# A STUDY ON THE ABC APPROACH IN COST MANAGEMENT PRACTICE

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Activity-based costing (ABC), an alternative approach to traditional accounting, represents a costing methodology that identifies the main cost drivers, or the main activities in an organization, thus assigning the cost of the products and services according to the number of specific activities or transactions used in the development process of a product or service. This system is based on the measurement of all the activities performed within an organization and provides the companies with the opportunity to efficiently improve their activity or to reduce the costs with no quality loss for their customers. The primary aim of ABC method was to implement a logical system of additional allocation with a better information and improvement in the field of managerial policies, a real cost structure on the basis of which strategic managerial decisions could be further adopted. Under the terms of a continuous growth of fixed cost weighting, we will become more interested in the calculation system of process costing. This costs calculation method can bring on important benefits, especially for service provider companies, considering the high share of common- indirect costs (overhead), in their unit.

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## 1. Introduction. Conceptual delineations in using ABC method

The activity-based method was developed in the USA and the reference work was „The Hidden Factory", written by Jeffrey G. Miller and Thomson E. Vollmaan. Following a critical study that has been based on the sectors and places with common costs (overhead), they reached the conclusion that a cardinal role in controlling all the financial overhead was played by a new model, that of thoroughly describe the costs and classify them according to what caused them. The first attempt of achieving that kind of a system belongs to the authors Kaplan and Cooper from Harvard Business School, in 1987 (Chirață C., 2008).

Activity-based costing (ABC), an alternative approach to traditional accounting, is set-up on the idea that the cost size depends in a more persistent way on the manner in which the activities are structured within a company, not merely on the volume of production.

The inscape of ABC approach resides in the principle according to which a much more real allocation of indirect costs on consumption carriers leads, in the end, to a precise cost rating of the products. The fundamental principle of this method is: products consume activities, which in their turn consume resources.

Activity-based costing method (ABC) seeks to allocate indirect costs to production costs in a more actual way than the classic volume of production and, in the same time, it tends to illustrate the relationship between indirect costs and the activities they engender (Briciu S., 2006). This process enables the use of several distribution bases called activity cost inductors. The cost centers (production departments) are replaced by rearrangement activity centers, the costs being allocated to each activity in part. One of the defining aspects of this method is represented by the idea according to which the products consume activities and subsequently the activities have a great impact on costs.

The basic assumptions of ABC method, actually the logic behind this method are as follows:

- cost objects consume activities;
- activities consume resources;
- consuming resources creates costs;
- understanding the causal relationship between them represents the basis of a successful management.

The ABC approach is especially distinguished as a more precise method of costs' calculation, focusing more on indirect costs than on the total costs of the entire activity. This is a method agreed by the companies that have big overheads, a diversified production, a high cost of errors, and a tough competition on the market (Dumitru M., 2008).

## 2. Cost calculation steps on activities

- Identification of activities and associated costs

As a basic step in the ABC method, it implies the process of identifying the activities starting from their justification in the value creating process of the company. Represents an authentic organizational analysis because it helps to eliminate profitless activities. Only a real production of the goods is an added-value criterion, all the other steps in the manufacturing process (moving from one place to another, pending completion of some processes ) are consuming resources, and do not add any value to the process as a whole. The result of this first stage is dependent upon the quality of the available information system, a thorough knowledge of the entire sequence of operations, with details for each stage of manufacturing, from the receipt of materials to their final inspection.

- Establishing the cost drivers/simulators for each activity

The cost drivers represent the cause / the explanatory factor of fluctuation in the consumption of resources and serves as a tool of measurement of the volume of provided benefits. From the point of view of the management accounts, the activities that we are referring to are helpfulness only to the extent that each of them can be associated to a cost driver, as a matter of fact the induction itself of the activity mentioned above.

- Setting-up the rearrangement centers according to a cost driver

At this stage, all the activities for which it has been identified the same cost driver will group into a rearrangement center. For example, the dispatch and invoicing activities of the goods may have the same cost driver (selling asset). They will be brought together in a single rearrangement center. Therefore, it will make it easier to measure the cost without a particular treatment of each activity. Still at this stage, it shall be determined the unit cost of each inductor considering the costs for all the activities from each rearrangement center. Thus, using technical data with reference to manufacturing conditions, there will be established the inductor's volume. The ratio between the expenditures clustered into the rearrangement center and the total volume of the cost driver, will determine the unit cost for the inductor:

$$\text{Unitary Cost driver} = \frac{\text{Cost of consumed resources}}{\text{Inductor's volume}}$$

- Allocation of activity costs on objects of calculation (products, works, and services).

At this stage, it shall be determined the cost for the calculation object (product or service), by adding direct expenditures and consumption of cost drivers from the rearrangement centers, so as to acquire a proper workability.

In order to determine the production cost of the manufacturing products it will be necessary to re-collect the following elements:

- ✓ the cost of parts and sub-assemblies;
- ✓ the cost of other raw materials;
- ✓ direct labour;
- ✓ the cost for machinery operation;
- ✓ the cost of activities consumed by manufactured products

$$C_{ac} = C_{ui} * Q_i \text{ where:}$$

$C_{ac}$ - cost for consumed activity
$C_{ui}$ - unitary cost driver
$Q_i$ - volume of inductors used in manufacturing a product

- Total cost calculation of sold products

In this last stage, the production cost will be supplemented by a part of the administrative and selling-off cost, a part determined via adequate cost drivers to this business sector.

## 3. Advantages and Limits of the Activity Based Costing Method

Having as a point of reference the traditional methods of costs' calculation, it has been outlined a significant discrepancy between the latter and the ABC method, starting from the fact that the methodology of traditional calculation mode could issue significant differences for outputs costing , due to the manner of allocation rather than the delineation of general expenses on cost objects. This may have the effect to stop down the final price of the outputs as well as the adoption of some bad management decisions.

ABC method gives an in-depth economic vision of the costs in comparison with the traditional methods focusing exclusively on costs analysis. This method can be also seen as a means of business management within a company. This new approach gains evident performance within the company especially through its add-on features to value-cost enhancement and through the achievement of strategic objectives. Performance means efficiency, effectiveness, profitability. Both the quality cost and the non-quality cost can be controlled through a causality relation between activity, cost driver and the consumption of resources. Furthermore, using this method provides two significant ways of reducing the cost: supports identifying the opportunities of a real cost reduction (through cost drivers) and provides simulations of the reducing cost impact upon it.

The opportunities offered by ABC method which are not to be found in traditional methods:

- identification of the most profitable/unprofitable customers, products, branching channeldetermination of all the „real contributors" to financial performances;
- accurate forecasting of the costs and resources related to the manufacturing volume and the organizational structure;
- identification of the causes of poor performance;
- the pursuit of activities and processes.

A complete ABC system, fitted with multiple collectors and cost drivers, is much more complex than traditional systems, which requires, in its turn, a much more complex business management. For a company involved in activity-based costing analysis, having two cost analysis systems– one for internal use and one for getting up external reports- it is a sine qua non condition, as the reports produced by this kind of system are not in accordance with GAAP (generally accepted accounting principles). Although this method could be very lucrative for many companies, many of them are experiencing a number of problems when it comes to practice (Filip T., Ionaşcu I., 2001):

- defining activities;
- cost drivers selection;
- imputation of costs on activities.

ABC method offers the advantage of a more real cost for the product, which constitutes the basis to adopt strategic decisions at a managerial level, because this is established according to all the activities developed for its manufacture.

## 4. The Relationship between Activity Based Costing (ABC) and Activity Based Management (ABM)

ABC system is a methodology that measures the cost and the performance of calculation objects, activities and resources based on relations of cause-effect type. In other words, ABC system performs mathematical calculations which convert data into information.

Activity based management (ABM) is the discipline which focuses on the management of activities within the framework of a business process, as a means of improvement, both for the value received by the customers as well as for the resulting profit, based on a strategic off cut of the activities performed within a company, similar to the one defined by the ABC method.

ABM is perceived by some authors as a development of ABC method, able to put into effect the information resulting from mathematical calculations meant for analysis, assessments and decisions making. Although ABC method is seen by some few as a spin-off for activity-based management, it can be clearly distinguished from traditional methods. From the point of view of innovation in the cost calculation sector, ABC originality consists of highlighting the product cost over a long period (Klaus E., 2000).

ABC method, considered by some authors as being a mere instrument for costs' calculation, and ABM, a psychology of performance management, allows abandoning the vision of „monitoring the resources" for „ monitoring the activities". ABM method appears to be a method of management which allows the strategic control of the organization upon performance improvement, by a sustained progressive undertaking. According to ABM system, means of strategic control, an enterprise should be looked upon as a network of activities organized through crosscut processes, which compete as a whole to the process of creating value (Ioanăş.C, 2005).

ABC/ABM model provides to enterprises the opportunity to have a better information related to managerial costs, as well as precision and transparency, without affecting the daily system of transactional information. On the other hand, the system also provides for the daily system of transactional information as well as for applying non-financial information so as to reassign the expenditure made with the resources included in the calculated costs.

Adopting an ABC/ABM system in the daily cost and works accounting and managerial policy of an enterprise, should be a business fundamental goal, given the fact that such a system represents a main source of information for product development and customer's rationalization, performance gained through profitability and planning strategy, as well as for productivity betterment. Equally, ABC – ABM correlation allows of managers and employees to have in their possession relevant information with regard to economic structure and cost system, and helps the employees to become active partners in shaping the vision of a the future entity.

The collection of data entry is defined to meet the ABC/ABM system requirements: the cash book, the structure of the cost center, the inventory/the cost for sales accounting procedures, interdepartmental taxes, costs to be paid, allocation costs, total payroll costs.

## 5. Comparative management costs study from a company using the traditional methodology and ABC method

The company SC MODCONF SRL, manufactures and merchandises three products P1, P2, P3 and wants to implement ABC method instead of the traditional one. In the calculation stage, we should take into account the following data:

| ELEMENTs | P1 | P2 | P3 |
|---|---|---|---|
| **Manufactured Quantity (pcs)** | 75 | 50 | 1.00 |
| **Direct expenditure of raw** | 20 | 25 | 15 |
| **Direct labour (hours/piece)** | 10 | 5 | 7 |
| **Hours of operation** | 6 | 4,5 | 3 |

The cost per hour of direct labour is 25 lei. The products are manufactured and sold in lots of 25 pieces. The overheads are absorbed in the total cost of products according to the number of manufactured orders for sale and they have been identified by activities, as follows:

| ACTIVITIES | COSTS | COST INDUCTORS |
|---|---|---|
| **Equipment maintenance** | 146.250 | Equipment operating hours |
| **Launch of manufacturing** | 90.000 | Number of production orders |
| **Materials reception** | 67.500 | Number of orders for materials |
| **Quality Control** | 121.250 | Manufactured quantity |
| **Management** | 255.000 | A national currency unit added to direct cost |
| **Distribution** | 191.250 | Turn-over |
| **Total** | 871.250 | |

The orders for materials were in number of 50, from which there were 5 distinctive orders for P1, 3 orders for P2 and 6 orders for P3. The remaining orders shall be equally allocated to those 3 products. The selling price is as follows: for P1-1.000 um, P2- 800 um, P3- 655 um.

**a. Complete cost calculation according to traditional method**

| EXPLANATION | P1 | P2 | P3 |
|---|---|---|---|
| 1. Cost per raw materials | 200*750=150.000 | 250*500=125.000 | 150*1.000=150.000 |
| 2. Cost per labour | 10*25*750=187.500 | 5*25*500=62.500 | 7*25*1.000=175.000 |
| 3. Direct cost (1+2) | 337.500 | 187.500 | 325.000 |
| 4. Production indirect costs | 168.750 | 93.750 | 162.500 |
| 5. Production cost (3+4) | 506.250 | 281.250 | 487.500 |
| 6. Production rate | 596.250/750=675 | 281.250/500=562,5 | 487.500/1.000=487,5 |
| **7. Management cost** | 101.250 | 56.250 | 97.500 |
| **8. Distribution cost** | 75.937,5 | 42.187,5 | 73.125 |
| **9. Total cost** | 683.437,5 | 379.687,5 | 658.125 |
| **10. Total rate** | 911,25 | 759,375 | 658.125 |
| **11. Selling price** | 1.000 | 800 | 655 |
| **12. Analytical result** | 88,75 | 40,625 | (3,125) |

Allocation of manufacture indirect costs:
$K_S$ = 425.000/(337.500+187.500+325.000) = 0,5
Indirect cost allocated to P1 product = 0,5*337.500 = 168.750
Indirect cost allocated to P2 product = 0,5*187.500 = 93.750
Indirect cost allocated to P3 product = 0,5*325.000 = 162.500

Allocation of management costs:
$K_S$ = 255.000/(506.250+281.250+487.500) = 0,2
Management cost allocated to P1 product = 0,2*506.250 = 101.250
Management cost allocated to P2 product = 0,2*281.250 = 56.250
Management cost allocated to P3 product= 0,2*487.500 = 97.500

Allocation of distribution costs:
$K_S$ = 191.250/(506.250+281.250+487.500) = 0,15
Distribution cost allocated to P1 product = 0,15*506.250 = 75.937,5
Distribution cost allocated to P2 product = 0,15*281.250 = 42.187,5
Distribution cost allocated to P3 product= 0,15*487.500 = 73.125

**b. Complete cost calculation according to ABC method**

| ACTIVITIES | COST | Volume/ Cost Driver | Cost Driver cost drivers vol | Specific Inductors P1 | Specific Inductors P2 | Specific Inductors P3 | Indirect Cost P1 | Indirect Cost P2 | Indirect Cost P3 |
|---|---|---|---|---|---|---|---|---|---|
| **Equipment maintenance** | 146.250 | 9.750 | 15 | 4.500 (6*750) | 2.250 (4,5*500) | 3.000 (3*1.000) | 67.500 | 33.750 | 45.000 |
| **Launch of manufacturing** | 90.000 | 90 | 1.000 | 30 (750/25) | 20 (500/25) | 40 (1.000/25) | 30.000 | 20.000 | 40.000 |
| **Materials reception** | 67.500 | 50 | 1.350 | 17 | 15 | 18 | 22.950 | 20.250 | 24.300 |
| **Quality Control** | 121.250 | 2.250 | 53,89 | 750 | 500 | 1.000 | 40.417,5 | 26.945 | 53.887,5 |
| **Management** | 255.000 | - | - | - | - | - | 101.250 | 56.250 | 97.500 |
| **Distribution** | 191.250 | 1.800.000 | 0,10625 | 750.000 (1.000*750 | 400.000 (800*500) | 650.000 650*1.000 | 79.687,5 | 42.500 | 69.062,5 |
| **TOTAL** | 871.250 | - | - | - | - | - | 341.805 | 199.695 | 329.750 |

Calculation per orders for materials:
Current orders = 50 – 5 – 3 – 6 = 36 orders
Current orders/ product type = 36 / 3 = 12 orders
P1 orders= 5 + 12 = 17 orders
P2 orders = 3 + 12 = 15 orders
P3 orders = 6 + 12 = 18 orders

Allocation of management cost:

As for this type of expenditure has not been identified any specific inductor, it was basically chosen the amount of direct costs. We will calculate the ratio of management expenses in direct costs and we will subsequently multiply this percentage with correspondent direct costs for each product.

Ratio of management cost counted in direct costs = 255.000/(337.500+187.500+325.000) = 0,3

Correspondent management costs P1 = 0,3 * 337.500 = 101.250
Correspondent management costs P2 = 0,3 * 187.500 = 56.250
Correspondent management costs P3 = 0,3 * 325.000 = 97.500

Complete cost calculation:

| EXPLANATION | P1 | P2 | P3 |
|---|---|---|---|
| **Direct costs** | 337.50 | 187.50 | 325.00 |
| **Indirect costs** | 341.80 | 199.69 | 329.75 |
| **Complete cost** | 679.30 | 387.19 | 654.75 |
| **Complete rate** | 905,74 | 774,39 | 654,75 |
| **Unit selling price** | 1.000 | 800 | 655 |
| **Result** | 94,26 | 25,61 | 0,25 |

## 6.Instead of conclusions

We can easily notice profit redistribution towards traditional method. Hence, it can be concluded that traditional methods of allocating overhead costs directly on their output (final products) may lead to exaggeration or minimization of the real cost value when analyzing the internal approach of cost structure. Although this example has been simplified for a demonstrative purpose, it is certainly a precise representation of the way ABC method allocates more accurately the costs, with less apportionment and arbitrary allocations usually encountered at the traditional procedures of cost determination and management. However, we can appreciate the fact that activity-based costing gives a more accuracy to the costs of final products within an organization by assigning indirect costs (overhead costs) to activities carried out for the production of the outputs concerned than through allocation of these expenses.

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