

## **ACTIVITY-BASED COSTING (ABC) MODEL FOR ROMANIAN PUBLIC HIGHER EDUCATION INSTITUTIONS**

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**Abstract :** *The main objective of this study is to implement an efficient costing model such as Activity-Based Costing (ABC) within a public Higher Education Institution (HEI) in Romania. This study is based on the study and analysis of studies from the national and international specialized literature, comparative analyses. The collection of data and information was made from public data such as income and expenditure budgets, patrimonial results accounts of a HEI in Romania. The obtained results indicate real possibilities of implementing the ABC method within public higher education universities in Romania, and the authors' conclusions highlight the advantages of the implementation that are of interest both for specialists in the academic field and for specialists in the business environment.*

**Keywords:** Higher Education Institution (HEI), Activity-Based Costing (ABC), cost calculation, department, faculty, implementation

**JEL Classification: H83, M41**

### **1. Introduction**

Academic debates have intensified the role and benefits of public and private institutions of higher education within a country's economy. If private higher education institutions require accurate knowledge of costs (per student, study programs, departments, etc.) to measure financial performance, public higher education institutions require accurate cost knowledge to measure efficiency and increase accountability on how resources are used public to obtain the desired results. Although public and private universities have different orientations and aim at different development directions, both categories of institutions need the most accurate knowledge of costs to allocate resources to faculties or departments, depending on the segmentation at the university level.

Viewed from a financial point of view, private universities do not bring additional complications or burdens on government spending as resources are much reduced compared to public universities that must comply with the requested and allocated resources. Traditional methods used by public universities do not provide accurate information on the education services provided because these systems are focused only on meeting external reporting needs (summary accounting documents) and less on internal reporting needs (analysis of processes, activities and deviations). An effective

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cost management system cannot be designed without considering internal reporting requirements, focusing on the costs of key processes and activities, which helps to identify the causes, understand and take corrective measures to correct deviations to provide cost reduction.

Therefore, the main objective of our research consists in the implementation of an efficient cost calculation model such as Activity-Based Costing (ABC) within a public HEI in Romania. In this regard, the national and international databases were consulted and researched regarding the possibilities of adapting the ABC method to the specifics of the state universities in Romania, starting from the comparative analysis with the traditional calculation methods that are still currently practiced within them. Through the research undertaken, more knowledge is brought to the national and international specialized literature and the general framework for the implementation of the ABC method in the Romanian education system is created and to the extension of the application of the general principles of this method in this field.

The content of this article is structured in accordance with the proposed research objective and consists of a brief presentation of the specialized literature in section 2, a presentation of the research methodology and data source in section 3, while the empirical results are presented in section 4. Finally, discussions of the obtained results are presented in section 5 and conclusions, limitations of the study and future research directions are presented in section 6.

## **2. Literature review**

### ***2.1. The ABC method. Advantages and limits of its implementation in the business environment***

The inadequacies of traditional calculation methods propelled and increased in popularity the Activity-Based Costing (ABC) method as a result of the changes that the latter brought to the allocation of indirect costs through the use of specific allocation bases or cost drivers (Cokins and Capuşneanu, 2010). Ever since the presentation and explanation of the ABC method (Kaplan and Cooper, 1998), the method uses the allocation of costs in two stages: the first dedicated to the allocation from the level of resources to the level of activities and the second from the level of activities to products (Catânio et al ., 2015; Bornia, 2019) using specific cost drivers (main influencing factors) for the two levels. Through the correct distribution of indirect costs and the minimization of arbitrary allocations (the use of classic distribution bases), the products correctly bear the costs of the activities considering the number of cost objects and thus the principle of the ABC method is respected.

By going through the specific stages, the ABC method provides a very broad framework regarding the identification of processes, activities and production in any entity or organization, thus also contributing to the identification of potential cost efficiency areas at any level. Also, the ABC method emphasizes the determination of real costs and contributes to the improvement of the decision-making process by providing reliable information to the management of the organization.

Among the advantages of implementing the ABC method, specialists have identified the following: (1) the ability to reduce costs and improve the strategic position of an organization (Cooper and Slagmulder, 2003); (2) adjusting the prices of goods or services as a result of their unprofitable identification and elimination (Khodadadzadeh, 2015); (3) essential role in the design and execution of business strategies by providing crucial and essential information that facilitates comparative analyses (Kalicanin, 2013); (4) together with cost accounting, the ABC method turns into an effective management tool (da Costa et al., 2021; Kaplanog, 2008) and a system that indicates the profitability of business processes and the growth of innovation within an organization (Quesado and Silva, 2021).

In addition to the mentioned, specialists have also identified a number of disadvantages of implementing the ABC method such as: (1) investment costs, difficulties and complexity of system configuration and maintenance (Bornia, 2002; Askarany and Yazdifar, 2007; Kaplan and Anderson, 2007; Stratton et al., 2009; Pietrzak et al., 2020); (2) the existence of conceptual problems (Fito et al.,

2018), substantial software implementation costs of the ABC system and additional training costs for staff (Ouassini, 2019); (3) the ABC paradox or the gap between academia and limited business adoption (Gosselin, 2007); (4) clarifying the contextual factors for the adoption of the ABC system (Rankin, 2020) and the existence of a diversified clientele that requires certain additional or specialized services (Major and Hoque, 2005; Wegmann, 2019).

The exploration of the implementation of the ABC method was carried out by specialists and through bibliometric studies: (1) in the service sector (health) being used alongside other tools such as QFD or AHP (Analytic Hierarchy Process) (Stefano et al., 2012); (2) in the analysis of scientific production through exploratory and qualitative studies (Barsanti and Souza, 2018). Compared to those presented, our study focuses on the implementation of the ABC method in the state education system.

## ***2.2. The ABC method. Advantages and limits of its implementation in the academic environment***

Most of the studies undertaken by specialists on the ABC method refer to the business environment or the private sector and highlight its multiple aspects related to the advantages or limitations presented above. The implementation of the ABC method within managerial accounting was more theoretical than practical in the public sector, as very few HEIs applied and implemented this method, ignoring the costs and disadvantages (Bromwich and Scapens, 2016). As in the private sector and in the public sector, the collection of information becomes essential and relevant both for internal users (managers, directors, staff) and for external users (state, local community, various authorities) (Kurunmäki, 2009) but also in prioritizing the allocation of resources and minimizing costs due to budgetary pressures and the scarcity of public resources (Borges et al., 2024).

Like any other method implementation at the level of managerial accounting, very important is the human resource that facilitates this (Peralta and Costa, 2016) and on which its success or failure depends in the short or long term (Briciu et al., 2012; Cokins et al., 2012). The results obtained in an academic career are evaluated considering certain characteristics that define it and are based on the annual renewal of the curriculum that starts from certain objectives that must be met by teachers in the education process. To achieve an efficient financing of educational models, the university system proceeds to minimize its economic needs to make appropriate informed decisions and to ensure a successful management (Améstica-Rivas et al., 2017), i.e. the use of an appropriate cost-oriented system towards profitability.

Many HEIs have implemented the ABC method, partially (Lutlisky and Dragija, 2012; Hernández et al., 2010) or in combination with other traditional costing methods (Carvalho et al., 2008; Valderrama and Sanchez, 2006) whereby each cost centre includes several activities whose costs must be divided and then allocated to the final cost bearers. The common element that characterizes the two approaches in the implementation of the ABC method refers to cost centres, the same being reported by other specialists (Toma, 2011).

The specialists' studies were also directed towards other research directions of the implementation of the ABC method and the calculation of costs within HEIs such as: (1) cost management (Molina-Sanchez et al., 2019); (2) the development of managerial accounting in UK universities (Palowski, 2011), the degree of adoption and its determinants (Hutaibat and Alhatabat, 2020); (3) the calculation of departmental costs in Spanish universities (Sánchez et al., 2019) but also the advantages and changes brought within them at the level of managerial accounting (Brusca et al., 2019); (4) analysing the dynamics of managerial control over private universities in Indonesia (Tsamenyi et al., 2008); (5) analysis of the relationship between strategic managerial accounting and university performance (Marlina and Tjahjadi, 2020); (6) implementation of the activity-based budgeting model (ABM) within an Australian university (Kenno & Sainty, 2017).

Our study is focused on the determination of costs at the faculty level and at the department level within a public university, according to the specifics of the ABC method, and will highlight its advantages and limitations compared to the global calculation method practiced by it.

### **3. Research methodology**

The scientific research undertaken in this article is focused on the review of the national and international specialized literature (accessing the Web of Science and Scopus databases, the use of the legislation developed by the Ministry of Education, CNFIS, UEFISCDI, etc.) with the help of which certain extracts were made and findings, comparative analyses and methodological explanations applicable to the Romanian higher education system.

The purpose of the documentary research was to collect the data and information needed to perform comparative analyses, describe and build opinions on the adoption and implementation of the ABC method in the managerial accounting of a public HEI in Romania. These data and information collections were joined by the public data related to the revenue and expenditure budgets and the patrimonial results account of a public institution in Romania. Other specific research methods such as observation, documentation and data analysis and comparative research were also used in our research to interpret the results obtained. In carrying out the research, the specific development stages of the ABC method were followed by adapting to the specifics of the HEI in Romania.

Also, in our study we wanted to find out the answer to the following question: *Why would one want to implement and use the activity costing method (ABC) in a higher education institution (HEI) in Romania?*

Starting from this question, from the main objective of our research specified in the introductory part, two secondary research objectives were established, namely: (1) the implementation of the ABC method within a public higher education institution in our country and (2) the advantages/disadvantages of implementing the ABC method within a public HEI in Romania.

### **4. Implementation of the ABC method within a HEI in Romania**

#### ***4.1. The necessity to improve managerial accounting and cost calculation within HEIs in Romania***

The main role of management accounting is to provide a clear picture of the value-adding processes and activities in a HEI and to provide accurate information in the decision-making process. Considering the evolution of the Romanian higher education system and the current transformations, as well as those that will follow, each university will call for the efficiency of the processes and activities they carry out to make the managerial process more efficient, which is ultimately based on the use of an efficient cost calculation system by practicing a modern managerial accounting method.

The adoption and implementation of a modern cost calculation method such as the ABC method must also consider the size of the institutions in the education sector and the complexity of the activities that influence the organization of all processes specific to the managerial function. The answer to the question launched by us can be found especially within the limits of the global method of cost calculation that is applied at the level of HEIs in our country and which mainly refers to: (1) the insufficiency of providing solidly substantiated information that contributes to obtain costs and to develop final decisions intended for managers; (2) allocating costs based on arbitrary criteria that do not reflect the causal link between indirect costs and the allocation base(s) used; (3) the impossibility of identifying the causes of deviations, performing an operative control and taking corrective measures in real time.

All limits and aspects related to the use of traditional cost calculation methods can be eliminated by adopting and implementing the ABC method, the advantages of which have been presented in the section dedicated to the specialized literature. In addition, the costing mechanism provided by ABC can be used by any HEI. In this way, benchmarking studies (comparative analysis

studies) can be carried out between the own costs and those of the other educational institutions in the system, providing information both to students and the faculty, as well as to interested parties (the state, the local community, various specialized organizations (ARACIS, CNFIS)) etc.

If the global method practiced today only indicates the spending of money on goods and services through departments using volume allocation bases, the ABC method reports the costs of processes and activities by using specific cost drivers to allocate costs to activities and cost carriers, these being specific stages of the development of an ABC type system (fig. no. 1).

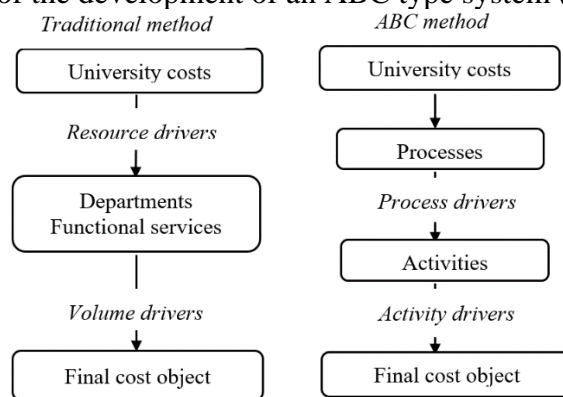


Figure no. 1. The traditional method compared to the ABC method

Source: Authors' processing

In the following, the stages of the implementation of the ABC method in a HEI in Romania are presented.

#### **4.2. The implementation of the ABC method in HEIs in Romania**

Carrying out the ABC method within a HEI involves the following stages: (1) identification of processes and activities; (2) identification of cost drivers; (3) allocation of indirect costs (of activities) to cost bearers; (4) determining the cost per faculty, per department, per student and teaching staff.

Before carrying out the ABC method, the implementation team composed of a manager and 4 members proceeded to the transversal reorganization of the HEI using as documents: the organization chart of the HEI, the executive organization chart and the departmental organization chart of the faculty under analysis. Following this transformation through transversal reorganization (according to the specifics of the ABC method), the informational and decision-making circuit was simplified, and it was possible to move on to the identification of the main processes and activities within the HEI. The HEI under analysis consists of 5 faculties each with its own departments and specializations. To exemplify the implementation and development of the ABC method, only one economic faculty was chosen.

(1) Therefore, three main processes were identified: the process of ensuring educational quality, the process of ensuring the infrastructure of the faculty and the process of ensuring support for students and teachers. The situation broken down by activities and composition by centralization of services and departments is presented in table no. 1).

Table no. 1. The situation of the processes and activities identified within the HEI

<b>Process</b>	<b>Activity</b>	<b>Services/departments</b>
The educational quality assurance process	Didactic education Research and publication	Departments/Specializations

The process of ensuring the infrastructure of the faculty	Financial, maintenance and auxiliary activities, IT support, cooperation and marketing, administrative, accounting	Financial services Maintenance and auxiliary services IT support services Administrative services
The process of providing support for students and teachers	Professional development	Services for students and internationalization

Source: Authors' processing

(2) Cost drivers or specific allocation bases refer to those units of measurement used to allocate indirect costs originating at the process or activity level. Depending on the level at which resources or indirect costs are located, two categories of cost drivers have been identified (fig. no. 1): *resource drivers and activity drivers*. The criteria used in choosing and determining the cost drivers were the complexity of the educational services, the insufficiency/excess of the cost drivers, the accuracy of the calculation and the usefulness of the information provided. Thus, within the analysed higher education institution (economic faculty), the following list of cost drivers was identified (table no. 2).

Table no. 2. The situation of cost drivers at the HEI

Activities	Cost driver	Measure
<b>1. Didactic Teaching</b>		
Course	Number of hours	Hours
Seminar	Number of hours	Hours
Examination	Number of hours	Hours
Consultation	Number of hours	Hours
Tutorial activities	Number of hours	Hours
<b>2. Research and Publication</b>		
Research Projects	Number of hours	Hours
Publications for professors	Number of hours	Articles
<b>3. Financial</b>		
Bank Commissions	Number of commissions	Commissions
Insurance Premiums	Number of insurance premiums	Value of insurance premium
<b>4. Professional Development</b>		
ERASMUS+ Participations	Number of participations for students and professors	Didactic stuff+students
Internet Documentation	Number of hours for documentation	Hours
<b>5. Administrative secretariat</b>		
Supplies	Number of supplies	Objects
Depreciation of Office furniture	Annual depreciation rate	Depreciation value
<b>6. Maintenance/Auxiliaries</b>		
Electricity	Consumption kwh	kwh
Water	Water consumption	m <sup>3</sup>
Cleaning	Number of worked hours	hours
Watch	Number of worked hours	hours
Repairs	Number of repairs	interventions
Depreciation of fixed assets	Annual depreciation rate	depreciation value
Inventory objects/Course and seminar rooms	Number of tables and chairs	Tables and chairs
Transport	Number of fuel vouchers	Consumption receipt
<b>7. Communication/marketing</b>		
Communication	Number of internet subscriptions	Subscriptions
Marketing	Number of organized events	Conferences/symposia/ round tables

Source: Authors' processing

(3) Allocation of indirect costs (of activities) to final cost objects. Using the cost drivers identified by activities (the faculty with economic specifics) from the point of view of their measurement unit (table no. 2) we moved on to the allocation of indirect costs on processes (from university level to process level) and activities (from the level of processes to the level of activities) (table no. 3).

(4) Determining the cost per faculty and department. To determine the total costs related to the economic faculty, according to the ABC method, direct expenses were first allocated (in the form of salary expenses related to the existing teaching and non-teaching staff) and then the activity expenses were allocated to the cost bearers. For the allocation of direct expenses, the discipline sheets of the teaching staff were used, which contain information about the course hours and seminars, consultations, tutoring etc. For the economic faculty under analysis, a number of 9 professors, 8 lecturers, 7 lecturers and 6 assistants, as well as 2 secretaries classified as non-teaching personnel, were taken into account.

Table no. 3. Allocation of costs (resources) to processes and activities at the HEI

<b>Total costs allocated to processes and activities</b>	<b>Faculty with economic specifics (lei)</b>
<i>The educational quality assurance process</i>	5596310
Didactic education activities	5183520
Research and publication activities	412790
<i>The process of ensuring the infrastructure of the faculty</i>	2711608
Financial activities (financial services)	5200
Maintenance and Auxiliary Activities (Maintenance and Auxiliary Services)	2548572
Communication and marketing activities (Communication and marketing services)	155566
<i>Administrative and secretarial activities</i>	2270
The process of providing support for students and teachers	1090000
Professional development activities	1090000
<b>Total</b>	<b>9397918</b>

Source: Authors' Processing

The allocation of indirect expenses (of activities) was made according to the cost drivers established in table no. 2. According to the calculated data, the total cost (TC) of the economic faculty and the total cost per department within the same faculty are determined as follows:

$$TC(f) = DE(f) + IE(f) \quad (1)$$

$$TC(d) = DE(d) + IE(d)$$

where: DE (f)/(d) = direct expenses related to education and research and publishing activities (direct salaries) within the economic faculty (f)/department (d).

IE (f)/(d) = indirect expenses allocated to activities (professional development, administrative and secretarial, maintenance/auxiliary, communication and marketing, financial) within the economic faculty (f)/department (d).

Up to the ABC method (table no. 4):  $TC(f) = 5596310 + 3801608 = 9397918$  lei

The total cost per faculty can also be obtained by adding up the costs of the two departments of the faculty with economic specifics, as follows:

$$TC(f) = TC(d_1) + TC(d_2) = 5159617.70 \text{ lei} + 4238300.30 \text{ lei} = 9397918 \text{ lei}$$

Table no. 4. Determining the costs related to the economic faculty

<b>Direct Expenses</b>	<b>5.596.310</b>
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<b>TSN=Teaching staff number</b>	<b>Number of assigned hours/NCD</b>	<b>Salary rate/Average cost</b>	<b>Total Expenses (lei)</b>
<b>Didactic education activities Teaching staff</b>			
<i>Teaching degree: PhD. Professor</i>	<b>9</b>		<b>1728000</b>
No. of course teaching hours	112	90	10080
No. of seminar teaching hours	56	70	3920
No. of examination hours	8	40	320
No. of students consultations hours	56	20	1120
No. of tutoring hours	56	10	560
Number of teaching/education hours	288	55.56	16000
<i>Teaching degree: PhD. Associate Professor</i>	<b>8</b>		<b>1313280</b>
No. of course teaching hours	84	80	6720
No. of seminar teaching hours	84	60	5040
No. examination hours	8	30	240
No. of students consultations hours	56	20	1120
No. tutoring hours	56	10	560
Number of teaching/education hours	288	47.50	13680
<i>Teaching degree: PhD. Lecturer</i>	<b>7</b>		<b>1078560</b>
No. of course teaching hours	84	70	5880
No. of seminar teaching hours	84	60	5040
No. examination hours	8	30	240
No. of students consultations hours	56	20	1120
No. tutoring hours	56	10	560
Number of teaching/education hours	288	44.58	12840
<i>Teaching degree: PhD. Assistant</i>	<b>6</b>		<b>679680</b>
No. of course teaching hours	56	60	3360
No. of seminar teaching hours	112	50	5600
No. examination hours	24	20	480
No. of students consultations hours	0	10	0
No. tutoring hours	192	49.17	9440
<b>Non-teaching staff: secretaries</b>	<b>2</b>		<b>384000</b>
Non-teaching staff (number of work hours)	1920	100	192000
<b>Research and publication activities</b>			
	<b>Cost driver</b>		<b>412790</b>
No. of research project hours	560	222	124320
No. of articles published by teachers	25	11538.80	288470
<b>Indirect Expenses</b>			<b>3801608</b>
<b>Activities</b>	<b>Cost driver</b>	<b>Average cost</b>	<b>Total expenses (lei)</b>
<b>Professional development activities</b>			
			<b>1090000</b>
Number of Erasmus+ teaching staff + student participations	100	10000	1000000
Number of internet documentation hour	1800	50	90000
<b>Administrative and secretarial activities</b>			
			<b>2270</b>
Office furniture depreciation rate according to the depreciation table	8	250	2.000
Number of consumables (printer paper)	18	15	270
<b>Maintenance and auxiliary activities</b>			
			<b>2548572</b>
Consumption kwh (electricity)	33000	0.75	24750
Consumption m <sup>3</sup> (water)	3030	15	45450
Number of worked hours (cleaning)	1920	80	153600
Number of worked hours (guard)	690	60	41400
Number of repairs	17	280	4760
Building depreciation rate according to the annual linear depreciation table	1	714556	714556
Number of office furniture items and Lecture and seminar rooms/Number of rooms	245	5880	1440600



Fuel consumption personal transport or events/No. consumption vouchers	48	2572	123456
<b>Communication and marketing activities</b>			<b>155566</b>
Number of telephone and internet subscriptions	1	1741	1741
Number of organized events (round tables, meetings, conferences, etc.)	7	21975	153825
<b>Financial activities</b>			<b>5200</b>
Number of bank fees	1	2400	2400
Number of insurance premiums	1	2800	2800
Source: Authors' processing			
Total cost (faculty with economics' specific)			<b>9397918 lei</b>

Source: *Authors' processing*

To determine the costs by department, the following calculations were made (table no. 5 and table no. 6):

$$TC(d1) = 3030863.20 + 2128754.50 = 5159617.70 \text{ lei}$$

$$TC(d2) = 2565446.80 + 1672853.50 = 4238300.30 \text{ lei}$$

Table no. 5. Determining the costs related to Department 1

<b>Direct Expenses</b>			<b>3030863.20</b>
<b>TSN=Teaching staff number</b>	<b>Number of assigned hours/NCD</b>	<b>Salary rate/Average cost</b>	<b>Total expenses (lei)</b>
<b>Didactic activities</b>			
<b>Teaching Staff</b>			
<i>Teaching degree: PhD. Professor</i>	<b>6</b>		<b>1152000</b>
No. of course teaching hours	112	90	10080
No. of seminar teaching hours	56	70	3920
No. of examination hours	8	40	320
No. of students consultations hours	56	20	1120
No. of tutoring hours	56	10	560
Number of teaching/education hours	288	55.56	16000
<i>Teaching degree: PhD. Associate Professor</i>	<b>4</b>		<b>656640</b>
No. of course teaching hours	84	70	5880
No. of seminar teaching hours	84	60	5040
No. examination hours	8	30	240
No. of students consultations hours	56	20	1120
No. tutoring hours	56	10	560
Number of teaching/education hours	288	44.58	12840
<i>Teaching degree: PhD. Lecturer</i>	<b>3</b>		<b>462240</b>
No. of course teaching hours	84	70	5880
No. of seminar teaching hours	84	60	5040
No. examination hours	8	30	240
No. of students consultations hours	56	20	1120
No. tutoring hours	56	10	560
Number of teaching/education hours	288	44.58	12840
<i>Teaching degree: PhD. Assistant</i>	<b>3</b>		<b>339840</b>
No. of course teaching hours	56	60	3360
No. of seminar teaching hours	112	50	5600
No. examination hours	24	20	480
No. of students consultations hours	0	10	0
No. tutoring hours	192	49.17	9440
<b>Non-teaching staff: secretaries</b>	<b>1</b>		<b>192000</b>
Non-teaching staff (number of work hours)	1920	100	192000
<b>Research and publication activities</b>	<b>Cost driver</b>		<b>228143.20</b>
No. of research project hours	300	222	66600
No. of articles published by teachers	14	11538.80	161543.20
<b>Indirect expenses</b>			<b>2128754.50</b>
<b>Professional development activities</b>	<b>Cost driver</b>	<b>Average Cost</b>	<b>total (lei)</b>

Number of Erasmus+ teaching staff + student participations			<b>750000</b>
Number of internet documentation hour	70	10000	700000
<b>Administrative and secretarial activities</b>	1000	50	50000
Office furniture depreciation rate according to the depreciation table			<b>1150</b>
Number of consumables (printer paper)	4	250	1000
<b>Maintenance and auxiliary activities</b>	10	15	150
Consumption kwh (electricity)			<b>1286234</b>
Consumption m <sup>3</sup> (water)	18000	0.75	13500
Number of worked hours (cleaning)	1560	15	23400
Number of worked hours (guard)	960	80	76800
Number of repairs	345	60	20700
Building depreciation rate according to the annual linear depreciation table	8	280	2240
Number of office furniture items and Lecture and seminar rooms/Number of rooms	0.50	714.556	357278
Fuel consumption personal transport or events/No. consumption vouchers	122.5	5880	720300
<b>Communication and marketing activities</b>	28	2572	72016
Number of telephone and internet subscriptions			<b>88770.50</b>
Number of organized events (round tables, meetings, conferences etc.)	0.50	1741	870.50
<b>Financial activities</b>	4	21975	87900
Number of bank fees			<b>2600</b>
Number of insurance premiums	0.50	2400	1200
Source: Authors' processing	0.50	2800	1400
<b>Total Cost (faculty with economic specifics)</b>			<b>5159617.70 lei</b>

Source: Authors' processing

Table no. 6. Determining the costs related to Department 2

<b>Direct Expenses</b>			<b>2565446.80</b>
<b>TSN=Teaching staff number</b>	<b>Number of assigned hours/NCD</b>	<b>Salary rate/Average cost</b>	<b>Total expenses (lei)</b>
<b>Teaching staff activities</b>			
<b>Personal didactic</b>			
<i>Teaching degree: PhD. Professor</i>	<b>3</b>		<b>576000</b>
No. of course teaching hours	112	90	10080
No. of seminar teaching hours	56	70	3920
No. of examination hours	8	40	320
No. of students consultations hours	56	20	1120
No. of tutoring hours	56	10	560
Number of teaching/education hours	288	55.56	16000
<i>Teaching degree: PhD. Associate Professor</i>	<b>4</b>		<b>656640</b>
No. of course teaching hours	84	80	6720
No. of seminar teaching hours	84	60	5040
No. examination hours	8	30	240
No. of students consultations hours	56	20	1120
No. tutoring hours	56	10	560
Number of teaching/education hours	288	47.50	13680
<i>Teaching degree: PhD. Lecturer</i>	<b>4</b>		<b>616320</b>
No. of course teaching hours	84	70	5880
No. of seminar teaching hours	84	60	5040
No. examination hours	8	30	240
No. of students consultations hours	56	20	1120
No. tutoring hours	56	10	560
Number of teaching/education hours	288	44.58	12840
<i>Teaching degree: PhD. Assistant</i>	<b>3</b>		<b>339840</b>
No. of course teaching hours	56	60	3360
No. of seminar teaching hours	112	50	5600

No. examination hours	24	20	480
No. of students consultations hours	0	10	0
No. of didactic/teaching hours	192	49.17	9440
<b>Non-teaching staff: secretaries</b>	<b>1</b>		<b>192000</b>
Non-teaching staff (number of work hours)	1920	100	192000
<b>Research and publication activities</b>	<b>Cost driver</b>		<b>184646.80</b>
No. of research project hours	260	222	57720
No. of articles published by teachers	11	11538.80	126926.80
<b>Indirect expenses</b>			<b>1672853.50</b>
<b>Professional development activities</b>	<b>Cost driver</b>	<b>Average Cost</b>	<b>Total (lei)</b>
<b>Professional development activities</b>			<b>340000</b>
Number of Erasmus+ teaching staff + student participations	30	10000	300000
Number of internet documentation hour	800	50	40000
<b>Administrative and secretarial activities</b>			<b>1120</b>
Office furniture depreciation rate according to the depreciation table	4	250	1000
Number of consumables (printer paper)	8	15	120
<b>Maintenance and auxiliary activities</b>			<b>1262338</b>
Consumption kwh (electricity)	15000	0.75	11250
Consumption m3 (water)	1470	15	22050
Number of worked hours (cleaning)	960	80	76800
Number of worked hours (guard)	345	60	20700
Number of repairs	9	280	2520
Building depreciation rate according to the annual linear depreciation table	0.50	714556	357278
Number of office furniture items and Lecture and seminar rooms/Number of rooms	122.5	5880	720300
Fuel consumption personal transport or events/No. consumption vouchers	20	2572	51440
<b>Communication and marketing activities</b>			<b>66795.50</b>
Number of telephone and internet subscriptions	0.50	1741	870.50
Number of organized events (round tables, meetings, conferences etc.)	3	21975	65925
<b>Financial activities</b>			<b>2600</b>
Number of bank fees	0.50	2400	1200
Number of insurance premiums	0.50	2800	1400
Source: Authors' processing			
<b>Total Cost (faculty with economic specifics)</b>			<b>4238300.30 lei</b>

Source: Authors' processing

(5) Determining the cost per student and teaching staff. To determine the cost per student, there are the data from table no. 7. Thus, as can be seen, on the faculty (with an economic profile) subject to our investigation, the cost determined according to the ABC method (related to 976 the number of students on the study programs) is 9.629 lei (9397919/976).

#### **4.3. Determining the cost per faculty and per department using the traditional (global) method at a HEI in Romania**

By applying the traditional (global) method and allocating resources at the faculty level and on study programs (bachelor, master and doctorate), the following situation was obtained within the public HEI (table no. 7):

Table no. 7. Determining costs by faculties and study programs

Faculty	Total of students	of which:	Total Expenses (lei)	Unitary Cost (lei/faculty)
Faculty 1	1085		9345968	8613.80
	Bachelor	735	5200260	7075.18
	Master	290	3500708	12071.41
	Doctorate	60	645000	10750.00
Faculty 2	910		6988580	7679.76
	Bachelor	580	3300780	5691.00
	Master	280	3366800	12024.29
	Doctorate	50	321000	6420.00
Faculty 3	850		3652600	4297.18
	Bachelor	600	2530400	4217.33
	Master	250	1122200	4488.80
	Doctorate	0	0	0
Faculty 4	1.179		11595230	9834.80
	Bachelor	905	8975230	9917.38
	Master	274	2620000	9562.04
	Doctorate	0	0	0
Faculty 5 (economic specifics)	976		7417600	7600
	Bachelor	750	4781600	6375.47
	Master	190	2432700	12803.68
	Doctorate	36	203300	5647.22
<b>University Total</b>	<b>5000</b>		<b>38999978</b>	<b>7800</b>

Source: Author's processing

As can be seen, on Faculty 5 (with an economic profile) subject to our investigation, the determined cost (based on the 976 number of students on the study programs) is 7600 lei and the total cost per university (based on the 5000 total number of students) is of 7800 lei.

#### 4.4. Traditional method vs. The ABC method. Cost level comparison

Comparing the data obtained by the two methods, the following situation was obtained (table no. 8):

Table no. 8. Comparative cost situation

Explications	Traditional method (lei)	ABC Method (lei)	Differences (lei)
Total Cost per Faculty	7417600	9397919	1980319
Total Cost per department	-	5159617.70 4238300.30	-
Total Cost per student	7600	9629	2029
Total Cost per didactic staff	247253.34	313263.97	66010.63

Source: Author processing

### 5. Discussions

As can be seen, the differences in costs calculated by the two methods (global and ABC) are significant and can be interpreted as follows:

- according to the ABC method, the difference in total cost per faculty of 1,980,319 lei can be explained by the correct identification of the processes and activities they involve and whose values are obviously much higher compared to the costs determined and allocated by the traditional method;
- at the department level, the costs could not be determined directly by the global method, as it was necessary to separate the students into study programs belonging to the respective department (in our case, there were 2 departments within the faculty with an economic profile analysed).
- the cost difference per student of 2029 lei can be justified by calculating correct costs (considering specific cost drivers) and by the fact that it highlights (compared to the global method

used) a subsidization of costs, in the sense that the real costs of the university are much higher compared to the amounts allocated and received from the Ministry of Education.

- The difference of 66010.63 lei per teacher is justified in the same way as in the previous explanation of the cost per student. The university bears much higher costs than those allocated and received from the Ministry of Education and in this sense the university must find other sources such as economic ones to supplement these real costs.

Therefore, the advantages brought by the ABC method compared to the traditional (global) cost calculation method are the following: obtaining real costs; accuracy of cost separation by cost centres (faculties, departments); allows the evaluation of the efficiency of the services and their improvement; provide accurate information on the cost drivers used and the determination of deviations, identifying and taking appropriate action in a timely manner; help in substantiating decisions at managerial and departmental level.

## **6. Conclusions**

Through the approach undertaken through this study and through the proposed object, namely, the implementation of an efficient calculation model such as the ABC method within a public higher education institution in Romania has been fulfilled. Also, by this study, the question raised in our research was answered, as evidenced by the stages covered by the ABC method and the advantages brought by it compared to the traditional cost calculation methods used by higher education institutions in Romania.

Like any other study, this one also presents some limitations related to the level of the public higher education institution, the degree of detailing of the much more complex processes and activities related to the specifics of each higher education institution, the impossibility of comparing the results obtained with those of other institutions of higher education similar public higher education in Romania or abroad. In this regard, we propose some future research directions such as: expanding the area of investigation of processes and activities, identifying the range of specific inducers for each process and activity, determining costs by study programs and specializations.

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