

**ACTIVITY BASED COSTING FOR BETTER
COST MANAGEMENT****K. Mohan**

School of Management,
Pondicherry University, India
drmohanpillai@yahoo.com

Lecturer Ph.D. Babu P. George

School of Management,
Pondicherry University, India
myselfgeorge@gmail.com

Abstract

Implementing change in management, successfully and profitably, is the greatest challenge for modern enterprises. Innovation in strategies, marketing performance, role of competition, change in technology, change in customer needs, management initiatives are all facts of life in the global environment today. Cost management works with its customer to manage change more profitably. Activity-Based Costing (ABC) is a new methodology of product costing which measures the cost of products more accurately. Overhead allocation is much more sophisticated under this system. This paper attempts to highlight the need, importance and methodology of ABC for better Cost Management in modern enterprises.

Rezumat

Implementarea schimbării în management, făcută cu succes și profitabil, este cea mai mare provocare a întreprinderilor moderne. Inovația strategiilor, performanța marketing-ului, rolul competiției, schimbarea tehnologiei, schimbarea nevoilor consumatorilor, inițiative în domeniul managementului sunt toate fapte de viață într-un mediu global din zilele noastre. Management-ul costurilor se străduiește să facă activitatea mai profitabilă. Activitățile Bazate pe Cost (ABC) constituie o metodologie nouă a costului de producție care măsoară mai exact costul produselor. O alocare globală este mult mai sofisticată în cadrul acestui sistem. Încercăm să scoatem în evidență nevoia, importanța și metodologia ABC pentru un mai bun management al costurilor în întreprinderile moderne.

Keywords

- Cost management;
- Activities and types;
- Cost and activity drivers;
- Activity based costing (ABC);
- ABC implementation;
- ABC applications.

Cuvinte cheie

- Managementul costurilor;
- Activități și tipuri;
- Motoare de costuri și activități;
- Activități Bazate pe Cost (ABC);
- Implementarea ABC;
- Aplicații ale ABC.

1. Introduction

Activity-Based Costing (ABC) is a new methodology of product costing which measures the cost of products more accurately than the traditional method. Overhead allocation is much more sophisticated under this system. Identifying various levels of costs that exist, accumulating costs into related cost pools and utilizing various cost drivers to determine to manufacturing the products and rendering services are the three basic tools of Activity-Based Costing.

ABC is a modern approach to product costing, pioneered by professors Kaplan and Cooper of Harvard University. ABC is a system that reflects more accurately in product costs, those activities that influence the level of support overheads. Support overheads include such items as assembling, production planning, inspection, dispatch, set-up, tooling and similar costs.

One of the vital things today for any type of organization is cost management, for it is an attitude, a philosophy and a set of techniques to build more value at cost. The role of cost accountant focuses on reporting of past costs, cost management and provide cost details for decision-making. Many of modern days' cost managers previously were cost accountants; their transformation is more than just a change in job title.

Most of successful organizations today have responded not only by transforming the nature of their work, but also by modifying their ways of managing. At present situation, traditional management practices that impose direction from the top levels of management down through the organization no longer may be viable, that "top-down" approach to management usually is not flexible enough to either recognize new opportunities or identify

growing problems in time to respond effectively. The business environment today emphasizes innovation and customer satisfaction, which requires cost managers to have an external orientation rather than the more traditional, internal orientation. Controlling of the cost is an art. Management and maintaining of the cost have ever welcomed by the strategic level management.

2. What is Activity-Based Costing?

A process using multiple cost drivers to predict and allocate costs to products and services; an accounting system collecting financial and operational data on the basis of the underlying nature and extent of business activities; an accounting information and costing system that identifies the various activities performed in an organization, collects costs on the basis of underlying nature and extent of those activities, and assigns costs to products and services based on consumption of those activities by the products and services.

ABC identifies business activities performed, measures the cost and performance activities and cost objectives, assigns resources to activities and activities to cost objects; and recognizes the casual relationship of cost drivers and activities. ABC traces cost of resources to activities and then to products and services based on the use of activities.

3. Activities and Types

An activity is a work performed within an organization. All manufacturing units or service units have various functions such as finance, accounting, human resources, production processes etc. each of these businesses and production processes is composed of defined steps or activities. An activity is a discreet unit of work for which an

organization can define inputs (resources used) and outputs. In the first stage of Activity-Based Costing, activities are identified, costs are associated with individual activities, and their associated costs are divided into homogenous sets.

An activity is also defined as an aggregation of actions performed within an organization that is useful for purposes of Activity-Based Costing. Thus, activity identification requires a listing of all the different kinds of work, such as:

- Material handling;
- Inspections;
- Process engineering;
- Product enhancement etc.

A firm may have hundreds of different activities. Once an activity is defined, the cost of performing the activity is determined. At this point, the firm could determine the cost driver associated with each activity and calculate individual activity overhead rates.

Activities play a vital role in cost management i.e. cost reduction and cost control. Even highly talented, experienced professionals and managers could seldom directly control costs without controlling activities that drive these costs. It could be explained in a cotton textile industry, if some of unit or batch-level activities could be improved, costs could perhaps be controlled. If certain quantum of “non-value adding waste” is removed, costs are reduced automatically. Such cost reduction is contrasted with the famous “across-the-board-cost-cuts” followed in many industries today. The distinction between these two cost reduction methods is that the larger might tend to unscientifically cut even some of the value-adding activities, which would be ultimately detrimental to the objective of such cost reduction exercises.

Activities may be classified into five types depending on the type of decision to use resources:

a) Unit Level Activities: the work efforts that transform resources into individual products and services are called unit level activities. A decision to produce more units of product or service proportionately causes more unit level activities. Unit level activities are performed for every unit of product or service.

b) Batch Level Activities: it reflects the organization’s manufacturing or service technology to perform certain activities that affect multiple units of output equally and simultaneously. A batch refers to a number of units of service or product that requires the same set up of personnel, software or equipment. Different technology allows different batch sizes and activities.

c) Product Level Activities: product level activities may include design, advertising, supervision, manufacturing and quality management that are specific to each type of product or service. These specific activities would not be necessary if, for example, the company decided it would no longer provide a certain product or service. However these product-level activities may use both product and facility-level human and physical resources.

d) Customer Level Activities: these activities are performed to meet the needs of specific customers. Customer-level activities may include supply and distribution if these are specific to customers.

e) Facility Level Activities: these activities may support all the organization’s processes, and are at the highest level of hierarchy. Examples of facility level activities are activities of top management, personnel, supply, distribution, advertising and promotion, research and development and so on that are common to all the company’s products, services and customers. Facility-level activities also include the work of

service departments such as Finance and Accounting, Management Information System and Human Resources.

4. Cost Driver Base and Rate

A cost driver base is a measurable cause or driver, of performing an activity; i.e., it is what causes a cost to be incurred. Increases or decreases of the cost-driver base cause increases or decreases in the level of activity performed.

There are many possible cost-driver bases is critical to the validity of activity analysis. An appropriate cost driver base should:

- Logically have a cause-and-effect relationship with the activity and the use of resources (cost);
- Be feasible to measure;
- Predict or explain activities' use of resources (cost) with reasonable accuracy;
- Be based on the practical capacity of the resource to the support activities.

The cost driver rate is estimated cost of resource consumption per unit of cost-driver base for each activity.

5. Traditional Cost/Actual Cost System

It is a valuation method that uses actual direct material, direct labor, and

overhead charges in determining the cost of Work-in-Progress inventory. In conventional costing, all overheads are absorbed on production volume, as measured by labor or machine hours. This means that high volume standardized products would be charged with most overheads and short run production with lower overheads in spite of the fact that short run production causes more set-ups, retooling, production planning and thereby generates more support overhead costs. Hence, traditional volume related overhead absorption tends to over cost products made in long runs and under costs products made in short runs.

ABC seeks to remove this problem by relating support overheads to products, not by production volume, by a number of specific factors known as cost drivers. A cost driver is an activity which causes cost.

6. Activity Center and driver

Activity center is a segment of the production or service process for which management wants to separately report the cost of the activities performed.

Activity driver is a measure of the demands on activities and thus, the resources consumed by products and services; often indicates an activity output.

Tabel no. 1

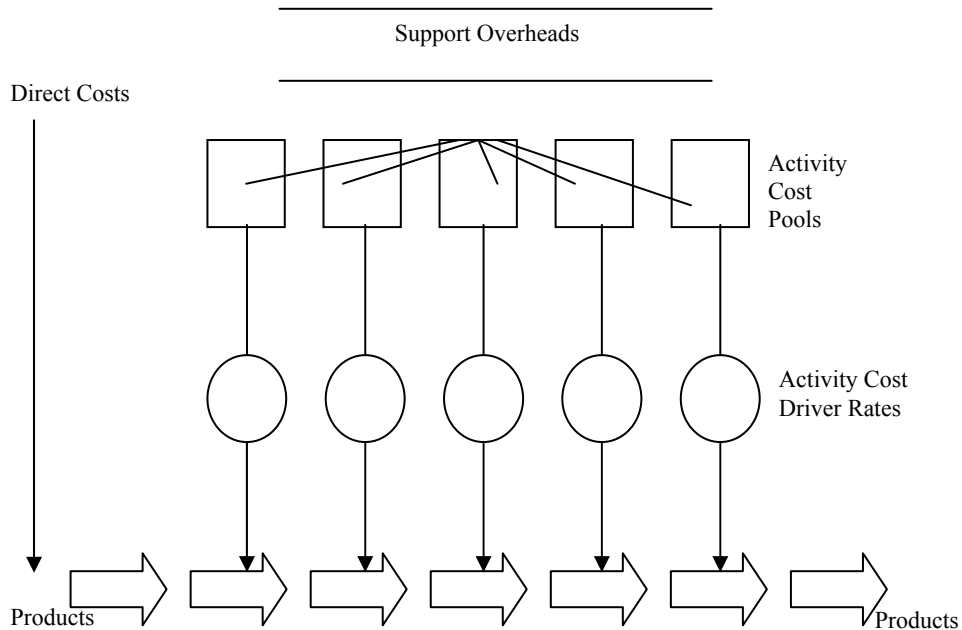
Examples of cost drivers	Typical costs influenced by cost driver
Number of production runs	Production planning & scheduling, set-up, inspection, tooling
Number of dispatches	Dispatch department, Invoicing etc.
Number of purchase orders	Purchasing department, Stock-holding etc.
Number of engineering changes	R & D Department, production planning etc

ABC seeks to deal with the fact that many overhead costs vary not with the volume of items produced but with the range of the items, i.e., the complexity of the production processes. Under ABC, a

product cost consists of its direct costs plus a share of overheads related to the number of cost driver units the production causes.

Figure no. 1

Outline of Activity-Based Costing



7. Application of ABC to Manufacturing and Service Organizations

Application of ABC is generally focused on production centers, but at the same time ABC can also be applied in various service organizations. Each and every service organization has got various activities and output that places demand on these activities. There are some major differences between production and service organizations. Basic activities in production

organizations tend to be of the same type and performed in a similar way. But these cannot be applicable in service organizations. For example, in insurance, transport, banking, hospitals we see dissimilar activities. Another difference between production and service organizations is based on output definition. In production organizations, the output is simply defined by way of number of units/products i.e., these are tangible in nature. But in service organizations the output definition may be impossible. Naturally the output of service organization is less tangible.

It is important to realize that the two stages of flow of resources through processes and process activities are identical for manufacturing and service organizations, even though their resources, processes, activities and outputs may be different. Further more, internal business processes are similar to outsource services provided by external service firms since they provide services to support production processes. Thus, ABC is equally applicable to manufacturing and service organizations.

An ABC system offers more than just accurate product cost information. It also provides information about activities and their costs. Knowing what activities are being performed and their associated costs allow managers to focus on those activities that might offer opportunities for cost savings – provided they are simplified, performed more efficiently and so on.

8. Steps Involved in the Design and Implementation of ABC System

Designing and implementing an ABC system involves the following four steps:

Step No 1: Managers determine the cost objectives, key activities and resources used. Cost drivers are also identified for each resource and activity.

Step No 2: A process-based map is drawn that represents the flow of activities and resources that support the cost objects.

Step No 3: Collecting cost and operating data.

Step No 4: To calculate and interpret the new activity based information. Often this last step requires the use of computer due to the complexity of ABC system.

9. Implementing ABC for Job and Batch Costing

Overheads can be charged to jobs using either traditional labor or machine hour absorption rates or by using various cost drivers in ABC system. If all jobs or batches are the same and placed similar loads on support activities there would be small difference in the costs calculated by either method. Such uniformity is unlikely and jobs and batches do vary in the loads they place on production facilities and on support activities.

As a consequence, costs calculated by traditional methods and ABC system are likely to be different. The general effect is that more complex/diverse/small quantity production will tend to be cost effective under ABC as compared to traditionally calculated costs. This can be explained by the following example.

The given details have been recorded for four batches in a period:

Batch Output in units	A 200	B 210	C 220	D 225
<u>Cost per batch</u>	\$	\$	\$	\$
Direct Material	1,650	1,700	1,750	1,800
Direct Labor	9,200	9,300	9,400	9,500
Labor Hours per Batch	1,150	1,160	1,170	1,180

The total production overhead for the period has been analyzed as follows:

	\$
Machine related costs	14,600
Materials handling & dispatch	6,800
Stores	8,250
Inspection/Quality Control	5,850
Set-up	6,200
Engineering support	8,300
Total	50,000

Cost drivers have been identified for the cost pools as follows:

Batch	A	B	C	D	Total
Machine hours per batch	520	525	530	540	2,115
Material movements	180	182	186	190	738
Requisitions	40	42	44	46	172
Inspections	18	20	22	26	86
Set-ups	14	15	16	18	63
Engineering hours	65	68	71	76	280

Required:

- a) the batch and unit costs using traditional costing based on labor hour overhead absorption rate (OAR);
- b) the batch and unit cost using ABC;
- c) compare the costs in (a) and (b).

Solution:

- a) Batch and unit costs using traditional overhead absorption based on labor hours.

$$\text{Labor hour OAR} = \frac{\$ 50,000}{1150 + 1160 + 1170 + 1180} = \$ 13.88$$

Batch Output (Units)	A 200	B 210	C 220	D 225
Cost per batch:	\$	\$	\$	\$
Direct Material	1,650	1,700	1,750	1,800
Direct Labor	9,200	9,300	9,400	9,500
= Prime Cost	10,850	11,000	11,150	11,300
+ Overhead (Lab.hrs X OAR)	15,962	16,100	16,240	16,378
Total Batch Cost	26,812	27,100	27,390	27,678
Unit Cost	134.06	129.04	124.50	123.00

- b) Batch and unit costs using ABC with various cost drivers.

Calculation of Cost Driver Rates:

Cost Driver	Cost Pool Total number of cost driver	Cost Driver Rate
Machine hours	14600/2115	\$ 6.90 per Mac. Hour
Material movements	6800/738	\$ 9.21 per Movement
Stores	8250/172	\$ 48 per Requisition
Inspection	5850/86	\$ 68 per Inspection
Set-ups	6200/63	\$ 98.41 per Set-up
Engineering	8300/280	\$ 29.64 per hour

Using ABC for Calculating the Batch and Unit Cost:

Batch Quantity	A 200	B 210	C 220	D 225
Prime Cost (a)	\$ 10,850	\$ 11,000	\$ 11,150	\$ 11,300
<u>Overheads</u>				
Mach hrs @ \$ 6.90	(520) 3588	(525) 3623	(530) 3657	(540) 3726
Movements @ \$ 9.21	(180) 1658	(182) 1676	(186) 1713	(190) 1750
Requisitions @ \$ 48	(40) 1920	(42) 2016	(44) 2112	(46) 2208
Inspections @ \$ 68	(18) 1224	(20) 1360	(22) 1496	(26) 1768
Set-ups @ \$ 98.41	(14) 1377	(15) 1476	(16) 1575	(18) 1771
Eng. Hrs @ \$ 29.64	(65) 1927	(68) 2016	(71) 2104	(76) 2253
Total overheads (b)	11,694	12,167	12,657	13,476
Total Batch Cost (a) + (b)	22,544	23,167	23,807	24,776
Unit Cost	112.72	110.31	108.21	110.12

c) The unit cost compared:

BATCH	A	B	C	D
Unit Cost under Traditional Method	\$ 134.06	\$ 129.04	\$ 124.50	\$ 123.00
Unit Cost under ABC Method	112.72	110.31	108.21	110.12
Gain by using ABC Method	21.34	18.73	16.29	12.88

It will be seen that in this example there are significant differences between the cost using the traditional method and ABC method. If ABC system is used there will be lesser

unit cost of \$ 21.34 in batch A, \$ 18.73 in batch B, \$ 16.29 in batch C and \$ 12.88 in batch D. It is this feature which, it is claimed, makes product costs more accurate when ABC is used.

10. Conclusion

Implementing change in management, successfully and profitably, is the greatest challenge for modern enterprises. Innovation in strategies, marketing performance, and role of competition, change in technology, and change in customer needs, management initiatives are all facts of life in the global environment today.

Cost management works with its customer to manage change more profitably. By unique combination of people, information processes and technology – the key ingredients of continuous transformation – cost management delivers result-oriented

solutions to solve the problems of on-going business enterprises, and change programs to capitalize on new business opportunities.

Undoubtedly, the ABC concepts are very useful and powerful and when applied in a firm, are capable of achieving rapid performance and increased profits. Since 1990, cost technology has been helping organizations achieve their full potential using their own highly developed Activity-Based Cost Management Program. Cost management can successfully take industries through ABC onto strategic and operational transformation programs.

Bibliography

1. Peter B.B. Turney. *Activity Based Costing – The Performance Breakthrough*, Cost Technology Inc., USA, 1996
2. Gupta M. & Baxendale S. & McNamara K. *Integrating TOC and ABCM in a Health Care Company*, Journal of Cost Management, July-August 1997
3. Bhattacharya and John Deadden. *Costing for Management*, Vikas Publishing House (P) Ltd., New Delhi, 1997
4. Kalpan R.S. and Cooper. *Cost and Effect: Using Integrated Cost Systems to Drive Profitability and Performance*, Harvard Business School, Press, Boston, 1998
5. Horgngren, Sundem and Stratton. *Management Accounting*, Prentice Hall of India (P) Ltd., New Delhi, Eleventh Edition, 1999
6. Rutherford Brian. *ABC: Too much Activity, not enough Costing?*, Businessline, Chennai, Nov. 23, 2000
7. Mahendra A. Solanki and Sunil Rajotia. *Activity Based Costing: Pros and Cons*, Productivity, Vol 41 No. 1, April-June 2000, CBS Publishers and Distributors, New Delhi
8. Sidney J. Baxendale. *ABC for the Small Business*, IEEE, Engineering Management Review, University of Houston, Vol 29, No. 3 Third Quarter, 2001
9. Srinivasan, R. *Banking on ABC*, Businessline, Chennai, April 15, 2002