

MODERNIZING MANAGEMENT ACCOUNTING BY THE ABC METHOD

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Abstract

In recent years the relationship between direct and indirect costs in total costs has changed a lot, due to the technological evolution in the sense of increasing the share of indirect costs. Thus was imposed the orientation of cost calculation to a method to allow the identification of the origin, analysis and control of indirect costs. In order to control the overheads it is necessary to be aware of the causal factors that generate resource consumption. The method that best meets these requirements is the ABC (Activity Based Costing) method. After clarifying the concepts of “activity” and “driver”, this paper presents the methodology used in the ABC method. The allocation of indirect costs on products, works, and services is calling for the activities of the company. The last part of the paper is limited to a case study conducted in a company producing automotive parts.

Keywords: activity, expense, costs, cost driver, resources, value

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1. Introduction

Activity-based costing originated from the U.S. in the paper entitled “The hidden factory”, authors being G. Miller and Thomas E. Vollmann who stated that to control indirect costs is necessary to identify the causes that generated these costs. The first attempt to achieve cost calculation according to this system was made throughout the U.S. by Kaplan, Johnson and Cooper in 1987. Thus a system called “Activity Based Costing” has emerged.

In recent years the cost structure has changed a lot due to technological evolution. In order to compete, companies allocate large sums for research, development, renovation, adaptation. By automating the production process increase the number of administrative, control and management activities. This led to the relationship between direct and

indirect costs in total costs to change in the sense of increasing the share of indirect costs. The importance of direct costs decreases in the favor of indirect costs, while increasing the share of fixed costs. It becomes necessary focusing the cost calculation on one method to allow identifying the origin of indirect costs, their analysis and control, the control being achieved by knowing the causal factors that generate resource consumption.

The main objective of this research is to highlight the advantages of using ABC method in cost calculation. Pierre Mevllec in "Cost calculation within companies" (Mevllec, 1995, p. 118), indicate the main objectives of the ABC method as:

1. Highlighting as directly as possible the activities of the company to obtain value (products, services).
2. Analyzing the activities showing: the nature of activities, the place of their occurrence and the main causes that trigger activities and determine the increase of resources consumed and thus of their costs.

The analysis is performed on two main axes:

1. relationship between resources, activities, products,
2. relationship between causes, activities, results.

The concept of the ABC method is that: activities consume resources and products consume activities.

ABC method is a method of absorbing type as settles on products all business expenses, both the direct and the indirect. The method involves allocating the indirect costs on products, works, services appealing to the company's activities. Traditional methods involve indirect cost allocations based on arbitrary quotas which very often lead to inaccurate results and this that due to increased share of indirect costs in the total company expenses.

2. Concept of activity

The activity can be defined as a part or all of the obligations of a compartment to achieve a product, provide a service, perform a work for which a group of people or one person uses a specific savoir-faire. It is a homogeneous set of operations, characteristic to a process of achieving value chain and resource consumption. No activity is isolated within the company. The company appears as a set of activities with links between them. It should build up an activity network in order to optimize the cost-value relationship.

To implement the activity-based costing it is necessary to abandon the approach of the company as a body with different functions; the company should be approached as a network of activities that consumes resources to create value in order to satisfy internal and external customers of the company.

Activities can be grouped by the nature of the decisions and their horizon: activities related to production and marketing of products, activities related to the organizational form, activities related to the existence of the product, activities related to production capacity.

The stage of identification of the activities is extremely important. It is necessary to distinguish between the duties, operations, activities, processes and functions; in practice they are often confused.

Duties are operational steps required to perform an activity. *Elementary operations* are expressed by a verb and a direct object (e.g. launching a manufacturing order, shipping a product). In a company we can identify hundreds of elementary operations.

Functions are grouping activities by occupations. They help to manage human resource skills (e.g. of functions within a company: acquisition, development, production, coordination, control, sale).

A chain of activities oriented to obtain an output forms a *process* characterized by the actual output, the consumption of resources and the factor that influence costs. Processes regroup activities after a common end. Each process has an external or internal customer. Processes are generally transversal to hierarchical organization and functional divisions.

3. Stages of cost calculation according to the ABC method

After identifying products for which costs are calculated, the cost calculation according to the ABC method involves the stages:

1. Identifying expenses incorporable into costs.

Full economic cost is determined according to the following rules:

- not all expenses and losses recorded in financial accounting are taken into account by management accounting;
- can be incorporated into costs also the expenses unrecorded in financial accounting);
- certain incorporable expenses are considered by management accounting at a value different from that recorded in financial accounting.

The expenses incorporable into costs are divided into: direct costs and indirect costs for whose allocation in the cost of products appeals for the company's activities.

2. Identifying the activities.

The method aims to cut costs on company's activities. Identifying the activities is independent of the organizational cutout. A service (department) runs usually several different activities. In addition, an activity can be found in more than one service.

In this respect it is necessary to draw up a map of activities. It should be considered to simplify the mapping of activities as at the level of society they are very numerous to be mentioned in a costing model. There may be activities related to the existence of manufacturing capabilities (research and development activity), the actual production (manufacture preparation, execution of production, quality control, stocking production in progress, finished goods stocking) or may be distribution related activities (market prospecting, shipping, billing) etc.

3. Identifying cost drivers for each type of activity.

The cost driver is the factor explaining the costs variation, is the reference size for allocating indirect costs. It is also used the concept of *incentive costs*. They are predominantly expressed in quantitative units, but can also be used as value or time units. With the cost driver is eliminated the conventional allocation of indirect costs of traditional costing methods. The costs driver is the unit of measurement of the activity. By this driver are measured the benefits provided by the activity to products.

The ABC method is based on the following premise: the control of resources consumption cannot be effective unless it is made in the same place of consumptions and as all company resources are engaged in activities it is necessary to identify the causal factors of resources consumption.

Choosing a cost driver for a given activity is based on: the objectives, the degree of fineness of the work, and the availability of information cost.

Depending on the objectives, as cost drivers we can choose:

- factors of consumption of resources, when very accurate costing is desired. These drivers are directly related to the amount of resources consumed and by using them, this consumption is accurately measured.

- measures of the work performed for each activity, in those areas where it is not possible to use factors of consumption of resources.

- activity triggers (corresponding to elements that trigger an activity).

They allow describing business processes (which are defined as a series of activities having the same trigger factor). Their use makes possible to understand the links between activities.

The degree of fineness of activities is also a factor influencing the choice of cost driver. When the activity is incorporating a large number of different operations, it is used, usually, a consuming factor driver type. When, however, the work is detailed, using units of work as cost drivers is sufficient to identify the relationship between the subject of cost and resource consumption.

For example, the management of supplies may have as driver the number of orders received - is an inducer of work unit. If orders received are

complex and various it is recommended the choice as cost driver - the number of components received.

The choice of cost driver is influenced by the *availability and the cost of obtaining information*. Being directly related to the activity, information about work units are usually easier to achieve, to identify, except those relating to consumption triggers or factors.

The number of cost drivers is higher, the quality of the information obtained, the accuracy of the calculated cost is greater. However, we should bear in mind that using too many drivers leads to increased costs for recording and calculating them. If big differences between products in terms of consumption of resources and activities appear, a short number of cost drivers may lead to inaccurate costs. Also, an increase in the total cost of the indirect costs requires the use of a large number of cost incentives.

4. Grouping activities with the same cost drivers in regrouping centers.

After completing the analysis phase of activities, the company is divided into a large number of base units. This is beneficial for better oversight of resource management, but the division of the company in many activities aggravates the work of whoever is calculating costs.

There may be activities for which are identified the same causal factors, activities having different relations. After identifying the cost drivers, in order to simplify the model, activities with the same cost drivers are grouped in a **regrouping center**.

5. Identifying costs related to each regrouping center.

Center-specific costs are charged to the respective center and the common costs of regrouping center will be distributed on them using the cost drivers of resources (indirect cost allocation keys on regrouping centers).

For example, for indirect costs with space depreciation may be used as the key to their distribution on aggregation centers, the centers area (in square meters) for the distribution of costs with indirect wages, we can use the number of hours worked by staff indirectly productive within the regrouping centers, the distribution of equipment maintenance and operation costs can be based on the number of hours worked in the maintenance and repair of each center.

6. The next step in costing according to the ABC method is the ***determination of unit cost per driver.***

Determining the unit cost per driver (cu_i) is similar to calculating the unit cost per unit by global method, being reported the indirect costs of each regrouping center to the number of drivers in that center.

$$cu_i = \frac{\text{Indirect costs of the regrouping center}}{\text{Number of drivers in the regrouping center}}$$

7. The next stage is the *allocation of indirect costs in the cost of products*.

Compared to traditional costing methods that have the assumption that products consume resources, the ABC method assumes that the **activity consumes resources, and products consume activities**. It is determined, for each product, the activities that were used to achieve them and the drivers of these activities. If the activities are specific to a particular product, their costs can be attributed to the product. If activities correspond to several products, their costs should be distributed to products using the drivers of activities.

Indirect costs due to an item are calculated based on the formula:

$$CI_j = \sum_{i=1}^m (n_{ij} \times cu_i)$$

where:

j – the product to which indirect costs are distributed;

CI_j – indirect costs related to product j ;

n – volume of cost drivers i for product j ;

i – cost driver;

m – number of drivers related to the activities that were used to develop the product j ;

cu_i – unit cost of driver i .

8. After allocating indirect costs to products we can proceed to *determine their unit cost*.

The ABC method calculates the full cost of not only products but also services, papers, orders, customers, product lines etc. The cost obtained is composed of all direct costs plus the cost of activities consumed by the products. The formula applied is:

$$cu_j = \frac{CD_j + CI_j}{q}$$

where:

j – product for which unit cost is calculated;

c_{uj} – unit cost of product j;
 CD – direct costs;
 CI – indirect costs allocated to product;
 q – quantity of products j obtained.

In terms of performance management, the usefulness of the ABC method can be given by the following aspects (Ionescu, 2007, p. 119):

- the possibility of determining the indicators necessary for the management in a total quality approach and the knowledge of the business cost;
- the analysis of the ways to reduce costs or to streamline production by reducing the number of components or by limiting specific series;
- empowering decision makers regarding the level of expenditure, in particular for support activities;
- a better grasp of the cost of launching new products or those relating to changes in existing products.

4. Study on the application of the ABC method in an enterprise producing spare parts

To illustrate the application of the ABC method we resorted to a case study at an enterprise which has as main activity the production of spare parts for vehicles. To simplify the calculation of the cost, I assumed that there are no finished products in stock, and neither a work in progress, neither at the beginning of the period nor the end of it.

For a certain reporting period are known the following information from table 1, information relating to the overall activity of the enterprise and product "Planetary".

Table 1. Indicators on the enterprise activity

Indicators	Total enterprise	Planetary
Number of models produced	10	1
Number of finished products manufactured and sold	15.000	2.000
Labor hours	6.000	1.000
Number of batches released in manufacturing	50	5
Number of components	140	20
Number of orders placed to suppliers	55	2
Number of order received from the customers	50	10

For product "Planetary", direct costs are:

- raw materials: 50 lei/pcs.

- labor: 0,5 h/pcs. x 25 lei/h = 12,5 lei/pcs.

Total indirect costs are amounting to 610.000 lei, as identified by the 5 departments of the company as:

Table 2. Amount of indirect costs

Department	Amount (lei)
Supply	100.000
Manufacturing	350.000
Marketing	90.000
Administration	40.000
Research	30.000
Total	610.000

The list of activities of the five departments, the allocation of indirect costs on these activities and related drivers are shown in Table 3:

Table 3. List of activities and related drivers

Department	Activities	Amount (lei)	Cost driver
Supply	- release orders	40.000	Number of orders placed to suppliers
	- receipt of orders	60.000	Number of components
	Total supply	100.000	
Manufacturing	- preparation of production	30.000	Number of batches released to manufacturing
	- manufacturing	300.000	Direct labor
	- maintenance	10.000	Number of batches released to manufacturing
	- quality control	10.000	Number of batches released to manufacturing
	Total manufacturing	350.000	
Marketing	- dispatch	50.000	Number of orders received from customers
	- billing	15.000	Number of orders received from customers
	- advertising	25.000	Number of models
	Total marketing	90.000	
Administration	- accounting customers	15.000	Number of orders received from customers
	- accounting suppliers	15.000	Number of orders placed to suppliers
	- inventory	10.000	Number of components
	Total administration	40.000	
Research	- research	30.000	Number of models produced

It is observed that there are activities for which were identified the same driver. For the determination of product cost by applying the ABC method, these activities are grouping in regrouping centers (table 4).

Table 4. Regrouping centers

Regrouping centers	Cost driver	Activities
CR1	Number of orders placed to suppliers	- releasing orders - accounting suppliers
CR2	Number of components	- receipt of orders - inventory
CR3	Number of batches released to manufacturing	- preparation of production - maintenance - quality control
CR4	Labor hours	- manufacturing
CR5	Number of orders received from customers	- dispatch - billing - accounting customers
CR6	Number of models produced	- advertising - research

Next, it is determined the unit cost per driver, reporting expenses of each centre to the number of drivers in that center (table 5):

Table 5. Unit cost per driver

CR	Cost drivers Activities	Number of orders released to suppliers	Number of components	Number of batches released to manufacturing	Labor hours	Number of orders received from customers	Number of models produced
CR1	release orders - accounting suppliers	40.000 15.000					
CR2	receipt orders - inventory		60.000 10.000				
CR3	preparation of production - maintenance - quality control			30.000 10.000 10.000			
CR4	manufacturing				300.000		
CR5	dispatch - billing - accounting customers					50.000 15.000 15.000	
CR6	advertising - research						25.000 30.000
	Total indirect costs (lei)	55.000	70.000	50.000	300.000	80.000	55.000
	Volume of cost drivers	55	140	50	6.000	50	10
	Driver unit cost	1.000	500	1.000	50	1.600	5.500

At the moment we can calculate the unit cost of the products by comparing total expenditure to the amount of products obtained. For product “Planetary”, calculations are shown in Table 6.

Table 6. Unit cost of product „Planetary”

Costs	Calculation	Amount (lei)
<i>Direct costs</i>		
- raw materials costs	50 lei/pcs. x 2.000 pcs.	100.000
- direct labor costs	12,5 lei/pcs. x 2.000 pcs.	25.000
		<i>125.000</i>
<i>Indirect costs</i>		
- management of orders placed to suppliers	2 orders x 1.000 lei/order	2.000
- management of components	20 components x 500 lei/component	10.000
- management of batches released in manufacturing	5 batches x 1.000 lei/batch	5.000
- management of hours	1.000 hours x 50 lei/hours	50.000
- management of orders received from customers	10 orders x 1.600 lei/order	16.000
- management of models	1 model x 5.500 lei/model	5.500
		<i>88.500</i>
<i>Total costs (lei)</i>	125.000 + 88.500	<i>213.500</i>
<i>Number of pieces obtained (pcs.)</i>		<i>2.000</i>
<i>Unit cost (lei/pcs.)</i>	210.500/2.000	<i>106,75</i>

5. Conclusion

Managers cannot lead well unless they have as much data and information on the costs and their implications on business performance, trends and strategies in the area of cost (Budugan, 2002, p. 9).

Under the traditional costing methods, the cost analysis concerns especially the execution phase of products. The ABC method points out that the implementation of any product requires a series of activities upstream or downstream the execution phase of products such as activities of receiving raw materials, assembly, installation of machinery, logistics, scheduling, labor preparation, or activities related to quality control, distribution, development of contracts and orders, administration etc. By means of cost driver is eliminated the conventional allocation of indirect costs of traditional costing methods, the cost driver being a measurement unit of the activity.

The indicators working with the ABC method addresses to the entire management team of the company, being not only accounting and financial,

but also non-financial, thus being easily understood both by economists and by the technical format, regardless of hierarchical level.

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