of the resulting information.

Weakness of ABC System

Despite of various advantages, following are the weaknesses of adopting ABC system-

1. It is based on historical costs; while for planning decisions future costs are more relevant.
2. For many short-term decisions, identification of variable costs is very important. But ABC system does not partition variable and fixed elements of overhead costs.
3. The accuracy of ABC system fully depends upon the quality of cost drivers. The allocation and absorption of costs may become an arbitrary allocation process, if the cost drivers are not associated with the factors causing costs.
4. ABC system tends to be more costly than the traditional methods of applying costs to products.

Difference between Activity Based Costing and Traditional Costing

Basis of distinction	Activity Based Costing	Traditional Costing
Primary Focus	Uses multiple cost drivers for multiple activities.	Uses identical cost driver for different activities.
Application	Is difficult to implement and requires time and effort.	Is straightforward and easy to implement.
Scope	Cover product cost only.	Can cover both product as well as period costs.
Management Use	The values can be used in external financial statements.	The values cannot be used in reports of external reporting.
Effectiveness of operations	Enhances management knowledge about activities related to production process.	Does not provide opportunity to identify any specific reasons for costs incurred.

Conclusion

Activity-based costing (ABC) is a costing method that identifies activities in an organization and assigns the cost of each activity to all products and services according to the actual consumption by each. ABC has attracted a considerable amount of interest because it provides not only a basis for calculating more accurate product cost but also a mechanism for managing overhead costs. By collecting and reporting on the significant activities in which a business engages, it is possible to understand and manage costs more effectively. It is the area of cost-management rather than product costing, where activity-based systems may have their greatest potential.

Miscellaneous Illustrations

1. The budget overheads and cost driver volumes of S Ltd. Are as follows-

Cost Pools	Budget Overheads	Cost Driver	Budged Volumes
Machinery Purchased	9,00,000	No. of orders	3,000
Material Handling	4,00,000	No. of Movements	1,000
Setup	3,00,000	No. of Set-ups	600
Maintenance	10,00,000	Maintenance Hours	10,000
Quality control	2,00,000	No. of Inspection	1,000
Machinery	10,00,000	No. of Machine Hours	20,000

The company has produced a batch of 3,000 components of AB-30. Its material cost is Rs. 1,50,000 and direct labour cost Rs. 3,00,000. The usage activities of said batch are as follows-

Machine Hours	2,500	Setup	30
Material orders	30	Maintenance Hours	500
Material Movements	15	No. of Inspections	30

(a) Calculate cost driver rates that are used for treating appropriate amount of overheads to the said batch.

(b) Ascertain the cost of batch of components using Activity Based Costing.

Solution:

(a) Calculation of Cost Driver Rates

Material Purchasing = 9,00,000/3000 = Rs. 300
Material Handling = 4,00,000/1,000 = Rs. 400
Setup = 3,00,000/600 = Rs 500
Maintenance = 10,00,000/10,000 = Rs 100
Quality control = 2,00,000/1,000 = Rs. 200
Machine = 10,00,000/20,000 = Rs. 50

(b) Calculation of Cost of Batch of 3,000 components of AB-30

Direct Materials			1,50,000
Direct Labour			3,00,000
		Prime Cost	4,50,000
Overheads:			
Material Procurement	30*300 =	9,000	
Material Handling	15*1,000 =	15,000	
Set-up Cost	30*500 =	15,000	
Maintenance	500*100 =	50,000	
Quality control	30*200 =	6,000	
Machine	2,500*50 =	1,25,000	2,20,000
		Total Cost	4,70,000

ILLUSTRATION 2. ABC Ltd. has collected the following data for its two activities. It calculates cost rates based on cost driver capacity.

Activity	*Cost Driver*	*Capacity*	*Cost*
Power	Kilowatt hours	60,000 kWhr.	₹ 3,00,000
Inspection	No. of Inspections	25,000 Inspection	₹ 5,00,000

The company makes three products A, B and C. For the year ended 31st March, 2016, the following consumption of cost drivers was reported.

Product	*Kilowatt hours*	*Quality Inspection*
A	10,000	10,000
B	25,000	8,000
C	20,000	5,000

Required :

(*i*) Compute the cost allocated to each product from each activity.

(*ii*) Calculate the cot of unused capacity for each activity.

SOLUTION

(*i*) Statement of Cost allocation to each product from each activity

	A	*B*	*C*	*Total*
Power	50,000 (10,000 × ₹ 5)	1,25,000 (25,000 × ₹ 5)	1,00,000 (20,000 × ₹ 5)	2,75,000
Quality Inspection	2,00,000 (10,000 × ₹ 20)	1,60,000 (8,000 × ₹ 20)	1,00,000 (5,000 × ₹ 20)	4,60,000

Working Note :

(*i*) *Calculation of Rate per unit of Cost Driver*

Power = ₹ 3,00,000 ÷ 60,000 kWh = ₹ 5/kWh

$$\text{Quality Inspection} = \frac{₹\ 5,00,000}{25,000\ \text{Inspection}} = ₹\ 20 \text{ per inspection}$$

(*ii*) *Computation of Cost of unused capacity of each activity*

	₹
Power (₹ 3,00,000 – ₹ 2,75,000)	25,000
Quality Inspection (₹ 5,00,000 – ₹ 4,60,000)	40,000
	65,000