

Calculation of Prime Cost of Animal Production by Means of ABC Method

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Abstract—One of the most important problems is a timely and accurate taking into account the expenditures and production outcome. The following things depend on the quality of this accounting information: cost formation, compensation for costs, the income of the enterprise and the quality of the released production improvement.

In this connection the problem of expenditures management accounting system of creation in agriculture is extremely urgent for native scientists.

The article presents the methodologies of prime cost calculation of animal production by means of traditional method and ABC method and also studies perspective introductions of ABC method into the practice of agricultural enterprises.

The carried out research helped to make the following conclusion: during ABC method use some difficulties can appear, which are connected with the groups determination of processes of production, expenditures drivers. As this system is not widely used and there are no created methodical recommendations, it can lead to incorrect processes and expenditures drivers distribution, distortion of prime cost of the production. However, in case of a competent approach, this method use would lead to more precise result achievement concerning the expenses and it would help the directors to make more reasonable managerial decisions.

Keywords—*management accounting; prime cost; expenditures; ABC method; calculation; methods of expenditures accounting*

I. INTRODUCTION

Forming the system of management accounting at the enterprise provides competent estimation of current state, the dynamics of development determination and also helps to create the complex of events, which provide the effectiveness increase of the realized activity, based on timely strategic decisions making.

It is impossible to state which of the existing methods of expenditures calculation and prime cost determination is the most accurate and optimal for use. It is necessary to take into consideration the fact, that for

managerial decisions making the most effective is considered to be accountancy prepared on the basis of marginal analysis of prime cost calculation.

II. LITERATURE REVIEW

Konstantinov V.A. (Konstantinov, V.A. (2013)), Shefer A.A. (Sheffer, A.A. (2015)), Usatova L.V. (Usatova, L.V. (2008)), the supporters of marginal gain and prime cost calculation, claim that constant costs distribution is realized on absolutely voluntary basis, so such information can't be used during management decisions making. The method of total costs absorption doesn't contain useful information for management staff, it can even disorient.

Sorokina V.V. (Sorokina, V.V. (2017)), Bengardt M.V. (Bengardt, M.V. (2011)) have another point of view. They prefer the method of production cost calculation. The authors say that production is impossible without constant production expenditures, which are unprofitable in terms of the main product, however during prime cost calculation one shouldn't ignore them.

One of the most interesting directions during prime cost calculation of the product is ABC method use. The method is based on taking into account the expenditures according to the functions. The founders of this method are Cooper R. and Kaplan R.

The distinctive feature of the method is overhead expenses distribution not according to the kinds of the produced production, but according to the fulfilled during production actions. It was the reason for the name of the method - Activity Based Costing.

Traditional approach to prime cost calculation in the system of accounting means that final product should include constant and alternating expenses.

ABC method takes into account the usefulness of information for making decisions by the directors. Cost driver is the fulfilled action, which presents the definite fulfilled function, concerning the definite kind of activity.

ABC method helps to find not connected with the volume of production base for overhead expenses distribution.

However, at agricultural enterprises this kind of accounting wasn't widely used. It is connected with the fact that there are no general created recommendations concerning management accounting introduction into agrarian sector.

The problems of management accounting formation at enterprises of agrarian sector are studied in scientific works of the following scientists: M.A. Vakhrushina (Vakhrushina, M.A. (2012)), V.B.Ivashkevich (Ivashkevich, V.B. (2011)), N.N. Karzaeva (Karzaeva, N.N. (2014)), E.I.Kostyukova (Kostyukova, E.I. (2014), (2015)), V.G. Shirobokov (Shirobokov, V.G. (2010)).

III. RESEARCH METHODOLOGY

As it was mentioned above, enterprises, including agrarian enterprises, face great volume of overhead expenses, which can be connected with the following:

- material values movement;
- resources provision into production;
- the quality of production provision;
- consumers' needs satisfaction and etc.

ABC method helps to avoid mistakes, connected with traditional distribution of indirect expenses proportionally to general for all subjects of economic activity base (labor and work time inputs, the volume of productive production, the volume of receipts from sale). More progressive technologies application in production provides the part of direct costs decrease in terms of simultaneous increase of indirect costs. An integrated algorithm of indirect costs connection with the prime cost distorts real state, creating the effect of high profitability according to the products, which in reality are not the one.

Prime cost of production calculation by means of the traditional method and ABC method was realized on the materials of public corporation "Yuzhnoe" of Rossoshansk district of Voronezh region. This enterprise is a great owner of Rossoshansk district of Voronezh region, which specializes in milk production.

The main difference of ABC method is productive overhead expenses accumulation not at districts (operations), but on the process (subdivisions), with further distribution according to the kinds of productions, used in these operations.

ABC-Method use in public corporation "Yuzhnoe" provides the use of expenditures driver according to each productive process. Processes, not connected with directly with the volumes of production, include expenses connected with equipment use, production transportation to the places of

storage, transport repair, amortization of equipment, control over quality of production.

First of all, the kinds of activity, which increase the added value of production, are identified. For example, in the analyzed organization, which specializes on animal production, the following kinds of activity are defined: labor of the workers, buying feed-stuff and materials, equipment setting and repair, production gathering, the quality of production check.

Secondly, cost drivers for each kind of activity are defined according to the content and quantity.

The most difficult and responsible moment is complex operations decomposition into the fulfilled actions, which give an opportunity to use different cost drivers for the components of the fulfilled action. Manyeva V.A. (Manyeva V.A. (2011)) defines cost drivers as follows: the number of material resources supply, the number of products quality checks, number of equipment tune-ups and others.

TABLE I. CORRELATION OF EXPENSES AND THEIR DRIVERS IN ANIMAL HUSBANDRY

Expenditures	Cost drivers
Feed-stuff	Transportation to the farm; giving animals food
Wage with allocations	Cleaning; enclosures charging ; food giving; veterinary inspections;
Means of animals protection	Number of vaccinations; veterinary inspection
Fixed assets content	Amortization; equipment adjustment; equipment checkout; equipment support;
Works and services	transportation; ventilation;
Production organization and control	Recalculation of animals; quality of products control;
Expenses connected with animals mortality	expertise; utilization;
Other costs	rent; functional specialists' consultations; insurance

IV. RESULTS

The created system of drivers helps to define the reasons for overhead costs appearance, their cost estimation and also define the moments for managerial decisions making. Drivers, as the cost drivers, increase the level of validity of the made managerial decisions, as they answer several questions: Which resources were used in production and Which working operations were used during this process?

TABLE II. EXPENDITURES GROUPING ACCORDING TO COST DRIVERS

Costs accumulation according to processes	Cost driver	Process expenditure s, rubles	Число операций		
			Milk	Mass increase	Total
Equipment amortization	Number of main means use	6986917	240	149	389
Transportation	Number of batches	3189000	67	45	112
Materials transportation to the farm	Number of deliveries	2111245	98	14	112

Equipment adjustment	Number of adjustments ,units	8184200	225	53	278
Control over products quality	Number of control operations	1245784	30	5	35
Total costs		21717146			

Thirdly, expenditure pools are formed according to kinds of activity, which are divided into components (cost components) according to the type of spend resources (materials, labor, outlay on cars and equipment and others).

At the 4th stage we calculate the rate of cost driver for each kind of activity by its sum ratio to the volume of this driver. Division of cost pools into homogeneous components according to the kinds of activity becomes the base for the rate calculation for each component of the costs.

TABLE III. RATES OF DRIVERS CALCULATION ACCORDING TO PROCESSES

Costs accumulation according to processes	Common cost according to process, thous. rubles.	Number of parameters according to each kind	Driver cost, thous. rubles.
Equipment amortization	6986.92	389	17.96
Transportation	3189	112	28.47
Materials transportation to the farm	2111.25	112	18.85
Equipment adjustment	8184.2	278	29.44
Control over products quality	1245.78	35	35.59

At the 5th stage costs are distributed for production management, in terms of preliminary set amount of cost drivers for each unit of this kind of product.

At the final stage calculation matrix of production cost is made, formed according to ABC method. For each kind of product costs are calculated as the product of the driver rate according to each characteristic into the number of this characteristic demonstration (table IV).

TABLE IV. PRIME COST OF ANIMAL PRODUCTION CALCULATION BY MEANS OF ABC METHOD

Expenses	Milk	Mass increase	Total
Direct outlays on materials, thous. rubles	27862.24	15025.19	42887.43
Outlays on wages, thous. rubles	16586.46	6816.12	23402.58
Production overhead expenses, thous. rubles			
Equipment amortization	4310.69	2676.22	6986.92
Transportation	1907.71	1281.30	3189.00
Materials transportation to the farm	1847.34	263.91	2111.25
Equipment adjustment	6623.90	1560.30	8184.20
Control over products quality	1067.82	177.97	1245.78
Total volume of costs	60980.26	27026.90	88007.16
Prime cost rub./t	1829.81	14586.04	x

V. CONCLUSION

During the methodology of prime cost calculation change of the main dairy herd it was possible to define overhead expenses on each kind of product production, which is difficult to get in terms of some other method use. Knowing the volume of overhead expenses according to each of the processes, it is possible to control them and find out the reason of over-expenditure.

In case of a competent approach, ABS method use would lead to more precise result achievement concerning the expenses and it would help to get great volume of information for managerial decisions making, constant production, business processes development and also gives an opportunity to manage overhead expenses.

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