

## **ADVANCED COSTING METHODS AND THEIR UTILITY IN ORGANIZING MANAGEMENT ACCOUNTING**

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**Abstract:** The main objective of this scientific approach is to underline the specific and utility of advanced costing methods starting from the limits of classic costing methods. The results of this study are materialized in delimiting the main modern costing methods, how costs and causes behind costs are identified, particularly how they interfere in cost reduction and decision-making. The article aims to prove the usefulness of applying modern costing methods, recalling principles that govern them and the manners and conditions of applications. The contribution of this research is materialized in a critical approach of the main advanced costing methods, starting from the assumption that all methods are based on common principles, but also have sensitive areas that set them apart, the purpose of this scientific approach being to identify and to briefly present these sensitive areas.

**JEL classification:** M40, M41.

**Key words:** methods, costs, management, computing, decisions.

### **1. INTRODUCTION**

The significant changes of the production technology, changing competitive conditions, but also other factors, underlie giving up costing based on traditional reasoning. Switching to new thinking in the area of costing has represented an important moment in redefining the role of management accounting in leading an entity.

### **2. OBJECTIVES**

The main **objectives** pursued by this scientific approach are:

1. Underlining the necessity to abandon traditional costing methods due to the deficiencies they show in monitoring and controlling costs;
2. Reviewing the following modern costing methods: Just in Time method, Throughput Accounting method, back flush Accounting method and UVA method.

### **3. METHODOLOGY**

This article is part of a doctoral thesis, the applied research method is the **basic** research, and the information on the topic was gathered by studying the national and international literature in the field, by analyzing the legislation, by navigating

specialized websites and various articles from databases. The main research methods that were used in my scientific approach were **documentation, analysis and synthesis.**

#### **4. ANALYSES OF THE LIMITS OF TRADITIONAL COSTING METHODS**

The issue of abandoning classic and traditional costing methods and of adopting modern and advanced methods has been widely debated in recent literature. The progresses achieved in perfecting production technology have demonstrated the growing traditionalism and conservatism shown in cost calculation.

Thus, the first failure of traditional costing methods was seen in the context of **significant changes that occurred in production technologies.** Today, entities are automated and computerized, products are renewed and their life cycle is shortening, services evolve and adapt to new consumer needs.

Major changes are also felt in the **conditions of competition** on domestic and foreign markets, and there is a shifting tendency of competition from quantitative criteria (price) to qualitative criteria (product quality, security of provided services). Traditional accounting information systems are mainly limited to quantitative aspects, and less to qualitative aspects.

The main features identified in classic costing methods are: low number of support functions and small share of indirect costs within total costs; a predominant share of direct costs within total costs; rigidity in changing products, as well as in changing costing methods; introducing on a large scale standardized and uniform products.

Another short-coming of classic costing methods is the fact they can't provide a precise calculation of cost by product due to the **assignment of indirect expenses based on conventional criteria.** This affects the quality of information about costs, responsibility and operative control of costs.

Some of the classic absorption costing methods categorize expenses in direct and indirect depending on how they are allotted by product. Increasing the share of indirect costs in total expenditure and using arbitrary keys to distribute them has led to inaccurate results due to ignoring the causal relationship between the used key of distribution and the achieved expense.

Another limit of classic methods is the fact they are mainly oriented towards **full costing** without taking into account the variation of expenses compared to the production volume. They put emphasis on grouping expenditure in direct and indirect expenses, and not on grouping them in variable and fixed expenses. Expenditure control is affected by this division, as well as cost efficiency. Their structuring into variable and fixed would allow the calculus of indicators with high percentage of information, necessary for substantiating decisions. Fixed expenses are those *“expenses that concern a single cost. Therefore, incorporating them into costs poses no problem: in other words, let assign them to costs”*<sup>30</sup>, and indirect expenses concern several costs and are assigned in accordance to certain procedures.

*“The information provided by classic methods loses its relevance due to the growing share of indirect expenses in total expenses of the enterprise and the high cost*

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<sup>30</sup> Louis Debrulle, *Management Accounting*, Economică Publishing House, Bucharest, 2002, p.29.

of gathering and treating information”<sup>31</sup>. There is still a significant gap between gathering and processing data on costs, which is still done manually in many cases, and the automation stage, which means using modern techniques of calculus. The concern to rebuild a safe information system for costs will require shifting from a simple analysis of costs to an authentic management of costs.

In conclusion, the rigidity of the information system of management accounting governed by traditional costing methods has made it difficult to monitor costs, to establish standards, to conduct an analysis of deviations regarding products. It was necessary to outline a type of **cost accounting** or a type of analytic accounting that is able to grasp the causes behind costs and to associate them with products.

## **5. CRITICAL ANALYSES OF ADVANCED COSTING METHODS**

There are three categories of products that have given economic, technological and managerial processes to management, causing major changes, such as<sup>32</sup>:

-The increased market competition and the interposition of the customer in the value chain requires the managers to show a constant concern to reduce traditional costs and to replace them with costs associated to activities that sustain the product, conducted upstream or downstream from the production area, in the stage of design or the stage of distribution and promotion of products and services on the market;

-Implementation of automated manufacturing technologies in productive processes, operational control of production and diversification of resource-consuming activities that compete in achieving production represent the new technical and organizational conditions that define operational activities of entities;

-Models for assisting the management process based on techniques of automatic processing of information represent management challenges for the production of goods and services within an entity.

These three main trends have led to innovating and promoting modern costing methods based on assisting the management process, such as: the **ABC method – Activity Based Costing; TC – Target Costing; KC – Kaizen Costing; JIT – Just in Time; TA – Throughput Accounting; BFA – Backflush Accounting; UVA – Unités de Valeur Ajoutée.**

### **5.1. JIT – JUST IN TIME METHOD**

As entities switch to a new production environment, it is necessary to speed up the production, measuring, control and reporting processes, as well as to change accounting procedures and techniques for measuring and monitoring activity. All these changes require developing the active function of accounting in order to develop forecasts, strategies and policies directed towards eliminating waste of raw materials, of human resources, of production space and time, as well as reduce the time for achieving pertinent accounting records.

*“Just in Time or JIT is a set of quantitative and qualitative techniques of management and beyond, being almost a global solution of strategic and operational management, even a philosophy”<sup>33</sup>.*

<sup>31</sup> Mariana Radu, *Management Accounting*, Bibliotheca Publishing House, Târgovişte, 2010, p. 313.

<sup>32</sup> Adaptation after Gheorghe Fătăcean, *Managerial Accounting*, Alma Mater Publishign House, Cluj-Napoca, 2009, p 339.

JIT originates in the 1960s in the Japanese shipping industry when due to major investments in shipyards they negotiated more frequent deliveries and they reduced inventories, making major changes to delivery dates.

The central idea of operating in real time is to produce and buy the demanded product or service only in the needed quantity and quality, and especially in a timely manner. This method for optimizing production relies on reducing the supply-production-distribution cycles starting from the premise of optimizing inventories so that at the end of each production process, the entity will be in one of the following situations: completion of final products coincides with their delivery; semi-finished products don't go through a stage of intermediate storage, but go straight into the finishing stage; to avoid frizzling financial resources, the supply should take place when the production is launched.

The JIT system is based on the following principles: the quality of the production process is essential, the working environment is continuously improving, simplicity helps sophisticated processes, the quantitative level of inventories represents freezing resources, goods are manufactured only when needed, any activity that doesn't generate added value for the product must be reduced or eliminated, the personnel must be qualified.

The system implies observing a rigorous technological discipline in which production takes place only when it's necessary and inventory is avoided. Implementing this system requires creating an operational system that includes:

**-eliminating inventories** - this will lead to eliminating their storage space, to reducing the volume of deteriorated inventories, to personnel cuts, to fewer control instruments for inventories, etc. The term zero inventories is dangerous and don't always generate positive effects, their absence in certain situations causing crises;

**-creating a planning and scheduling system of pull-through production** – it places the client's order to the forefront, this being what triggers production and supply. *Push-through* production (production pushed by the market) means producing on long term, before receiving the order from the customer, while the reason of pull-through production is production “pulled by the market”;

**-splitting batches** has positive effects on the behaviour of operators and implies manufacturing and delivering products in small batches, depending on needs;

**-the quick and inexpensive adjustment of equipments** is possible by installing a system of preventive intervention and a system of full control of machines that allows to identify the weaknesses and to quickly inform operators. The Japanese relied on a golden rule: *Never manufacture until you are sure of finishing without flaws*, so that every machine incapable of generating zero-defects was replaced;

**-creating flexible working cells** – the JIT system establishes a new mien of the distribution of production lines according to the following rules<sup>34</sup>: *rearranging equipment to reduce the time required to manufacture a product, only the equipments for consecutive processing are arranged on the process flow; establishing a flexible grouping of equipments so that all homogenous operations will be conducted efficiently and continuously; placing machinery in a manner that will allow the continuous and*

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<sup>33</sup> Chirața Caraiani, Mihaela Dumitrana, *Management Accounting and Control*, InfoMega Publishing House, Bucharest, 2005, p.416.

<sup>34</sup> Gheorghe Fătăcean, *Op.cit.*, p. 368.

*efficient manufacturing of families of similar products, ensuring at the same time the permanent adjustment of equipments;*

**-training a multi-skilled staff** represents a necessity for applying the JIT model because the personnel operates simultaneously with several equipments and the operational working cells can be managed by a single operator who has to perform multiple tasks;

**-imposing high quality standards for products and processes** in order to conduct continuous check-ups of the manufacturing process, to verify product quality, to ensure high quality of raw materials and materials so that they don't cause disruptions on the production lines.

The advantages of the JIT concept are the reduction of delivery time for products and the decrease of financial resources for storing the achieved production; and its disadvantage is the occurrence of new incidents, such as: unexpected failures of technological lines, strikes.

JIT proposes a new control method by post with the purpose of reducing the response time of control. There are two ways to control the post: cascade control, which involves checking a list of tasks performed by the operator, and self-control, meaning the operator checks his own work.

In American literature, the **Kanban Method** broke away from the JIT method. This new method aimed to avoid the tendency manifested by large entities to produce a surplus, demanding the start of production only when required and in the ordered quantity. The Kanban system *“is designed to produce only the components necessary for a process of supply on demand called pull-process. This means that an upstream position must only produce what was demanded by the downstream position, which, in its turn, must only produce what was demanded by its own downstream position. Kanban is an information system that makes the needs from the downstream to quickly climb to the upstream. It actually overlaps a physical flow with a reverse flow of information”*.<sup>35</sup>

The Kanban system is an information system that controls production through three types of cards: withdrawal kanban, production kanban and kanban for sale. The first two cards control movements within the manufacturing process, while the latter monitors the circulation of sub-assemblies on the production – supplier path.

The JIT method extends the concept of performance over time and space by using a new framework of management control and is based on the undefined use of the information that accompanies the flow of products.

## **5.2. TA – THROUGHPUT ACCOUNTING**

The emergence of throughput accounting is related to the theory of constraints, which refers to that fact an entity must identify the constraints of a system and must make decisions regarding how they should be exploited.

The **Throughput Accounting method (TA** or output accounting) is *“a system of measuring final results and of computing the production cost. It's considered that it rounds the JIT principles and draws attention to the determinants of profitability, such*

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<sup>35</sup> Chirața Caraiani, Mihaela Dumitrana, *Op.cit.*, p.423.

as the influence of the changes occurred to the production volume based on orders or pull-through”<sup>36</sup>.

The **pull-through** system (market-based production) is characterized by the fact customer orders are the ones that determine the acquisition of raw materials and production scheduling. The orders received from clients determine the production volume on one hand and, on the other hand, maintaining low inventories requires more frequent adjustment due to multiple interruptions of activity.

The **push-through** system (production in search of market) is characterized by products manufactured on long term and stored prior to receiving orders from clients.

**TA** determines the production cost in relation to how each product consumes resources, relating results and production to inputs. It is based on three concepts:

- most costs (except costs for short-term direct materials) are fixed and are called **Total Factory Costs (TFC)**;

- the non-use of the labour capacity will determine an **increase of the volume of work in progress (WIP)**, and the level of inventories will create non-profit, which is a situation that must be discouraged;

- profitability is influenced by the speed with which the finished products are obtained, so that by **improving the production capacity**, the possibility to meet customer orders will also increase.

The **TA index** or the **output rate** is determined by relating the *income per hour worked* (or minute) to the *cost per hour worked* (or minute). The earning or income per hour worked is determined by subtracting the cost of direct materials from total sales and reporting everything to the time spent in the key resource, meaning the last resource of the production chain.

If the TA index is proper, then the product is unprofitable and should be withdrawn from the market. By using “Throughput Accounting”, the products that are not sold don’t produce incomes and will diminish the output rate without creating the value of a product before selling it.

The TA index may be expressed in **absolute terms (TFC)**, an option that allows comparing total incomes resulted from inputs with total costs, the calculus formula referring total sale (except the cost of direct materials) to TFC.

TA suggests that assigning indirect expenses to costs should take place depending on how key resources are used. In this case, the **output cost** or the **throughput cost** is determined by dividing the product between standards minutes of outputs and total manufacturing costs to the minutes in key resources.

In conclusion, the TA method: defines all inputs as sales, except material costs; the costs of direct materials are considered variable costs; total costs are considered fixed costs; the gross margin isn’t a relevant indicator of profitability.

The TA method has been heavily criticized, but it directs the manager towards the key element in obtaining profit, reducing the time of response to the demands of clients and reducing inventories.

### **5.3. BFA – BACK FLUSH ACCOUNTING**

The **BFA method (Back flush Accounting)** is an accounting system designed to reflect the principles of the JIT system, with the central idea of running a backwards

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<sup>36</sup> Dorina Budugan, Iuliana Georgescu, Ioan Berheci, Leontina Bețianu, *Management accounting*, CECCAR Publishing House, Bucharest, 2007, p. 490.

approach of the production flow, starting with the value of the sold goods, in relation to which the costs will be assigned to inventories or to sell products.

The concept of back flush costing has the meaning of **backward calculus**. The BFA principle proposes to account for materials not as they are consumed, but when the final products are obtained and sold. The production cost is considered as cost of the period and is imputed to sales.

Basically, back flush accounting allows ignoring the inventory of finished products, adjusting the consumptions of a period of sales.

The BFA method aims two main aspects:

- it proposes the replacement of raw materials and work in progress accounts with a single account, taking into account the expenses with consumed inventories;
- it takes into account the transformation costs (labour costs and expenses with energy), which are basically assigned to the cost of the finished product (after several transactions in various accounts and after they are obtained) and not to the work in progress.

The advantages of the BFA method are: simplicity, without separately tracking raw materials and work in progress; it uses a small number of primary documents; it causes managers to adopt measures to eliminate inventories of finished products because they don't add value to the result.

#### **5.4.UVA – UNITÉS DE VALEUR AJOUTÉE**

The UVA method uses a non-monetary unit of measure for measuring the activity of the entity and costing. The principle of this method is to reduce the activity of the entity to a single product or to a family of products. The UVA method, developed by Georges Perrin, focuses on the idea of a common measure, of an index of equivalence, for the value of the entity.

The GP method, currently called UVA, avoids the global treatment of costs, focusing on a detailed analysis of each activity, and the costs of these activities remain generally stable in relative values.

The UVA method places emphasis of the strategic use of costs, monitoring how products are manufactured and sold, but also how the added value is created with each phase of production.

Adopting this method involves two phases:

**-the construction phase of the method:** aims to value in UVA the manufactured products, the administrative and commercial ranges, etc, and to compute the value added expressed in units of value added attributable to each product and service. Building the method implies taking the following steps: taking stock of UVA positions, defining a unit of measurement for values, assessing UVA positions in units, assessing resources, computing UVA indexes related to positions, computing UVA equivalents for products and services, computing the UVA equivalent of a sale;

**-the operational phase of the method:** aims to determine the production cost of products by accounting the value added units, to create performance indicators able to analyze the evolution of costs, to compute the result per transaction. Operationally, the method involves five steps: measuring the produced value added, computing the cost of a value added unit (UVA), computing the production cost of a sale and of its result, analyzing sale profitability, creating a management system.

The **UVA method** is a source for improving the profit, providing an important support when making operational and strategic decisions. *“The main contribution of the*

*UVA method is allowing accuracy in cost assessment, having no competition among other costing methods in the sense of considering 90% of the enterprise's expenditure as direct expenses*<sup>37</sup>.

The UVA method puts billed costs and revenue against each other in order to calculate the resulted profit, which allows identifying the key processes for the survival of the entity.

## **6. CONCLUSIONS**

In the last decade, the economic literature of developed countries recorded a genuine revolution in terms of costing. Given the context of the major transformations that occurred in the configuration of the current economic environment, the management process should provide solutions in order to keep the entity in the economic environment.

The classic methods are oriented towards the **past**, the provided information having an historic feature, without paying to much attention to forecasts. The real full cost of a product is determined after the whole process ends, after all the expenses related to this process were accounted.

Modern costing methods bring more to the art of costing and redefine a basic principle that should govern the activity of any entity, namely that any decision should be translated in terms of costs, and the costing method is important in substantiating efficient and operational decisions.

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<sup>37</sup> Mădălina Dumitru, Daniela Artemisa Calu, *Management accounting and costing costs*, Contaplus Publishing House, Ploiești, 2008, p.235.