

COMPARATIVE ANALYSIS FOR THE PRACTICAL PRACTICE OF COST CALCULATION

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Abstract: *Basic topic of our treatise is to introduce the system of cost calculation. Our reason for choice of this topic is that, in the economic environment of today, it is very important for a production company to have the most possible accurate knowledge about costs of the activity. This informational demand emerges in case of more and more managing entities since the cost cutback is often the only tool for retaining the competitiveness – of course, within certain frameworks. There is a frequent question among the corporate owners and management: "How could our costs be cut – even if only to a small extent?" One of the devices is the moderation of the activity costs, in order to do this it is essential to know how much the production of the unit of product costs for the company, that is to say, how many its first cost is. Our goal is to aim the attention at values and importance of the management information system as well as information obtained during determination of the cost, the differences in results of the individual cost calculation methods and the reasons of differences. In addition, our intention was to know and acquaint a complex cost calculation procedure in depth during which we endeavoured to form a system theory of a kind.*

Keywords: cost calculation, costing using equivalent units, activity-based calculation

JEL classification: M41

1. INTRODUCTION

It is growing evidence that the enterprises, without applying the managing accounting, are not able to solve the problems connected with costs and expenditures effectively (LAAB, 2010). The undertakings are not able to take actions in time without knowledge of the reasons of problems and the points of intervention; this can lead to deterioration of their market position and could incidentally be fatal in case of the functioning. It is required to think in a future-oriented way and make rapid but well-grounded decisions for the long-term perpetuance and the successful operation (BECISKY-NAGY - DROPPA, 2015); its sole device is a well-structured management information system.

The considerable transformation in the current cost structure makes its effect felt more and more keenly. While the general costs had a less importance in the 19th century then these ones are already decisive within the total cost in the 21st century (BODA-SZLAVIK, 2010). Shrinkage of the corporate direct costs derives from appearance of the "new" informational or knowledge-based society. The other important issue is the structure and accountability of the resources. Instead of the traditional resources, the information and the competence become the key to success; their value will be revaluated increasingly (BÓCSKEI, 2013). However, these ones are difficult to manage or cannot be managed at all by the previous methods which require the establishment of new requirements and elaboration of new solutions (KAPLAN-COOPER, 1998).

Moreover, other social and human limits need to be demolished. Today in Hungary, an

adequate importance is still not attributed to incorporation of the managerial accounting into the corporate processes (KARDOS et al, 2007). The Hungarian society's attitude, fears and reservations relating to the changes and novelties already hampers the establishment of managerial accounting, managerial informational system within the corporation, let alone the introduction of newer, more modern cost accounting methods (LAAB, 2011). This phenomenon is especially typical within circle of the small and medium-sized corporations where, beyond the mentioned obstacles, the establishment of a managerial informational system is often not performed due to financial difficulties (SINKOVICS, 2007). However, the goal of this kind of informational system is just to eliminate, moderate the financial difficulties and to improve the performances (ZARDA, 2009).

2. MATERIAL AND METHOD

We demonstrate the determination of first-cost of the produced products through two methods then, based on the obtain values; we examine which one of the two methods is more effective. We compare the results to the accounting prices. After deducing the two methods, we examine the rate of the allocated costs within the total cost then, analysing the methods separately, we examine the first-costs calculated in the single phases, their relation and differences compared to each other and the reasons of differences. Finally, we compare results of the first and the second methods with each other as well as we view their differences compared to the accounting prices.

The corporation providing data to this essay performs more activities in parallel. During the cost calculation system, we take the activities, products strongly interconnected with the live animals. Since the production of the necessary fodder and eggs is also performed within the corporation thus we calculate the first-cost of these products as well.

3. RESULTS AND VALUATION

Costing using equivalent units

At first, we determined the rate of the direct and indirect costs as well as the equivalent numbers. The income statement prepared through a classification of expenses by function contains the sum of the direct and indirect costs (CZIPSZER, 2002). According to it, 96% is deductible from the total costs and 4% was an overhead. Configuration of the equivalent units happens based on the accounting prices used in the corporation.

Then, it was needed to divide the costs according to whether they have an overhead content. Certain expenses fully contained economic overheads. A more larger rate was represented by the costs which included both direct and indirect costs such as energy and utility charges. During the dividing, by means of the equivalent units, we determined each product's quantity stated in lead product, that is to say, we multiplied the original quantities by the equivalent numbers then we divided their amount by the above-calculated cost ratio to be partitioned. As a result, we obtained that how large cost of a given expense is for one unit of a lead product. And then, the costs for the other products could also be determined through multiplying the cost unit by the equivalent numbers. After the dividing, a summary of the obtained cost units was the next step.

At time of determining the actual first-cost, we firstly charged the cost of the single crops on the duck feed and goose feed – in rate of their accounting prices. By adding this expense to the feed costs determined previously, we obtained their actual first-cost. And we distributed this feed cost on each age group of the live animals then the costs increased in this way were charged on the single live animal age groups with regard to the egg costs (HANYECZ, 2006).

Activity-based calculation

The other method, which we used for determining the first-cost, was the activity-based calculation. This is the method which is currently applied by the corporation. In order to determine the first cost as accurate as possible, it was required to divide those overheads about which is known that they can be charged on the single activities by means of the proper projection base (VERO, 2004). On this basis, the cost calculation process can be compartmentalized into nine phases:

1. Allocating the overheads of machine operation by means of the proper projection bases. Determination of the projection bases was performed according to the waybills (hours of operation and the kilometres travelled) continuously kept.
2. Allocating the costs of sector. For dividing these ones, determination of those projection bases was also required which were the days spent in machine and the feeding days.
3. Determining of the first-costs of crop production in reference to one unit of each cultivated plant variety.
4. Calculating the cost of duck feeds, goose feeds and other feeds produced in a mixing plant.
5. First-cost of the breeding animals: determining the animals in the breeding stock, more precisely the firsts costs of the eggs.
6. Dividing the indirect costs occurred in the hatching plant. Division of the costs happens between the duck eggs and the goose eggs. We use costing using equivalent units during the cost allocation where the equivalent number of the duck egg is 1 and of the goose egg is 2. The cost determined in the previous step is the basic material cost of a baby animal while the hatching cost is its cost of production.
7. Determining the first costs of baby ducks and geese. As I mentioned before, the first-cost of a baby animal is composed of two parts: the basic material cost i.e. the first cost of an egg and the hatching cost.
8. Determining the first-cost of ducks for sale as well as reared and weaner geese. Here, except the first cost of a baby animal, we already take all costs incurred into consideration which are related to the animal husbandry. We divide the obtained total cost by the number of pieces.
9. Calculating the first cost of animals for breeding. This is not a recent age group but a livestock kept with the ducks for sale as well as the reared and weaner geese in parallel.

Comparative analysis of the results obtained

In case of the costing using equivalent units presented at first, we divided 95.5% of the total cost recorded by expenses for the single cost holders. If we multiply the actual first cost obtained as a final result by the number of pieces then the result will be 6 367 255 052.48 HUF which shows the total amount of the products produced. If we do this calculation with the data obtained during the activity-based calculation then the result will be a much more higher value, namely, 10 609 413 848.19 HUF. This amount is the same as the sum of the allocated costs because, in this case, the costs were already "put in their place", that is to say, each factor in the class of accounts No. 7 is recorded on account of the appropriate cost holder. It was not possible in case of the accounting using equivalent units therefore a correction of the first-cost was needed after performing the calculations. Difference between the 6.4 million HUF mentioned above and all the allocated costs is given by that the amount of 6.4 million HUF contains cumulative costs actually because, for example, we already carried the costs of plants' cultivation forward to the single feeds at the beginning. So, it is important to emphasize that this amount states only a value, the value of products possessing by the corporation, since the plants and feeds mentioned before can simultaneously be found in each year. Similarly, the eggs and the single age

groups exist side by side, not distanced from each other.

Sheet 1 shows the calculated first-costs and their deviation from the accounting prices.

Sheet 1: First-costs and account prices of the products

Serial number	Description	Quantitative unit	Accounting price	First-cost		Difference	
				1st method	2nd method	1st method	2nd method
1st	Silo maize	HUF/kg	7,00	13,32	3,46	90,24%	-50,57%
2nd	Fodder wheat	HUF/kg	46,00	87,51	77,73	90,24%	68,98%
3rd	Fodder maize	HUF/kg	45,00	85,61	43,73	90,24%	-2,82%
4th	Fodder oats	HUF/kg	45,00	85,61	201,76	90,24%	348,36%
5th	Sunflower	HUF/kg	90,00	171,21	75,36	90,24%	-16,27%
6th	Duck feed	HUF/kg	73,82	10,35	69,88	-85,98%	-5,34%
7th	Goose feed	HUF/kg	70,45	9,87	68,18	-85,98%	-3,22%
8th	Duck egg	HUF/pc	80,00	52,24	60,67	-34,70%	-24,16%
9th	Baby duck	HUF/pc	136,00	134,21	105,06	-1,31%	-22,75%
10th	Duck for sale	HUF/pc	779,49	654,49	712,61	-16,04%	-8,58%
11th	Young duck for breeding	HUF/pc	4 361,03	3 039,69	4 485,81	-30,30%	2,86%
12th	Goose egg	HUF/pc	324,00	168,91	357,15	-47,87%	10,23%
13th	Baby goose	HUF/pc	550,00	500,04	567,74	-9,08%	3,23%
14th	Reared goose	HUF/pc	927,32	1 170,15	932,53	26,19%	0,56%
15th	Weaner goose	HUF/pc	2 238,64	2 640,57	2 108,69	17,95%	-5,80%
16th	Young goose for breeding (Golden G.)	HUF/pc	6 656,28	5 310,07	4 738,08	-20,22%	-28,82%
17th	Young goose for breeding (Lippitsch)	HUF/pc	12 083,95	9 232,27	11 085,97	-23,60%	-8,26%

Source: Own calculation based on data of the examined corporation

For the cultivated plants, the second method has brought a more accurate result, with one exception. In case of the fodder oats, the difference at the costing using equivalent units is slightly higher than 90% compared to the equivalent number but it still approaches better in comparison with the 384.36% defined in the second case. The actual value of the differences is 40.61 HUF as well as 156.76 HUF. We obtained the best result in case of the fodder maize – 1.27 HUF –, with less than 3% deviation.

In point of the duck feeds and goose feeds, the activity-based calculation resulted in better value as well. The differences are 5% and 3% compared with the accounting prices. By means of the costing using equivalent units, we obtained less than 15% of the accounting price as a first cost. Its reason was that we immediately charged the amount exceeding the 1 billion HUF of the purchased materials on the live animals since we had no information whether it is mixed into the feed so whether it forms the basic material of the feed or not, namely whether it is an independent product.

During determining the costs of the duck eggs and goose eggs, the second method proved to be more reliable as well. By the costing using equivalent units, we obtained a value more lower than the accounting price in spite of that we also took the hatching costs into consideration during this step. If we had taken the hatching costs into consideration not in case of the first costs of eggs then the first costs would have been even more lower but the difference in case of the baby animals would have appeared in this way as well. In case of the activity-based calculation, the first-cost of an egg includes the basic material cost; the hatching cost enlarged the first-cost of a baby animal. That is to say, the hatching cost is added to the expenses of an egg which together form the base of the production cost of a baby animal.

During allocation of the breeding animals' cost, the activity-based calculation took just the following things as a starting point: quantity of the own produced eggs and the costs incurred to this end. This was possible because the quantity and cost of the purchased and own produced eggs were available in the statements. There was no possibility for this correction in case of the first method. During allocation of the hatching cost, we took the total quantity – own produced and purchased – of the eggs into consideration in both cases.

We can see, at time of examining the first-costs of the live animals, that we obtained a good result by applying the first method, in contrast to the preceding. Moreover, in case of the baby ducks, this determined the costs more accurately than the activity-based calculation. The costing using equivalent units gave the first-cost of a baby duck with a slightly more than 1% difference while this divergence reaches almost 23% in the second case. In case of baby geese, the situation is already not such favourable but the values obtained here is also acceptable.

In case of the other live animals, the second method resulted in a more accurate first-cost, with one exception. In case of the Golden Goose-typed geese, both methods calculated the first-cost with a big difference, but the first one showed only 20.22% in comparison with the 28.82% of the second one.

It can be observed that the longer the elapsed time is, the higher the cost of each age group is. Of, course, the older an animal is, the higher the amount of the feeding and other husbandry costs is.

4. CONCLUSIONS

In case of most products, the activity-based calculation produced more accurate results. However, the first-costs determined by the costing using equivalent units are not negligible as well. It is worth determining the first-cost of each product by means of more methods in parallel since the individual methods can result in different outcomes and successes. During the first-cost determination, the application of other methods and their combinations are to be considered as well. In case of the costing using equivalent units presented firstly, like the depreciation charge for example, the simple costing can provide a more realistic image about the single product's loadability with expenses.

We can improve the results of the activity-based cost calculation and we can obtain additional information insofar as we also think over the application for a more developed version of the time-controlled activity cost calculation. According to it, the determination of

the activities' costs starts from the time spent on it. It is worth examining that, for example, in case of the reared and weaner geese, how the costs change when if there is not enough capacity to carry the animals to the slaughterhouse in time. This time, the managements can calculate with two alternatives if they do not want to sell them alive: either they can hire another corporation to perform the cut or they will keep the animals until enough capacity is available in their own abattoirs. It is essential to examine the cost commitment of these two options because keeping the animals further can increase the first-costs while the cutting cost will already form a part of the processed products' cost unit.

Task of the controller as well as the corporate management is to carry out an analysis and evaluation procedure meeting the informational requirements during which they explore the problems as well as the deficiencies and they work out action alternatives for the elimination (KÖRMENDI-TÓTH, 2011), . The analysis should be started already at the beginning, at cost of the eggs. In our opinion, the essential question in here is the following: Should we purchase it or should we produce it by ourselves?

Cost calculation system of the investigated enterprise meets the requirements of today; it provides information about each phase of the production process, allowing them to recognize the problems in time, to determine the intervention points and to respond immediately. The allocatable parts of overheads have fully charged on the cost holders so the expenses accounted and projected on them provide a reliable real basis for the managerial decisions. It was possible because records of the corporation are sufficiently detailed; these ones provided an appropriate starting point during the cost allocation.

References

1. Boda Gy. – Szilávik P. (2010): Stratégiai megfontolások és kvalitatív módszerek érvényesítése a döntéstámogató vezetői számvitelben. Vezetői számvitel módszertani füzetek. I. évfolyam. 5. szám. 15-28.
2. Czipszer K. (2002): Onkköltség-számítás. VERZAL-KONZULT PRESSZ Kft., Budapest, 116
3. Becsky-Nagy P. – Droppa D. (2015): Cash flow kimutatások a controlling szolgálatában CONTROLLER INFO 2015/2 kézirat
4. Böcskei E. (2013): Stratégiai vezetői számvitel, mint a kis- és középvállalkozói szektor lehetséges útja. CONTROLLER INFO 11: pp. 9-14. (2013)
5. Hanyecz L. (2006): A controlling rendszere. Saldo Kiadó, Budapest, 291 p.
6. Kaplan, R. S. – Cooper, R. (1998): Cost and Effect, Harvard Business School Press, USA, 79.
7. Kardos B. – Sztanó I. – Veress A. (2007): A vezetői számvitel alapjai. SALDO, Budapest, 279
8. Körmendi L. – Tóth A. (2011): A controlling alapjai. Saldo Kiadó, Budapest, 218. p.
9. Laáb A. (2010a): A vezetői számvitel új útjai, „Pénzügyi mágiák - Pénzügyi kiutak” konferencia 2010. szeptember 30. - október 1. Nyugat-magyarországi Egyetem Közgazdaságtudományi Kar. Sopron.
10. Laáb A. (2011): Döntéstámogató vezetői számvitel. Complex Kiadó, Budapest, 381 p.
11. Sinkovics A. (2007): Költség- és pénzügyi controlling. Complex Kiadó, Budapest, 292 p.
12. Verő I. (2004): A költségelszámolás lehetőségei. UNIO Kft., Budapest, 345 p.
13. Zárda N. (2009): A vezetői számvitel alkalmazásának fejlesztése a magyar mezőgazdasági vállalkozásoknál. Doktori értekezés. Szent István Egyetem, Gödöllő, 143 o.