

SOME THEORETICAL-PRACTICAL CONSIDERATIONS REGARDING THE CALCULATION METHOD BASED ON THE CONCEPT OF COST ON ACTIVITIES

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Abstract

In the current context, efficient and judicious cost management involves reducing them in order to increase the profitability of the entity's business. This paper aims to highlight the role of new methods of cost calculation in entities producing products, service providers and contractors, establishing strengths and scourges between traditional methods and modern / evolved methods. Thus, in conducting a quality research, an extensive bibliometric analysis was performed through Google Scholar, Web of Science and Biblioshiny platforms, which allowed the research of the concept of "calculation methods" at national and international level in terms of several criteria. At the same time, in the context of modern costing methods, the ABC method was selected to exemplify the application methodology. In conclusion, the main advantages and disadvantages of the traditional costing method and the ABC method were highlighted. Summarizing the above, it can be concluded that efficient cost management allows the achievement of pre-established objectives, the achievement of the competitive advantage of market entities, the efficient adoption of decisions and the rationalization of consumption at the entity level.

Keywords: *management accounting, modern methods, production cost, decision making.*

JEL Classification: *M41*

I. INTRODUCTION

Accounting as an information system, modeling tool, social and organizational practice, pursues two distinct directions for presenting the economic activity of the entity: financial accounting or "*external side*", which aims to provide an overview of the entity's business through financial statements, and management accounting, also called the "*internal side*", which makes the entity's internal processes available to the entity's management.

In the interwar period, management accounting bears the notion of "*production accounting*", its purpose being to calculate the cost of production. Over time, management accounting has known other names, one of which is "*managerial accounting*", a notion that appears in the Anglo-Saxon countries in the mid-twentieth century, by combining two disciplines: accounting and management, the close connection between management and accounting being explained by the influence of the basic characteristics of management on the accounting field, namely: functions, processes, management levels, decisions, etc.

At national level, according to art. 3 of the Law on Accounting and Financial Reporting, officially opts for the notion of "*management accounting*" which is a "*system for collecting, recording, processing and transmitting information for planning, control and analysis of the entity's activity, for the purpose of preparing internal reports for making managerial decisions*".

In the context of the market economy, one of the main tasks of the entities is to increase the efficiency and profitability of the activity carried out through several factors, in this case, by improving the management system. As a result, the quality and efficiency of decisions depend, to a large extent, on the level of development of management accounting, which should not be limited to costing, but should also develop and control budgets, determine responsibilities and monitor the level of performance. To achieve and control the performance obtained, to collect relevant information for decision-making.

Cost management is their rational reduction in order to increase the profitability of the entity, at the same time, their efficient management allows the achievement of pre-established objectives and judicious use of available resources under strict control, allow the entity to reduce activities that result in high costs.

The evolution of management accounting has also conditioned the modification of the concept, objectives, procedures and methods of calculation and cost management. The procedures and techniques used are established according to the qualitative characteristics of the information necessary for internal users and the particularities of the activity carried out (Mihailă, 2008).

The aim of the paper includes researching the essence of modern methods of costing, in this case, studying the theoretical and practical aspects of the essence, emergence and applicability of the ABC method, and identifying differences from traditional methods.

The topicality of the topic derives from the indisputable role of management accounting in the strategic management of the entity, in the optimization of economic processes and the proper organization of the cost calculation resulting from the activity carried out. At the same time, as a result of the perpetual evolution of costing methods, entities, in particular accountants, have the task of researching new methods and their advantages in order to streamline processes and costs. In the context of improving the organization and management of entities worldwide, efforts have been made to develop new methods to simplify and facilitate the calculation of production costs. Thus, calculation methods have been developed that reflect the evolutionary stages of calculation and the general trend manifested in all countries for its continuous modernization (Caraman, 2007).

II. RESEARCH METHODOLOGY

In the research, the theoretical and practical approach was used, using several research methods: *analytical method* (examination of the literature in the field of management accounting, in particular, modern methods of costing), *webographic analysis* (access to the Google Scholar search engine, research of the Web of Science platform and results interpretation software - Biblioshiny), *comparison method* (examination of the essence of modern calculation methods selected for research and identification of the optimal scope for use), *systemic method* (identification and interpretation of the opinions of different authors at national and international level on modern calculation methods), *synthesis method* (concentration of the main aspects on modern calculation methods), *induction and deduction method* (highlighting the main results and conclusions of research on the subject of methods their modern costing method). In order to identify the works that share the same research path, the literature was analyzed in relation to the proposed topic, at national level distinguishing the works of the authors: Grabarovschi, L. (2013), Bădicu, G., Mihailă, S. (2020), Bajorean, E., Bajan, M. (2018), and others. Analogously, in the international literature, there is an even more prominent interest in relation to the researched topic, highlighting the research of the authors: Hlaciuc, E. (1999), Albu, N. (2013), Oprea, C. (2002), and others.

In order to identify the relevant publications in relation to the topic researched at international level, bibliometric analysis was used, establishing the following research criteria: identification of the phrase "costing methods" in the title of publications, during the years 1975-2022. The analysis identified approximately 228,000 results obtained through the Google Scholar search engine, and found various articles published in scientific conferences and economic journals. Following the same criteria, the Web of Science platform was researched. 52 publications, which were extracted for data interpretation using VOSviewer and Biblioshiny software. According to the results obtained in figure 1, most scientific papers were published in 2019 - 6 publications, followed by 2016, 2020 - 4 publications, 2018-2021 - 3 publications, etc.

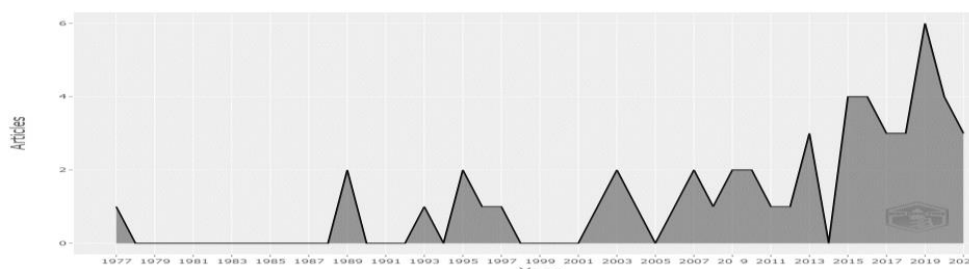


Figure 1 - Annual scientific productivity between 1975 and 2022
Source: developed by the author through the Biblioshiny software

At the same time, it becomes imperative to know the most productive countries in terms of the publication rate of scientific papers on costing methods. Thus, the countries with the most publications in the period 1975–2022 were the USA (26 publications), Brazil (18 publications), Canada (14 publications), the UK (13 publications) and others.

At the same time, among the countries whose articles are the most cited are: USA (308 citations), UK (133 citations), Canada (75 citations), Switzerland (65 citations) and others.

Based on Figure 2, it can be seen that the strongest links between the criteria "keywords-authors-country" are attested between the Netherlands and the authors Rovira, J., Garcia-Mochon, I. and others, who use keywords such as "activity-based costing", "bottom-up method", 'economic evaluation', etc., there is also a close link between Brazil and the authors Itria, A., Toscano, Cm., who use the words such as costing methods, costs and cost analysis, etc.

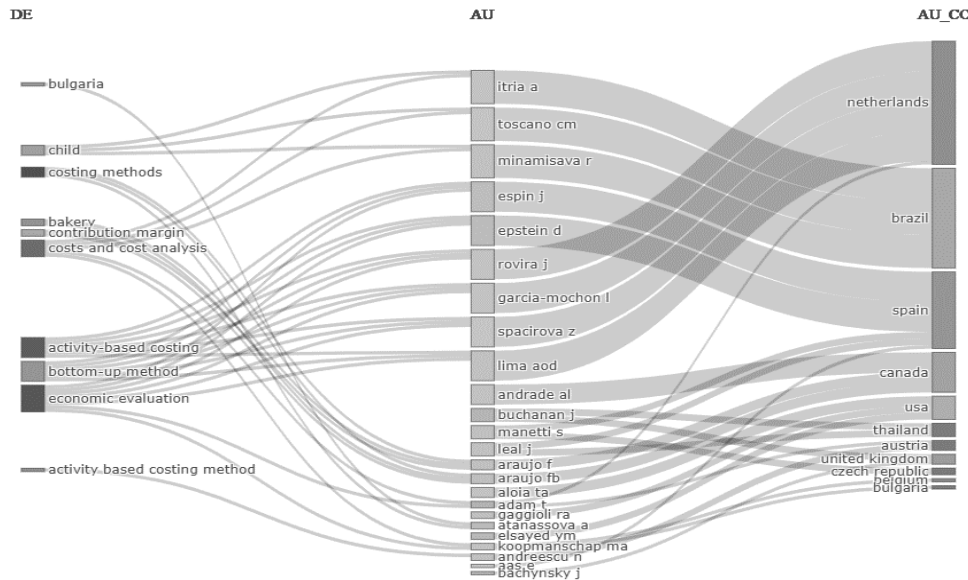


Figure 2 - The interconnectivity of the criteria "country - author - keywords" in the period 1975 - 2022

Source: developed by the author through the Biblioshiny software

The bibliometric analysis allows the identification of the most valuable, current and cited works in a certain field of research, thus, due to the more and more performing software, the interpretation of the contents of the databases and the visualization of the evolution trends, are a reality. In this context, in Figure 3, the Biblioshiny interpretation software summarizes all the keywords proposed by the authors of the publications, placing them within a coordinate system in terms of degree of relevance (horizontal axis) and degree of development (axis vertical). As a result, it can be concluded that in the researched period, the phrase costing methods is within the framework of emerging or declining topics, the interest of researchers moving to the current topics, such as: economic evaluation, activity-based costing, cost economics, cost management, costing system, etc. At the same time, in the quadrant of motor themes, there is the phrase costs and cost analysis, which denotes topicality and interest in cost analysis and management, as the issue of optimizing them and improving management systems is an imperative for each entity.

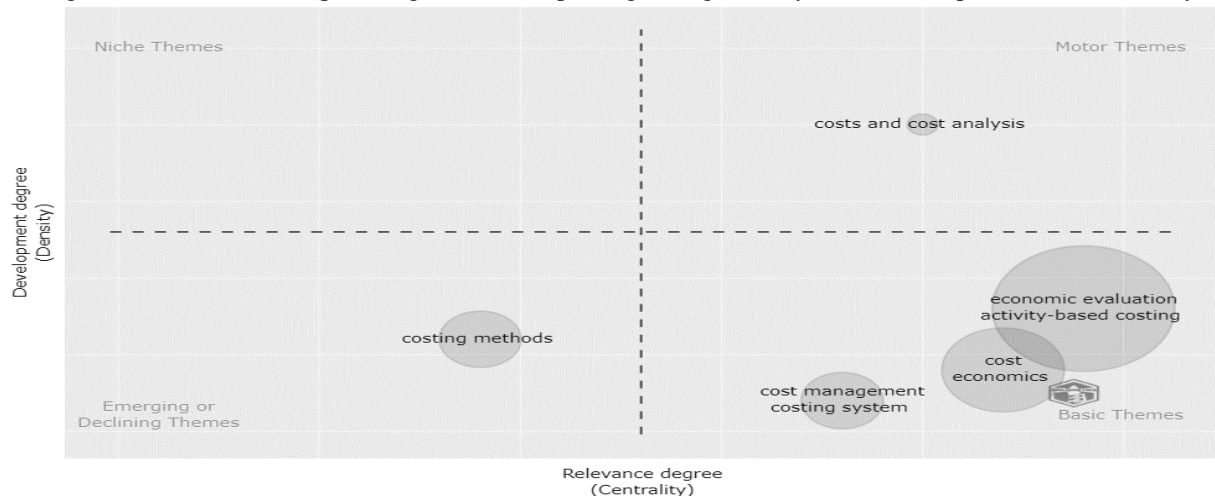


Figure 3 - Thematic map on the degree of relevance and development of research depending on the keywords used

Source: developed by the author through the Biblioshiny software

As a result, it can be concluded that the issue of costs and their calculation methods is timeless, with small positive or negative changes in dynamics from one year to another.

Modern approaches to cost calculation

The information synthesized by the management accounts is studied in order to interpret as efficiently as possible the results of the entity's activity, contributing to the establishment of objectives, providing information, documents and calculations necessary for decision making.

In accordance with the provisions of the Methodological Guidelines on the accounting of production costs and the calculation of the cost of products and services, at national level, the cost calculation can be performed by one of the following methods: global method, phase method, order method, standard cost method or other methods set out in the accounting policies. As a result, under the accounting policies, 'the entity may use a separate method of calculation, multiple methods or a combination of methods for calculating the costs of manufactured goods, services rendered and / or work performed, depending on the organizational-technological particularities and informational-decisional needs' (Bădicu & Mihailă, 2020).

According to the Methodological Indications, the cost calculation represents the totality of the procedures used to determine the cost of the manufactured products and / or the services provided. In the current context, the calculation of the production cost is oriented towards decision and control, becoming one of the basic components of the mechanism of profitable management of the entities.

Choosing a method of calculating costs requires specifying the objects of calculation, establishing centers of responsibility and budgeting techniques, setting the document system, taking into account a number of factors, such as: different nature of production, seasonal appearance, specific process, nomenclature manufacturing, the duration of the production cycle, the evolution trend of some factors, as well as the purpose pursued by the management of the entity (Bădicu & Mihailă, 2020).

The transition from a traditional method of calculation to a modern one can positively influence the decision-making process due to the foundation on efficient distribution criteria. Currently, there are various methods that provide the information spectrum needed to make decisions, such as: *standard-cost*, *direct-cost*, *PERT-cost*, *target cost (TC)*, *George Perrin (GP)*, *activity-based costs (ABC)*, *hourly rate -car (THM)*, *just in time (JIT)*, *recalculated costs (BFA)* etc.

The emergence of evolved methods is due both to the influence of advanced production technologies on management accounting and to the disadvantages in traditional approaches to management and cost accounting. The main disadvantages referring to the fact that the traditional approaches do not satisfy the needs of the productive environment, the traditional methods distorting the information necessary for decision making, etc. (Grabarovschi L., 2013). However, the mentioned disadvantages can be removed by applying modern methods of calculation and cost management, which come from new concepts of contemporary management. As a result, the theoretical-practical analysis of the ABC method is proposed.

The essence of the activity-based method: particulars and method

In the general sense, the cost of a product, service or work includes direct material costs, direct labor costs and indirect production costs. Thus, the most problematic area of research in the field of calculation and cost accounting derives from the accuracy of techniques for allocating indirect production costs.

Activity cost calculation is a method of approaching cost allocation, which identifies the main operational activities, locates all activity costs, reduces or eliminates non-value-added activities and allocates costs, using as a basis the activity that generates them. . By identifying the activities and costs related to the execution of each activity, the ABC method seeks to obtain a higher level of detail in order to understand how an entity uses the resources at its disposal. Defining the areas of activity and the choice of cost inducers / distribution bases is one of the main tasks in using the ABC method, so (Bădicu & Mihailă, 2020):

- the activity represents the ensemble of operations performed by one or more individuals, which allow the provision of utilities starting from certain resources, homogeneous operations, from the point of view of cost and performance behaviors;
- operations represent the work elements or operational stages necessary to perform and complete an activity;
- resources are the economic elements (factors of production), which contribute to the realization of operations (financial, human resources, equipment, transport, etc.).

Examining in antithesis the essence of traditional costing methods and the essence of the ABC method, an important difference lies in the fact that the ABC method is a method of calculation and management. At the same time, the ABC method ensures the determination of a cost with a higher degree of accuracy. In this order of ideas, in figure 4 are presented other differences attested between these methods:

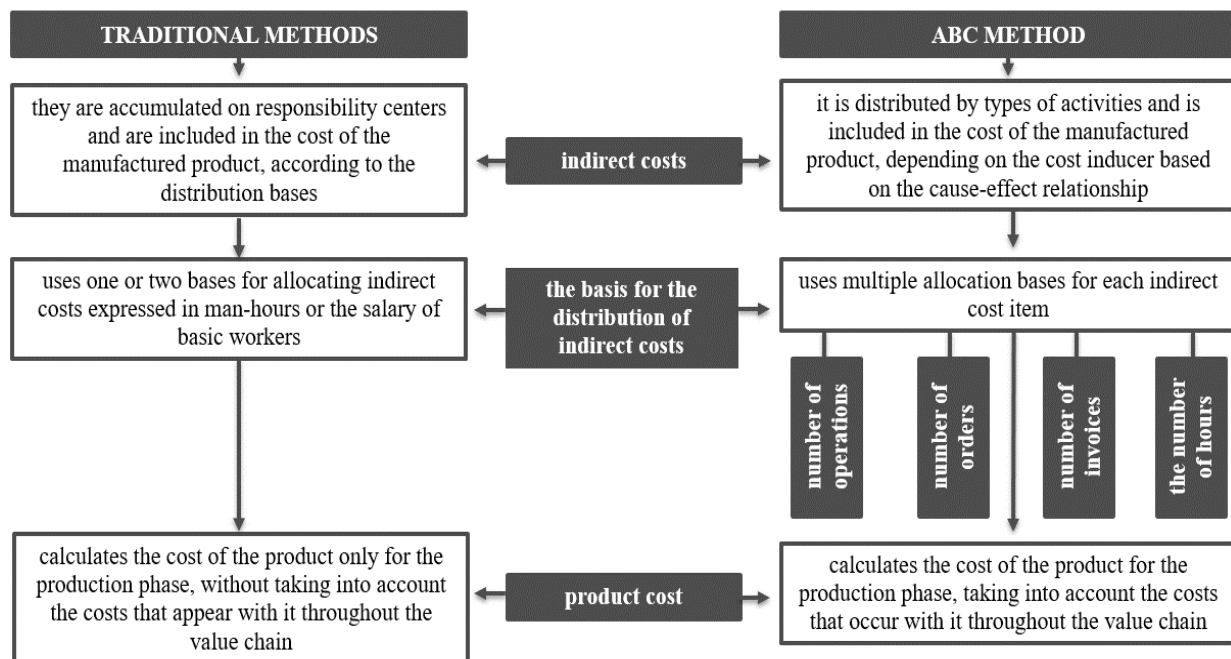


Figure 4 - Differences between traditional methods and the ABC method

Source: adapted by the author in the database (Bădicu, G., Mihailă, S., 2020)

One of the most important contributions of the ABC method is the remedy of the shortcomings of traditional treatments, in order to satisfy the requirements of users of accounting information. In this sense, the authors Căpușneanu, S., Martinescu, D.M. (Căpușneanu & Martinescu, 2010), performed an analysis of the main causes that led to the choice of the ABC method, compared to traditional cost methods and which are the basis for improving the profitability of the enterprise, as follows: customer profitability, transparency of sales prices, integration of multi-year expenses, etc. In general, there are nine stages of implementation of the ABC method, shown in Figure 5:

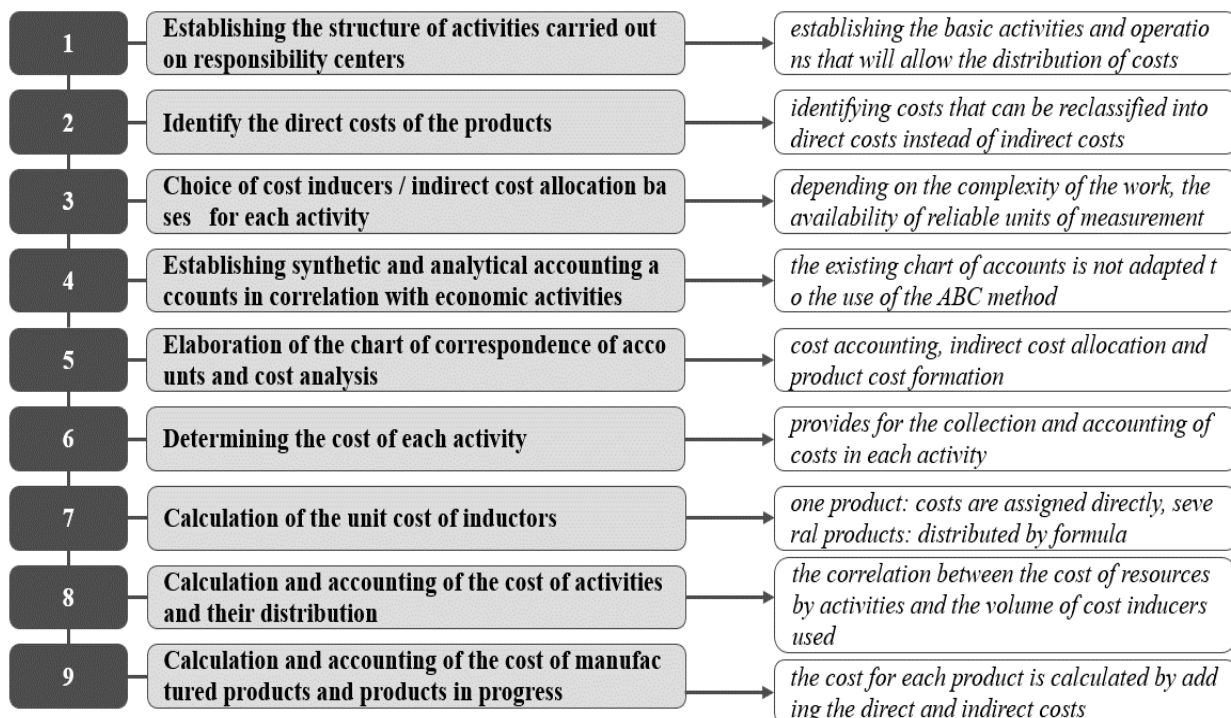


Figure 5 - The stages of implementing the ABC method of cost calculation

Source: adapted by the author in the database (Bădicu, G., Mihailă, S., 2020)

If an entity decides to use the ABC costing method, most changes would be made in the area of information processing, emphasizing the need for more detailed information on resource consumption by type of activity. Following the obtaining of the information, the costs would be distributed in the value of the manufactured products, according to the cost inducers, subsequently, establishing the results and the efficiency of the use of resources.

Practical aspects regarding the application of the activity-based method

In order to highlight the particularities of the ABC costing method, a comparative practical application between the traditional costing method and the ABC method is proposed:

The entity "Beta" SRL specializes in the manufacture of two types of medical clothing for women: bathrobes and medical suits. The entity manufactures and sells the items in batches of 20 pieces - medical gowns and 30 pieces - medical suits. In order to manufacture clothing items, material orders consisted of 10 for medical gowns and 15 for suits.

As a result, based on the data presented, Table 1 presents the initial situation regarding the manufacture of specialized clothing:

Table 1. Report on indicators and costs for manufactured products

Indicators	Medical gowns	Medical suits
Manufactured quantity, pieces	600	900
Material costs, lei / piece	130	210
Costs regarding work remuneration, lei	100	120
Machine operating hours, hours / piece	1	1,5

Source: prepared by the author

Following the determination of the quantity of manufactured articles, direct costs and hours worked, an important moment is the highlighting of the situation of indirect production costs by types of activities, with the indication of cost inducers (Table 2).

Table 2. Report on indirect production costs and their basis for distribution of activities

Activities	Indirect costs production, lei	Distribution base / cost inductor
Supply operations	19 520	Number of strings of materials
Machine maintenance operations	47 850	Number of hours operation of the equipment
Launch operations	25 900	Number of lots of manufactured products
Product management operations	19 380	Number of lots of manufactured products
Control and quality operations	12 550	Number of lots of manufactured products
Total	125 200	X

Source: prepared by the author

In this regard, the next step provides for the calculation of the total cost of production per unit per product, both by the traditional method and by the ABC method. The purpose of the dual calculations being the antithesis analysis of the obtained results and the generation of conclusions in relation to the above-mentioned theoretical aspects.

In order to determine the total and unit cost of production by the traditional method of cost calculation, the following steps are followed:

1. *Allocation of indirect production costs* according to machine operating hours, the total number of production equipment operating hours (NtFU) being calculated according to the following relation:

$$NtFU = [(600 \times 1 \text{ hours}) + (900 \times 1,5 \text{ hours})] = 600 + 1\,350 = 1\,950 \text{ hours}$$

2. *Determination of the value of indirect hourly production costs:*

$$125 \frac{200}{1\,950} = 64,21 \text{ lei/hours}$$

3. *Determination of the cost of production on each item of clothing (Table 3).*

Table 3. Determination of production cost per product

Manufactured products	Material costs, lei / piece	Remuneration costs, lei	Indirect production costs, lei / piece	Unit cost, lei / piece	Manufactured quantity, pieces	Actual production cost, lei
A	1	2	3	4=1+2+3	5	6=4x5
Medical gowns	130	100	64,21 (1*64,21)	294,21	600	176 526
Medical suits	210	120	96,32 (1,5*64,21)	426,32	900	383 688
Total	X	X	X	X	X	560 214

Source: prepared by the author

According to the calculations performed, it can be found that the actual production costs, on the two types of clothing items, constitute 560 214 lei, in their perimeter counting the material costs, with the personnel and the indirect production costs.

Analogously, according to the **ABC method**, initially, the cost of an inductor in each activity is determined, subsequently, their value to contribute to the evaluation of the indirect production costs for each activity related to the manufactured products. Thus, Table 4 summarizes the indirect production costs for each activity and the value of a cost inducer:

Table 4. Indirect production costs, cost inducers and the cost of a cost inducer

Activities	Indirect production costs by activities, lei	Cost inducers	The value of the cost inducer, lei
A	1	2	3=1/2
supply department	19 520	25 orders *	780,80
department machinery	47 850	1 950 hours	24,54
production launch department	25 900	60 orders **	431,67
product management department	19 380	60 orders **	323
Control and quality department	12 550	60 orders **	209,17
Total	125 200	X	X

Source: prepared by the author

* *Material orders* = 10 + 15 = 25

** *Lots of products sold* = [(600 pieces / 20 pieces / lot) + (900 pieces / 30 pieces / lot)] = 30 + 30 = 60

In the following table, the cost of specialized clothing is determined using the ABC method, summarizing all direct and indirect production costs, from all the above-mentioned activities:

Table 5. Determining the production cost per product by the ABC method, lei

Cost items	Medical gowns	Medical suits	Total costs
A	1	2	3=1+2
Material costs	130 x 600 = 78 000	210 x 900 = 189 000	267 000
Remuneration costs	100 x 600 = 60 000	120 x 900 = 108 000	168 000
Total direct costs	138 000	297 000	435 000
Provisioning costs	10 x 780,80 = 7 808	15 x 780,80 = 1 171,20	8 979,20
Equipment costs	600 x 1 x 24,54 = 14 724	900 x 1,5 x 24,54 = 33 129	47 853
Launch costs	30 x 431,67 = 12 950,10	30 x 431,67 = 12 950,10	25 900,20
Product management costs	30 x 323 = 9 690	30 x 323 = 9 690	19 380
Control and quality costs	30 x 209,17 = 6 275,10	30 x 209,17 = 6 275,10	12 550,20
Total indirect costs	51 447,20	63 215,40	114 662,60
Total production cost	189 447,20	360 215,40	549 662,60

Unit cost of production	$189\,447,20 / 600 = 315,75$	$360\,215,40 / 900 = 400,24$	X
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Source: prepared by the author

From the data in Table 5, it appears that in the ABC method, the information is much more detailed on each item of clothing, which indicates the determination of a production cost with a higher degree of accuracy. At the same time, it can be seen that in terms of economic management through the ABC method, the costs of activities, not related to the production process (supply, launch, control, etc.), are included in the cost of the product. The calculations obtained on the production cost by the traditional method and the ABC method allow their comparison in Table 6:

Table 6. Comparative situation of unit cost of production

Products	Unit cost of production		Differences
	Late method	The ABC method	
A	1	2	3=2-1
Medical gowns	294,21	315,75	+21,54
Medical suits	426,32	400,24	-26,08

Source: prepared by the author

Based on the calculations performed in Table 5, it can be seen that the production cost calculated by the two methods is different. In conclusion, the application of the ABC method allows a more accurate and accurate distribution of indirect production costs and may influence the adoption of sound decisions on the setting of selling prices. At the same time, it can be mentioned that cost management based on traditional methods of accounting and calculation, does not fully ensure the control of indicators, staff motivation and financial diagnosis of the activity, therefore, entities also use modern / advanced methods of calculation of cost.

III. CONCLUSIONS

In the current context, the new challenges of the economy determine the evolution of production and management processes. The impact of technology development and customer requirements in setting the selling price, made more responsible the decision makers at the level of entities, causing them to adhere to the new approaches of calculating the cost of production based on modern methods.

Following the research of modern methods of cost calculation, it can be seen that their implementation within the entities of the Republic of Moldova can be a real success, the new methods being highlighted by useful and valuable tools in determining and analyzing the profitability of the business. .

Studying in antithesis the traditional and modern computational approaches, it can be seen that both the traditional method and the ABC method have both advantages and disadvantages. Thus, in the case of the traditional method, one can distinguish advantages such as: the relatively simple calculation system in relation to the distribution of indirect costs; use by different types of entities in the field of production, trade, services, etc. At the same time, the following aspects are encountered in the series of disadvantages: the absence of a concrete analysis regarding the cost-generating elements regarding the obtaining of certain products; the impossibility of predetermining the selling price of a product in accordance with the non-participating activities in their realization.

In the same vein, the ABC method has advantages, such as: thorough analysis of the elements that generated the costs due to the wide distribution of indirect costs; recording a higher degree of efficiency from the perspective of entities where the share of indirect costs in total production costs is more considerable. At the same time, the disadvantages of the ABC method speak of: difficult identification of all activities and cost drivers, in this case, their value; the application of such a system can be costly for the entities' budgets; also, the impossibility of allocating certain types of indirect costs, being assigned to other existing categories, etc.

In conclusion, it is necessary to specify that the usefulness of modern calculation methods can be quantified depending on the type of activity of the entity and the productive and economic potential, thus, if the entity operates with various exact costs, it is certainly chosen otherwise, when the market imposes prices, traditional methods are used.

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