USE OF COMMON COSTS ALLOCATION METHODS BETWEEN OUTPUTS THAT PRODUCED IN A SINGLE MANUFACTORING PROCESS

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Annotation

Article proved the necessity of cost allocation in production that simultaneously produced several types of products. The methods of cost allocation between types of outputs that produced in a single manufacturing process were considered. The using methods of common costs allocation in Ukraine and countries with Anglo-Saxon accounting system were analysed. The expediency of using of analysed methods of common costs allocation is grounded. Authors determined that use of methods of allocation of common costs establish the company.

Keywords: accounting, prime cost, common costs, costs allocation, joint products.

Introduction

In manufacturing process may be simultaneous production of different outputs. In petroleum industry in a single manufacturing process get petrol, gas, kerosene, fuel oil; in wood industry obtain boards, sawdust, bark, wood chips; in agriculture from perennial grasses receive hay, straw, seeds, green mass, from dairy cattle breeding – milk, offspring, from sheep – wool, lambs, live weight gain, milk. For the calculation of production prime cost the common costs should be distributed between its types for specific methods.

To research of questions about calculation of production prime cost and allocation of common costs devoted works of many scientists, in particular: M.Y. Demyanenko, P.T. Sabluk, G.G. Kireytsev, V.M. Zhuk, U.Y. Lytvyn, P.Y. Khomyn, V.S. Sowinski, M.Z. Pyzenholts, A.P. Varava, C. Drury, C.T. Horngren, G. Foster and others. However, their critical analysis, assessment of advantages and disadvantages in the economic literature do not provide sufficient.

The aim of the article is analysis of common costs allocation methods between outputs that produced in a single manufacturing process used in Ukraine and other countries.

1. Necessity of cost allocation

In conditions when in the manufacturing process simultaneously receive several products, it is difficult to calculate the prime cost of each of them. The problem with this is that costs differentiate between joint products in the manufacturing process it is impossible to a certain point, called the split-off point. For example, it is impossible to determine what amount of expenses relate to grain and straw during the crops growing. After the split-off point costs relate to the production of each product.

In the case of single manufacturing costs for it account to reach the split-off point. Subsequent costs arising after the split-off point include to a specific object (Figure 1).

For example, when growing herbs common costs are pre-tillage, sowing, cost of seeds and so on. The following costs relate directly to the relevant products: hay, green mass, seeds.

Different methods are used for allocation of common costs between products in case of single manufacturing. The method depends from characteristics of production technologies, adopted on-farm economic relationships and goal pursued by management personnel.

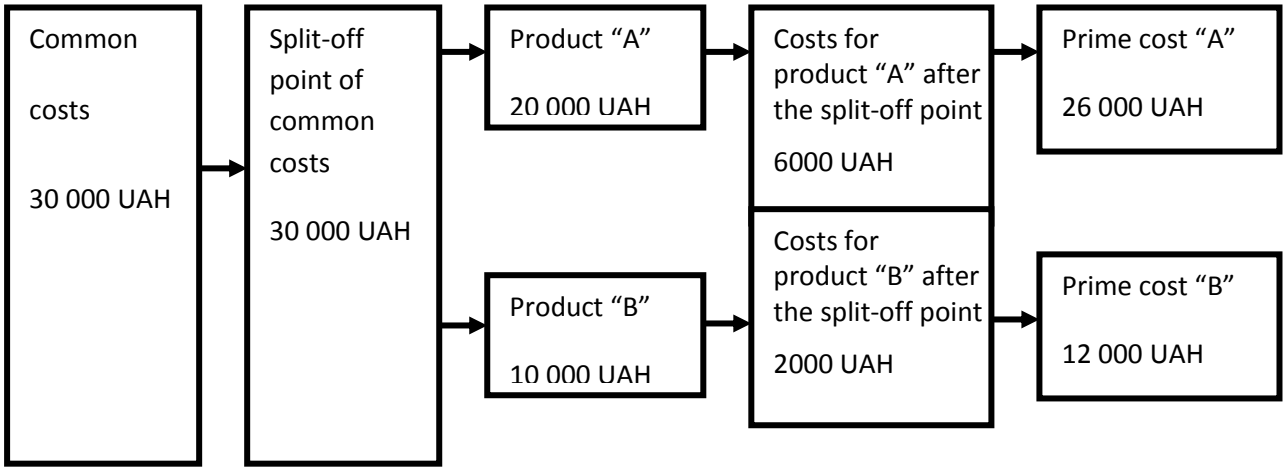

Figure 1. Cost calculation in case of joint production

2. The using of cost allocation methods in countries with Anglo-Saxon accounting system

In countries with Anglo-Saxon accounting system formed such methods of allocation of common costs: physical measure method, sales value at split-off method, net realizable value method, constant gross margin percentage method [1; 7].

The physical measure method provides the allocation of costs to each type of product in proportion to its share in the total volume of manufactured products. Its application is possible in case, when products measured in the same physical measures (e.g., liters, kilograms, etc.).

Despite its simplicity, this method is useful in cases where products are similar and have approximately the same production technology. If you need to allocate costs between different types of products, which are measured in different measures – some in litres, others in kilograms, it is necessary to transfer such measures to a single base (e.g., kilograms) and then carry out the allocation of costs.

The sales value at split-off method is analogous to the method of costs allocation according to cost of products at sales prices used in Ukraine. The costs for this method are allocated in proportion to the revenue from the sale of each product to the total revenue from the sale of all products.

The method of net realizable value provides the allocation of costs on the basis of their relative net realizable value at the split-off point. The split-off point is the point at which it is possible to separate costs for production of certain products. For this method determine the estimated selling price of each type of products at the point of separation. To define it is necessary from realizable value of each product deduct all costs that relate to these types of products after the split-off point: additional costs for further processing, selling costs and other costs associated with production of each product. Then you need to know the share of each product in the total net realizable value. For these shares distribute total costs between each type of product.

The constant gross margin percentage method provides the assessment of each product as the difference between sales proceeds and profits, which is defined as the same percentage of revenue for each product minus costs for further processing.

For this method first determines the amount of revenue from the sale of all types of products together, and then the total profit as the difference between total revenue and total costs (21000,00 – 14000,00 = 7000,00). By dividing the total profit on the total revenue

determine the profit share in revenue (7000,00 / 21000,00 x 100% = 33,33%). This share take equal for each type of product in revenue (sales price) and thus determine the profit for each type of product. By subtraction from the revenue of profit, additional costs for processing and selling obtain value of products.

This method based on approximate calculation of the profits from each type of product, which take to be equal for all products. However, it does not take into account the fact that some products bring different profits, and some even may be unprofitable.

3. Characteristics of methods of allocation of common costs used in Ukraine

In Ukraine [3; 4; 5] use such methods to allocate costs between the main types of related products:

1. Simple;
2. Accumulation (summation) costs;
3. Excluding of costs production;
4. Conversion to the main products (coefficient);
5. Proportional;
6. According to cost of products at sales prices;
7. According to installed base;
8. Assessment of costs for certain types of products by expert way and expressing them in specific relative indices;
9. Standard.
10. Combined.

The simple method (or the method of direct calculation) is used in industries with simple process with no work in progress. This method use in particular small businesses that do not have separate production units. In these industries clearly demarcate cost on production of each type of product. To determine the prime cost in terms of mass production of homogeneous products it is necessary the total cost on production of outputs divide on their number.

The method of accumulating (summation) costs includes all costs incurred for the manufacture of products. At the same time costs are accounted for separate their types, stages, processes. The costs in this case associate with each individual product (stage, process) at the time of their occurrence.

The method of excluding costs of production use in cases where simultaneously with the basic products get also by-products. To determine the prime cost of main products, it is necessary from the total costs exclude cost of by-products, estimated by a certain method (for example, by calculated and normative prices). This method is prevailing in agriculture.

Method of conversion to the main products (it is also called a coefficient) use for the assessment of several types of by-products. In this case one of its type take as a conditional unit, and other products on the basis of specified coefficients equal to it. As a result determine the share of each type of product by factors and costs allocate according to the share of each product. Coefficient method often use on farms, particularly in dairy cattle breeding for cost allocation between milk and animal yield, in sheep – for cost allocation on sheep maintenance between wool and increase in live weight.

In the proportional method the costs allocation between different types of products made in proportion to quantitative value of one of features that are common to several types of products obtained (for example, proportional to the number of content in them of full grain, nutrients, etc.).

To transform heterogeneous products into unified standard units apply coefficients. On the basis of them then carry out the cost allocation.

The method of allocation of costs according to cost of products at sales prices provides using them as a basis for cost allocation. To do this, it is necessary divide the total costs to the total amount of sales. Thus, we determine the rate, which means how much costs relate to 1 UAH of products sold. Multiplying the selling price of the particular type of product on the rate, allocate costs to the appropriate product type. This method makes it possible to associate most accurately costs with the selling price of each product. However, its use is complicated in conditions of inflation. Zbarskiy V.K. notes that for the value estimation use selling prices. The value estimation of the products with obvious advantages – universality and simplicity, has significant analytical shortcomings. The process of reproduction in market conditions is accompanied by inflation, devaluation of the hryvnia and the corresponding rise in prices [2]. This disadvantage obviates in a stable economy.

In case of using the method of cost allocation according to installed base, it is necessary to choose such base that would provide a cause-effect relation between costs and certain types of products. Bases for cost allocation can be used such as in the allocation of indirect costs. P(s)A 16 "Expenses" provides the following bases for allocation of indirect costs: hours of labor, wages, volume of activity, direct costs [6]. Research show that in plant growing it is reasonable to use base of costs allocation in proportion to direct wages.

Method of cost allocation through the assessment of costs for certain types of products by expert way and expressing them in specific relative indices use in conditions when the distribution of costs is difficult. Therefore, the examination is being conducted to assess the costs of certain types of products and their conversion to relative numbers.

Example 1. By expert way determined that from the total amount for the maintenance of main flock of sheep relate to the prime cost of the offspring of lambs in roman sheep – 12%, karakul – 15% and in all other directions – 10%.

Example 2. To determine the prime cost of one centner of corn grain the grain reception centers transfer corn ears of full maturity in dry grain for the actual grain yield from the corn ears by the threshing average daily samples taking into account the basic moisture content of the grain in corn ears, which is taken at 14%.

Standard method of cost allocation provides the allocation of costs between different types of products on the basis of standards. For example, for calculated and normative prices determined the value of by-products, wastes, which deduct from costs for production of main products, when calculating the prime cost of production.

The combined method of cost allocation is a combination of several methods of allocation of common costs, when determining the prime cost of certain products.

For example, the method of excluding of costs production can be combined with such methods: conversion to the main products (coefficient), according to cost of products at sales prices, according to installed base, assessment of costs for certain types of products by expert way and expressing them in specific relative indices.

The allocation of common costs arising from the manufacture of certain products should carry by one of the methods used both in Ukraine and other countries. The company can select any of them based on goals set for such allocation. The choice of method does not affect on the overall financial results, but only redistributes costs between different types of products.

Conclusions

1. In production process, when jointly manufactured several types of products, it is difficult to calculate the prime cost of each of them.

2. The company can choose any of calculation methods for allocation of common costs, depending on goals set for such distribution. For allocation common costs can be used the

following methods: simple, accumulation (summation) costs, excluding of costs production, conversion to the main products (coefficient), proportional, according to cost of products at sales prices (or sales value at split-off method), according to installed base, assessment of costs for certain types of products by expert way and expressing them in specific relative indices, standard, combined, physical measure, net realizable value, constant gross margin percentage.

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