Application of the Activity Based Costing System to the Wood Industry

Daniel Petru Vârteiu
“1 Decembrie 1918” University of Alba Iulia
varteiu_daniel@yahoo.com

Cristian Florin Bota
“1 Decembrie 1918” University of Alba Iulia
bota.cristian.florin@carcreditteius.ro

Abstract

Traditional costing methods assign indirect costs evenly, according to resource consumption by a product, while this consumption actually takes place in an uneven manner. To avoid such errors, entities seek to ensure best possible appraisal of uneven resource consumption, and the ABC method is one way of achieving this goal. The ABC method starts from the observation that it’s not products that consume resources but activities, and the entity’s activities are used by products. Costing through this method requires taking the following steps: identification of activities, assessment of resources consumed by each activity, determination of cost drivers and calculation of unit costs for each driver, and allocation of activity costs for each cost object.

Key words: ABC method, activities, drivers, costs, expenses
JEL Classification: M41

1. Introduction

Accounting information used within production entities is subject to a process of permanent renewal. It should help establish a real production cost, based on allocation of indirect costs in an uneven manner, and modern costing methods make it possible. The ABC method is a modern method that focuses on the concept of “activity” and “cost driver”. Through this method we achieve a quantitative measurement of costs, activity performance, resources and cost objects. The concept of activity highlights the causality between the resources consumed and the products obtained, and the cost driver highlights what causes the cost of a product.

Henri Bouquin, in his book Contabilitate de gestiune [Management Accounting], says that “the ABC method places in the center of the costing issue the concept of activity. Activities are administered currently and directly like products. Starting from this premise, we get to the idea that it’s not products that consume resources but activities, and the entity’s various activities are used by products”. (Bouquin, 2004, p.182)

2. Methodology

Our research aims to present the activity-based costing method as well as the calculation of costs according to this method.

As research methods and techniques, in our study we used theoretical documentation, comparison, synthesis and practical documentation. Theoretical documentation consisted in studying field literature. We used comparison when talking about allocation of indirect costs based on an even assignment according to the traditional method and an uneven allocation thereof according to the ABC method.
We used synthesis when presenting theoretical aspects, because the ABC method implies a vast field of study. We made use of practical documentation within the company when we collected data about its activity.

3. Theoretical aspects of the ABC method

The ABC method is a return to accounting sources. It emphasizes the need to reflect the real manufacturing and sale process and to adopt an assessment method authorizing the monitoring of costs along the way. It stresses the need to follow the movement of resources on the way relating to the different activities and cost objects of the company. The calculation of the full cost of a product is not useful unless it removes the laws of various cost categories that it integrates. (Tabără, 2004, p.63).

The construction of the costing model, according to the ABC method, requires taking the following steps:

- identification of activities;
- assessment of resources consumed by each activity;
- determination of cost drivers and calculation of unit costs for each driver;
- allocation of activity costs for each cost object (product).

In national and international field literature, due to the importance of the subject dealt with, we find a series of papers, books and articles. Thus, the ABC method is a widely debated topic in books such as: Contabilitatea managerială [Managerial Accounting] by Sorin Briciu; Contabilitate managerială aprofundată [Advanced Managerial Accounting] by Paul Deaconu, Stere Mihai, Nadia Albu and Cătălin Albu; Contabilitate și control de gestiune [Management Accounting and Control] by Mihaul Epuran and Valeria Băbăiță; Contabilitate de gestiune [Management Accounting] by Henri Bouquin.

In the book Contabilitate managerială aprofundată [Advanced Managerial Accounting], the authors state that the ABC system was born due to criticism of the traditional costing model that used the allocation method. According to this method, the allocation bases did not reflect the actual way in which a product consumed resources. Although the method of determining the way in which activities consume resources is based on estimates, these are distinct from the arbitrariness of allocation. In addition, to obtain a relevant cost that is not too “expensive” to calculate, there is no need for very strict monitoring of the time spent by each employee, and estimates and approximations are sufficiently accurate.

4. Case study of the ABC method

We conducted our ABC case study on the activity of the company “Fely Lemn S.R.L.”, which was set up in 2003 and has a total of four employees. The company’s main business activity is the manufacture of joinery and carpentry items for buildings, and it can also carry out secondary activities such as manufacture of chairs, office and shop furniture, kitchen furniture and manufacture of other furniture.

To carry out its business activity, S.C. Fely Lemn S.R.L. uses the following materials: fiberboard, wood, and accessories such as: hinges, handles, edges, wood screws. It also uses various types of machinery: cutting machines, edgebanders, planers, slitting machines, polishing machines; and hand tools: screwdrivers, milling machines, drilling machines, hot-air blower. The company manufactures and sells three categories of products: fiberboard furniture, wood (oak, spruce, cherry) carpentry and joinery items. We know the following data concerning the making of the company’s products:
Table no. 1 Presentation of expenses incurred

<table>
<thead>
<tr>
<th>Items</th>
<th>Fiberboard furniture</th>
<th>Wood carpentry</th>
<th>Joinery items</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct costs/expenses</td>
<td>13000</td>
<td>4500</td>
<td>3000</td>
<td>20500</td>
</tr>
<tr>
<td>Indirect production costs</td>
<td></td>
<td></td>
<td></td>
<td>8260</td>
</tr>
<tr>
<td>Administrative overheads</td>
<td></td>
<td></td>
<td></td>
<td>2000</td>
</tr>
<tr>
<td>Distribution costs</td>
<td></td>
<td></td>
<td></td>
<td>411</td>
</tr>
<tr>
<td>Quantity manufactured</td>
<td>12</td>
<td>15</td>
<td>300</td>
<td>327</td>
</tr>
</tbody>
</table>

Source: practical documentation

Analysis and grouping of activities are as follows:

Table no. 2 Presentation of activities

<table>
<thead>
<tr>
<th>Activity</th>
<th>Cost</th>
<th>Cost driver</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raw material orders</td>
<td>1450</td>
<td>Number of orders released</td>
</tr>
<tr>
<td>Inventory management</td>
<td>1000</td>
<td>Number of types and sizes of raw materials</td>
</tr>
<tr>
<td>Preparation and release of manufacturing</td>
<td>1000</td>
<td>Number of batches released</td>
</tr>
<tr>
<td>Production</td>
<td>2400</td>
<td>Machine operating hours</td>
</tr>
<tr>
<td>Administration</td>
<td>2000</td>
<td>Costing hours</td>
</tr>
<tr>
<td>Distribution/sale</td>
<td>411</td>
<td>Number of products</td>
</tr>
</tbody>
</table>

Source: practical documentation

The following information is also available:

Table no. 3 Cost drivers

<table>
<thead>
<tr>
<th>Drivers</th>
<th>Fiberboard furniture</th>
<th>Wood carpentry</th>
<th>Joinery items</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of orders released</td>
<td>12</td>
<td>3</td>
<td>10</td>
<td>25</td>
</tr>
<tr>
<td>Number of types and sizes of raw materials</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Number of batches released</td>
<td>12</td>
<td>15</td>
<td>30</td>
<td>57</td>
</tr>
<tr>
<td>Machine operating hours</td>
<td>160</td>
<td>80</td>
<td>80</td>
<td>320</td>
</tr>
<tr>
<td>Costing hours</td>
<td>10</td>
<td>7</td>
<td>5</td>
<td>22</td>
</tr>
<tr>
<td>Number of products</td>
<td>12</td>
<td>15</td>
<td>300</td>
<td>327</td>
</tr>
</tbody>
</table>

Source: practical documentation

Allocation of activity costs to products:


### Table no. 4 Allocation of activity costs

<table>
<thead>
<tr>
<th>Activity</th>
<th>Cost</th>
<th>Fiberboard furniture drivers</th>
<th>Fiberboard furniture costs</th>
<th>Wood carpentry drivers</th>
<th>Wood carpentry costs</th>
<th>Joinery items drivers</th>
<th>Joinery items costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raw material orders</td>
<td>1450</td>
<td>12</td>
<td>696</td>
<td>3</td>
<td>174</td>
<td>10</td>
<td>580</td>
</tr>
<tr>
<td>Inventory management</td>
<td>1000</td>
<td>2</td>
<td>333</td>
<td>3</td>
<td>500</td>
<td>1</td>
<td>167</td>
</tr>
<tr>
<td>Preparation and release of manufacturing</td>
<td>1000</td>
<td>12</td>
<td>210</td>
<td>15</td>
<td>263</td>
<td>30</td>
<td>526</td>
</tr>
<tr>
<td>Production</td>
<td>2400</td>
<td>160</td>
<td>1200</td>
<td>80</td>
<td>600</td>
<td>80</td>
<td>600</td>
</tr>
<tr>
<td>Administration</td>
<td>2000</td>
<td>10</td>
<td>909</td>
<td>7</td>
<td>636</td>
<td>5</td>
<td>455</td>
</tr>
<tr>
<td>Distribution/sale</td>
<td>411</td>
<td>12</td>
<td>15</td>
<td>15</td>
<td>19</td>
<td>300</td>
<td>377</td>
</tr>
</tbody>
</table>

Source: practical documentation

Determination of production cost:
Fiberboard furniture: - direct costs/expenses: 13000 lei
- indirect production costs: 3363 lei
- production cost: 13000 + 3363 = 16363 lei
- quantity: 12
- unit production cost: 16363 / 12 = 1364 lei.
Wood carpentry:  
- direct costs/expenses: 4500 RON  
- indirect production costs: 2192 RON  
- production cost: 4500 + 2192 = 6692 RON  
- quantity: 15  
- unit production cost: 6692 / 15 = 446 RON.

Joinery items:  
- direct costs/expenses: 3000 RON  
- indirect production costs: 2705 RON  
- production cost: 3000 + 2705 = 5705 RON  
- quantity: 300  
- unit production cost: 5705 / 300 = 19 RON.

The records related to production are as follows:

- record of direct costs/expenses  
921 = 901 20500  
921 furniture 13000  
921 carpentry 4500  
921 joinery 3000

- record of indirect costs  
923 = 901 8260  
923 furniture 3363  
923 carpentry 2192  
923 joinery 2705

- record of administrative overheads  
924 = 901 2000

- record of distribution costs  
925 = 901 411

- record of allocation of indirect costs, administrative overheads and distribution costs  
921 = % 10671  
923 8260  
924 2000  
925 411

- calculation and settlement of actual costs relating to the finished products obtained  
902 = 921 31171  
902 furniture 921 furniture 17737  
902 carpentry 921 carpentry 7253  
902 joinery 921 joinery 6181
5. Conclusions

Activity-based costing is one of the latest achievements in the field of costing. The concept of this method starts from the observation that it’s not products that consume resources but activities, and the company’s various activities are used by products. Therefore, it is better to use the company’s allocation for each activity and not for each function and product. Work units are replaced by cost drivers that are not necessarily quantitative criteria, but elements that trigger activities and thus generate costs.

The ABC calculation system was born due to criticism of the traditional costing model, which used the allocation method. According to this method, the allocation bases did not reflect the actual way in which a product consumed resources. The traditional cost management system was unable to cope with changes occurred in the economic environment. To continue using it would have meant leaving untracked about 70% of the entity’s resources, which would certainly have led to failure in an extremely active competitive environment.

The ABC method helps entities identify significant opportunities to reduce cost and increase profit through repricing in unprofitable customer relationships, improve processes, decrease product design costs and streamline the list of products. Its widespread potential is a great opportunity for companies.

6. References: