

# **INNOVATIONS OF THE ABC METHOD IN THE COST**

## **CALCULATION**

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**Abstract:** Costs calculated by traditional management accounting systems are inadequate for managers in the new economic and technological environments in which the entities operate. Starting from this reality, the ABC method has been developed and implemented, a method of cost calculation and at the same time, an enterprise performance management tool. Initially, the ABC method was used to calculate costs, being the method to meet the goals pursued by the calculation, namely: stock assessment, decision making and cost control support. This method is based on the representation of the entity based on its activities. It allows a new vision of cutting entity, cross view, which replaces the vertical, hierarchy- functional cutting. Thus the real cost is obtained, on which strategic decisions can be made by eliminating non-creating activities of value and cost distribution using the activity that generates it as a basis for allocating. ABC method has evolved over time from cost calculation to performance management, increasingly integrating more modern management principles and it has become a strategic tool or ABM (Activity Based Management). Summarizing, we can say that from the accounting point of view, of the cost calculation, it represents an improvement of the methodology for allocating overhead expenses on cost carriers, but his major contribution is in the entity's management plan, the new vision that proposed, ie management activities are the path to profitability by increasing the value for customers.

**JEL classification: M41**

**Key words: ABC method, cost inductor, pertinent cost, activity, performance management.**

### **1. CRITICS BROUGHT AGAINST THE TRADITIONAL MANAGEMENT ACCOUNTING**

Calculation methods based on the principle of full costs have emerged and developed in the early last century in an offer economy in which the entities, in fact, production workshops, had a simple (one product), and repetitive production. It was subsequently shown that these methods have not kept pace with the movements of concentration and diversification of entities' activity.

Concentration led to a vertical delegation of responsibilities, management accounting in the United States becoming an essential support. Note however that only controllable costs could be attributed to decentralized responsible and not the full costs of which they were not entirely responsible.

Diversification has led to market segmentation and the emergence of support functions, in which case the full cost could not be meaningfully judged against fluctuations

in commercial applications and to clarify the decisions that needed faster and more objective calculations.

In recent decades we are witnessing processes such as: "powerful groups and concentration, globalization of economies, such as supply and demand, new economic and technological limitations and opportunities of the global environment, etc. which lead to a redefinition of business objectives, resulting in major changes in the productive logic.

In these circumstances, the new company's strategic guidelines to: manufacture of products that have value for the request, ensuring flexibility in the entire business, to easily adapt to any environmental changes, simultaneous achievement of cost savings and improving quality."<sup>1</sup>

The many contemporary phenomena called into question traditional management accounting systems, being highlighted their shortcomings, including:

- ✓ allocation of overhead expenses, the main problem of management accounting<sup>2</sup>, there can only be achieved on the basis of conventional distribution, arbitrary, and is questionable, because the entity functions start to take on increased importance, context in which planning, research and development, marketing, logistics are primarily generating overhead expenses. In traditional management accounting systems usually overhead costs are the carriers cost using a single criterion for allocating physical (work unit) or value which, in most cases, is not based on a causal relationship to the costs subject distribution. Such allocations may lead to cross-subsidization between cost carriers<sup>3</sup>, that underestimation of costs for carriers while others overvaluation, with negative impact on decision making, stock assessment, determination of profits and entity management control;
- ✓ although there are a variety of procedures for calculating, determining unit costs is the only concern of these methods;
- ✓ cutting activity on the responsibility centers based on the entity's organizational structure and is not subject to the need of economic modeling, which can lead to adverse impacts on the entity management, that there is no collaboration between various centers that lead to strategic objectives entity as a whole;
- ✓ require a complex and difficult analysis due to increased organizational structures; information to be collected and processed, become prohibitive, does not allow;
- ✓ faster decision making and the outcome is delayed to 15 to 20 days after the end of reporting period;
- ✓ Determining the reporting period does not correspond to economic reality, this is subject to stock accounting. However, real-time of the entity is not a conventional time, it is a time that corresponds to the own rhythms of the production processes;
- ✓ direct costs are often analyzed in the smallest details, the analysis is focused specifically on direct labor and raw material and direct materials consumption, whose share in the cost structure shows a steady downward trend, but inefficiency

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<sup>1</sup> Flavius-Andrei Guinea - Developments and involutions in management accounting, "Accounting, auditing and business expertise" Magazine, no. 8 and 9 / 2006, p. 41-42.

<sup>2</sup> Capron Michel - Accounting perspective, translation by Lorin Niculae, Humanitas Publishing House, Bucharest, 1994, p. 57.

<sup>3</sup> Nadia Albu, Cătălin Albu - Performance Management Tools, Volume I, Management Accounting, Economic Publishing House, Bucharest, 2003, p. 156.

is found lying in the indirect costs that are neglected because they are analyzed in block and allocated by products in a conventional manner<sup>4</sup>;

- ✓ exclusive concern towards the knowledge of unit costs lead to confusion between value and cost, which, in essence, "to be dissociated because the cost is prior to the time value and it is already predetermined in the design phase"<sup>5</sup>, while the market value is being tested and assessed by the customer;
- ✓ certain costs are a result of failures at all levels of technical and organizational structures (other than those relating to non-productive expenditure, and management deficiencies are visible) and can be called notional costs, which do not produce value;
- ✓ sometimes, extra - accounting costs are taken into account in decision making. It is the case of opportunity cost, respectively the lost opportunity cost generated by the restrictive character of some resources.

In this context it may now assert that traditional management accounting systems have lost credibility in the way that the costs it imposes that are inappropriate for managers in the new economic and technological environments in which the entity operates.

From this fact, in the '80s, the ABC method was developed and implemented by a number of American scientists, including R. Cooper, Kaplan R.S. and others and French (Labasa, Lorino, etc.). These experts have proposed a new entity's accounting model (Activity Based Costing - ABC) starting from the concept of activity, allowing to agree vision of entity organization with functions and processes to better manage the entity.

The question is: ABC method is a method of cost calculation or an entity's performance management tool? The answer may be located by analyzing development in the use of ABC method.

## 2. ABC METHOD AND COST CALCULATION

**Initially, the ABC method was used to calculate costs, being the method to meet the goals pursued by the calculation, namely: stock assessment, decision making and cost control support<sup>6</sup>.**

By implementing the ABC method we can achieve a cross-cutting on the activities of the entity that replaces the traditional cutting, the vertical, namely the hierarchy - functional cutting. Under these conditions, the activity becomes the focal center of the entity, based on the principle that "there are not the products which consume the resources, but the activities, and the products consume various activities."<sup>7</sup> This will get a real cost, based on which, strategic decisions can be made by eliminating non-creating activities of value and distributing the overhead expenses using the activity inducers as a base. It should be noted that the ABC method does not focus on an accurately cost calculation, but of a cost that meets the requirements of managers, which is provided at the appropriate time, the quantity and quality required by them.

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<sup>4</sup> Berliner C., Brimson J. A. – Cost management for today's advanced manufacturing - în CAMI Conceptual design, Harvard Business School Press, Boston, 1988.

<sup>5</sup>Flavius-Andrei Guinea - Developments and involutions in management accounting, "Accounting, auditing and business expertise" Magazine, no. 8/2006, p. 44.

<sup>6</sup> Nadia Albu - Activity Based Costing Method – For whom, for what?, "Accounting, auditing and business expertise" Magazine, no. 9 / 2008, p. 59.

<sup>7</sup> Flavius-Andrei Guinea - Developments and involutions in management accounting, "Accounting, auditing and business expertise" Magazine, no. 9 / 2006, p. 56.

ABC method, compared to traditional cost calculation methods, makes changes only in terms of allocation of overhead expenses on the cost carriers, respectively using a variety of allocation bases (multicriteria assignment by cost inducers) and there is a causal link between them and the expenditure subject to allocation. It will thus obtain a relevant cost, due to these cause-effect relationships between the activity and the product that consumes the activity.

Without denying the second blast brought by the new changes in the calculation of a management entity – oriented cost, we believe that it is in fact an improvement of the distribution of the overhead expenses on cost carriers.

To see if this is so, we will evaluate further, cost calculation through ABC method as an alternative to the traditional calculation of cost in traditional management accounting systems.

The traditional methods of cost calculation and the ABC method are based on group of charges contained in costs in direct costs and overhead expenses.

In the ABC method, treatment of direct costs is similar to the one from the traditional management accounting systems, namely the direct allocation on the cost carriers, based on documents that show resource consumption (consumer bills, vouchers work, payroll, etc.).

**Overhead expenses** are treated differently by the ABC method as compared with traditional systems, being charged to the carriers after the procedure outlined below.

In a first step we proceed to a detailed analysis of the entity in a cross-view and identify the activities that can be grouped according to several criteria in relation to the objective pursued by the implementation of the ABC method. For cost calculation needs, the activities are grouped into: product unit activities, product batch activities, products and activities supporting the product or service (of support)<sup>8</sup>. Depending on the size of the entity it can be identified more or less activities, but for a relevant cost calculation it is enough to be retained and considered a reasonable number of activities, even optimal if possible. Managers choose the level of detail of the activities by making a compromise between the size of the estimated costs to implement the ABC method and the estimated benefits to be derived from its use, knowing that the higher increases the degree of detail in activities' analysis, it increases their cost of obtaining.

Some authors<sup>9</sup> have introduced a separation between activities that create value and those that do not create value, in order to focus efforts on cost reduction on activities that do not create added value without diminishing the value given to the final customer.

Activities consume resources, but it can not be determined a person responsible for each activity identified. The activity is found in a particular function of the entity in the vertical cutting, hierarchy – functional, and therefore it should be identified the center of responsibility which it belongs to in order to determine the person responsible for the relative management decisions to the activity. According to the ABC method, the center of responsibility is not a center for analysis and distribution of overhead expenses, as in the traditional cost calculation methods, but it is necessary this relation with the structure to enable the cost control of the activities.

Next, we proceed to the determination and delimitation between the activities of all relevant expenditure (overhead), that is, in fact, the costs of resources consumed by activities.

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<sup>8</sup> Ronge Yves de – Comptabilite de gestion, DeBoeck Universite, 2005, p. 362.

<sup>9</sup> Lorino P. – Le controle de gestion strategique, Dunod, Paris, 1991, p. 40.

Although some resource consumption are indirect in relation to products, they are nevertheless direct to activities, which makes the resources consumed by the support activities not to be shared in the products cost in accordance with arbitrary distribution bases. In fact, one of the basic principles of the ABC method is the more realistic distribution of overhead expenses on products, in comparison with traditional cost calculation methods.

To determine the cost of the carriers, the so-called cost inducers of activities must be established.

According to some authors, “cost inducers is the innovative part of the ABC method, but they are also the most costly aspect”<sup>10</sup>.

The concept of the ABC method, the cost inducer is actually a criterion for allocation of costs related to activities, but unlike the bases of distribution of classical management systems, there is a causal connection between the inducer chosen for an activity and the expenditure of the activity. Correct identification of inducers of cost “is essential to ensure the quality of accounting information that the ABC method generates, and any change of the cost inducer involves a change in the total cost of the cost carrier.

Cost inducers allow activities cost allocation on cost carriers and serve as an instrument to measure the volume of services provided.”<sup>11</sup>

To achieve the goal, choosing a cost inducer must allow:

- in terms of cost calculation, the correct representation of the consumption of activities by cost carriers;
- in terms of the social component, the behavior orientation of employees towards achieving the strategic objectives of the entity.

Once the causal factors were identified (cost inducers) induce the same cost activities can be grouped in a single center analysis, so the quality of activities allocation is not affected on cost carriers, ie getting an accounting information relevant for decision making and management control of the entity.

This group must be made because establishing an analysis center for each activity identified would lead to an extraordinarily voluminous accounting information system, with hundreds of such centers, with all ensuing consequences, and therefore, management must make a compromise between making a simple management accounting system (a low cost inducers and activities) and a system to increase the accuracy of the calculated cost (all activities detailed and cost inducers)<sup>12</sup>.

Next step and last in the treatment of overhead expenses under ABC method implementation, is the distribution of these charges on cost carriers which is obtained by weighting the unit cost of each cost inducer with the volume of inducers consumed by each cost carrier. This is the ideal situation, respectively that costs are indirect to the carriers, but direct to the center of activities. There are cases of overhead expenses to the cost carriers, as well as to the centers of analysis based on activities. Before being entered in cost carriers, they are first distributed among different analysis centers using an allocation key, more or less arbitrary, which can lead to obtaining inaccurate costs and, consequently, to making poor decisions.

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<sup>10</sup> Nadia Albu, Cătălin Albu - Performance Management Tools, Volume I, Management Accounting, Economic Publishing House, Bucharest, 2003, p. 166.

<sup>11</sup>Rongé Yves de – Comptabilité de gestion, DeBoeck Universite, 2005, p. 399.

<sup>12</sup>Ibidem, p.396.

In conclusion, on the overhead expenses, in the design of ABC method, it can be said that the method comprises two stages, namely:

- the entity is cut on activities that identify consumption of resources (overhead expenses), sometimes it is necessary to gather more similar activities in a center of analysis;

- through cost inducers, the collected costs are distributed on cost carriers.

In response, the classical concept of cost calculation methods there are still two stages to go through the attachment of the overhead expenses on cost carriers, namely:

- the entity is cut on the analysis centers (of responsibility) on the hierarchy – functional criterion which collects overhead expenses;

- by supplementing, using physical criteria of allocation (work units) or value, sometimes even the same criterion for all types of overhead expenses, these costs are distributed on cost carriers

Finally, we get the full cost of cost carriers (products, services, customers, etc.) adding the cost of activities consumed to direct expenditure, like traditional management accounting methods.

Comparing the steps taken by the two methods, it can be concluded that for calculating the cost, in essence, both classical methods and ABC method apply specific principles for determining the total cost, and what distinguishes them is just the different allocation of overhead expenses on cost carriers, ie criteria for allocating versus cost inducers. In these circumstances, we believe that the key problem is the cost inducers, how they manage to distribute more accurately, the overhead expenses in the products cost compared with the unique distribution criteria.

The above assertions can be illustrated by the practical example below.

S. C. Romelectra Sistem S.R.L. produces low and high voltage transformers currently using the classical method of cost calculation, in which the basis for allocating overhead expenses is unique, respectively the total direct costs.

During a month, the entity discloses the following situation regarding the classical method of cost calculation (Table 1):

- manufactured production: 3 pieces of low voltage transformers 1000 kva - 6 / 0,4 kV (transformer 1) and two pieces of high voltage transformers 1000 kva - 20 / 0,4 kV (transformer 2);

- direct costs of production: transformer 1: 7.371 lei; transformer 2: 6356 lei;

- overhead expenses of production: 4767 lei;

- general administrative expenses: 2.900 lei.

- allocating the overhead expenses of production:

$$k = 4.767 / 7.371 + 6.356 = 0,35$$

Transformer 1000 kva – 6/0,4 kv:  $7.371 \times 0,35 = 2.580$  lei

Transformer 1000 kva – 20/0,4 kv:  $6.356 \times 0,35 = 2.187$  lei

- allocating the general expenses of production:

$$k = 2.900 / 7.371 + 6.356 = 0,21$$

Transformer 1000 kva – 6/0,4 kv:  $7.371 \times 0,21 = 1.548$  lei

Transformer 1000 kva – 20/0,4 kv:  $6.356 \times 0,21 = 1.352$  lei

**Table 1****Unit cost calculation by the classical method**

<b>Cost elements</b>	<b>1000 kva – 6/0,4 kv</b>	<b>1000 kva – 20/0,4 kv;</b>
Raw materials and direct material	2.670	1.880
Direct Wages	3.675	3.500
Contributions to direct wages	$3.675 \times 27,90\% = 1.026$	$3.500 \times 27,90\% = 976$
Direct cost	7.371	6.356
Overhead expenses of production	2.580	2.187
Production cost	9.951	8.543
General administrative expenses	1.548	1.352
Total full cost	11.499	9.895
Unit full cost	$11.499 : 3 = 3.833$	$9.895 : 2 = 4.947$

The company manager believes that the current calculation methodology distorts the calculated cost for the two types of transformers and does not allow to accurately assess the profitability of production. Consequently, he decides to implement the ABC method for cost calculation and analysis of the activity undertaken by the company.

The ABC method implementation team identified the following activities and cost inducers (Table 2).

**Table 2****Analysis data**

<b>Activity</b>	<b>Overhead expenses</b>	<b>Cost inducer</b>	<b>Inducers T1</b>	<b>Inducers T2</b>	<b>Total inducers</b>	<b>Inducer cost</b>
Supply	520	Number of orders	30	20	50	10,40
Tank manufacturing	3277	Number of products	3	2	5	655,40
Winding	2500	Hours worker	89	130	219	11,42
Installation of accessories	600	Number of accessories	120	80	200	3
Finishing	350	Hours worker	15	20	35	10
Stand assay	320	Hours worker	6	10	16	20
Sale	100	Number of invoices	3	2	5	20
Total	7.667					

As shown, the activities of winding, finishing and stand assay have the same cost inducer and according to the ABC method, they can be grouped in a single center of activities. But for accurate cost calculation, the three separate centers are kept.

We proceed to calculate the full cost for the two types of products as follows:

**Unit cost calculation by the ABC method**  
**Low voltage transformer 1000 kva - 6 / 0, 4 kv**

1. Raw materials and direct material	2.670,00 lei
2. Direct wages	3.675,00 lei
3. Contributions to direct wages	<u>1.026,00 lei</u>
4. Direct cost	<u>7.371,00 lei</u>
5. Overhead expenses of production	<u>3.984,58 lei</u>
a. Supply 30 x 10,40	312,00 lei
b. Tank manufacturing 3 x 655,40	1.966,20 lei
c. Winding 89 x 11,42	1.016,38 lei
d. Installation of accessories 120 x 3	360,00 lei
e. Finishing 15 x 10	150,00 lei
f. Stand assay 6 x 20	120,00 lei
g. Sale 3 x 20	<u>60,00 lei</u>
Total full cost	<u>11.355,58 lei</u>
Unit full cost	3.785,19 lei / piece

**Unit cost calculation by the ABC method**  
**High voltage transformer 1000 kva - 20/0,4 kv**

1. Raw materials and direct material	1.180,00 lei
2. Direct wages	3.500,00 lei
3. Contributions to direct wages	<u>976,00 lei</u>
4. Direct cost	<u>6.356,00 lei</u>
5. Overhead expenses of production	<u>3.682,42 lei</u>
a. Supply 20 x 10,40	208,00 lei
b. Tank manufacturing 2 x 655,40	1.310,80 lei
c. Winding 130 x 11,42	1.483,62 lei
d. Installation of accessories 80 x 3	240,00 lei
e. Finishing 20 x 10	200,00 lei
f. Stand assay 10 x 20	200,00 lei
g. Sale 2 x 20	<u>40,00 lei</u>
Total full cost	<u>10.038,42 lei</u>
Unit full cost	5.019,21 lei / piece

With the implementation of the ABC method, through fairer distribution of overhead expenses, using for this purpose a variety of criteria for allocation, unit costs were obtained which differ greatly from those calculated by the classical method of management. Thus, for transformer 1, the unit cost decreased from 3.833 lei / piece to 3785,19 lei / piece, therefore a reduction of 47,81 lei / piece, and for transformer 2, the unit cost increased from 4.947 lei / piece to 5019, 21 lei / piece, therefore an increase of 72,21 lei / piece. In this context, analyzes on the profitability and productivity of both products change, and the manager can take a series of better-informed decisions about the production and sale of these products (these tests will be the subject of another article).

On the other hand, we believe that if vertical vision is kept (hierarchical - functional) in crop establishment, but for allocation overhead expenses , a variety of physical units of work are used, going to overhead expense, the results obtained in the plan



of costs relevance do not differ much from those obtained by implementing the ABC method, and provides a characterization of the activity of the centers of responsibility, as in the ABC method. In addition, it must be avoid the enormous costs of implementing the ABC method in the entity management.

In this context, if we refer only to the contribution made by the ABC method to the cost calculation, we consider that it actually represents another way, a procedure of allocating overhead expense in costs, adjusted to the new economic and technological environment, characterized by complex production processes, diversity of products, going to their personalization, increase customer requirement.

Summarizing, we can say that the implementation of the ABC method (in my opinion, only method of allocating overhead expenses) to calculate the full costs of products are not warranted in any entity, but it has a greater impact on the actual level of costs and therefore of profits, to companies where the share of overhead expenses related to support activities for production is increasing in the total cost structure of the entity and, moreover, it presents a variety of products and services offered to customers.

This is characteristic of large entities in the field of material production, less of the entities in the service and trade sector.

On the other hand, excessive media coverage of the ABC method in recent decades is because, in addition to cost calculation, it can be used for various purposes within the entity by activities management or ABM (Activity Based Management). We consider here that, in our opinion, the activities map forming the entity better folds in the calculation of costs used by managers in making decisions aimed at satisfying final customers of cost carriers (product, work, service).

### 3. ABC METHOD AND THE MANAGEMENT OF THE PERFORMANCE OF ENTERPRISE

**ABC method has evolved over time from cost calculation to performance management, increasingly integrating more modern management principles and it has become a strategic tool<sup>13</sup>.**

Activity Based Management Method (ABM) is an extension of the ABC method beyond cost calculation and simultaneously it relies heavily on information provided by it to improve the decision making.

Acting on the activities of ABC / ABM makes possible the decision making concerning the short-term and long-term objectives of the entity, namely:<sup>14</sup>

- it allows for continuous improvement and evaluation of performance through three categories of indicators: of measurement, of performance management and of tracking of action plans and progress;
- it allows training and motivating all employees of the entity in the design, implementation and performance measurement by specific instrumentation of the ABC / ABM system;

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<sup>13</sup>Nadia Albu - Activity Based Costing Method – For whom, for what?, "Accounting, auditing and business expertise" Magazine, no. 9 / 2008, p. 60.

<sup>14</sup> Rongé Yves de – Comptabilite de gestion, DeBoeck Universite, 2005, p. 408.

- it shows the impact of a decision on an activity on other activities that structurally belong to another entity function, therefore, to another responsibility center;
- it better identifies causes of costs than traditional methods, which increases the accuracy and pertinence of costs and the use of information on cost for various purposes within the entity;
- it allows to evaluate different alternatives to improve the profitability of products that are not profitable at a time. They are considering various solutions, such as selling price increase, product analysis to reduce its consumption of activities which have a higher production cost, production process improvement, etc.. Avoidance of unprofitable products may not be the best solution because they can be complementary in terms of production or distribution plan. In addition, the abandonment of one or other of the products leads to a reduction of direct costs (raw materials, direct labor) without thereby being reduced the overhead expenses, which most often are caused by the structure of the entity and not by the items produced;
- it allows that through cost inducers, the expenses to be distributed to products or to customers and thus is able to improve profitability for customers who use more activities and thus who have a higher cost compared to others, however they pay the same price for goods supplied by the entity, so you can get an increase in entity profit by recalculating the sale price for the unprofitable customers;
- it allows management to reconsider the whole supply process, focusing on the one hand, the identification and proper allocation of overhead expenses specific to support activities of the procurement process: transport, handling, insurance, receipt, storage, and on the other hand, on finding appropriate ways of regulating the settlement of transactions;
- identify activities and the corresponding cost for each activity, allowing designers and engineers to compare the cost of different technical solutions, possible when designing the product (mass production, series production, customized production) knowing that a significant share of the costs (over two thirds ) arises at this stage and in subsequent stages of product life cycle is difficult to intervene to reduce it.

Summarizing those presented on the evolution of the role and contribution of the ABC method in the entity management, it can be said that from the accounting point of view, of the cost calculation, it represents a procedure of allocating overhead expenses on cost carriers, but its major contribution is in the entity's management plan, through the new vision it proposed, ie activities management is the path to profitability by increasing the value for customers.

So, the ABC / ABM system is a management and administration method, it possesses the specific instruments of evaluation and measurement of the entity performance. Nor could it be otherwise, since her purpose is not just a cost calculation, but, rather, to provide information to substantiate the operational and strategic decisions, and, which is particularly important, to track the effects of such decisions.

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