

CAUSE-AND-EFFECT RELATIONS AND TIME INTERVAL IN REAL TIME ACCOUNTING ANALYSIS AT INDUSTRIAL ENTERPRISES

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Keywords: administrative accounting, real time mode, correlation -and-regression analysis, deterministic dependence, time intervals of analysis, controlled system operating mode, detailed real time accounting.

This paper considers the basic tendencies of the operative administrative accounting development on industrial enterprises in modern market conditions. The cause-and- effect relations are considered from the point of view of statistical methods of analysis.

In modern reality the speed of change of external conditions increases all the time. Therefore the methods of organizing administrative activity, making administrative decisions which are based on the retrospective and current analysis do not respond to the modern requirements of a sustainable company development in domestic and world market any more.

The variety of the markets of consumer goods and services shows that the strategy of penetrating into commodity market becomes more and more differentiated. The consumers are interested in goods with new consumer properties, and the speed of changing preferences of one property to another has considerably increased.

This factor is strengthened due to the growing competition when the manufacturers of similar production cannot compete in price range any more, indefinitely reducing the level of sales profitability.

The competitive struggle in non-price sector appears for the consumers between the participants of the market, where the main objective is a constant improvement and change of consumer properties. It compels manufacturers to introduce in the market in the shortest terms the new product which satisfies the demand of end users. As a result that leads to the reduction of product life cycles, and accordingly industrial-and-technological cycles. All this forces to make small quantity of goods, increasing the manufacture of differentiated production developed and made for special groups of consumers.

The operational administration in such tough conditions should provide mobile and flexible work of all participants of production in every workplace, administrative accounting should

cover the whole industrial-technological process up to separate technological operation. Thus time frameworks in which the analysis is carried out and administrative decisions are made under the influence of the above listed factors are as well constantly reduced, they tend to zero in present market situation. It leads to accomplishing operational administration in the company.

The purpose of administrative accounting is an operative economic estimation of short-term changes in production concerning the set program of development of corresponding operated economic system and maintenance of its effective functioning.

The peculiarity of cause-and-effect research in administrative accounting is that the information about any event should arrive in a mode approached to real time practically at the moment of its fulfillment. Therefore, for carrying out deep statistical analysis of production factors, there is no possibility to save up enough variations of events in production which is a consequence of the influence of these factors.

It is necessary to determine the difference of the methods defining cause-and-effect relationships in administrative accounting. The difference of methods is that the events which are essential for the range of effective signs during the certain moment of time and carrying out correlation-and-regression analysis can appear.

In the framework of administrative accounting we basically speak about stochastic dependence of a productive sign on a factorial sign when causal dependence is shown not in each separate case, but in general by the great number of supervision.

In administrative accounting it is necessary to speak about functional (determined) dependence when a certain value of factorial sign cor-

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responds to the certain value of productive time during a certain moment.

Organizing administrative accounting in manufacture, it is necessary to concentrate attention on two very important phenomena: cost price and volume of products release which are the basic productive signs to a great number of the factors making on their impact. They are a basis for profitability and production efficiency and are used as the basic indicators which come from subsystems of administrative accounting in the system of administrative account for the complex financial and economic analysis of enterprise activity.

Some equations are used in a system of administrative accounting for showing the dependence of industrial cost price, as productive sign, from factorial sign. Basically these are linear dependences:

$$S = m + U,$$

where M - the cost of used material;

U - payment for technical operation.

In turn two above-stated factors influencing the cost price, also have dependence on a number of factors:

$$M = p \cdot q,$$

where p - the price of material unit;

q - the quantity of material used for product manufacturing.

$$U = t_1 \cdot T,$$

where t_1 - labour input of manufacturing of a detail;

T - the tariff.

As a result dependence will become:

$$S = p \cdot q + t \cdot T.$$

In the process of analysis we should define two production factors which make a basis of product cost price: the quantity of material or raw material and labour input in manufacturing which concern relevant expenses.

The use of these two indicators allows us to use them in the administrative accounting as the basic firm making cost prices of each product. In this case directly main components are analyzed which make a big influence on the greatest effect, from the point of view of operational planning, taking into account the above-stated formulas.

It is also necessary to notice that the used concept of the industrial cost price in administrative accounting concerns not only with finished products, but also with the cost price of each accessory, at each stage of its processing. The material and raw materials are not always directly used in reception of a ready product, in mechanical engineering.

Taking into account that the end-product cost price can be calculated from the cost price of assembly units, they include the cost price of other products of work in progress which can undergo some intermediate stages of processing then cause-and-effect relationships at formation of the cost price of finished goods will look in the following way:

$$Sep = Spr_1 + Spr_2 + \dots + Spr_n,$$

where $Spr_1 = Spr_{11} + Spr_{12} + \dots + Spr_{1n}$ and etc.

In this case the formation process of the cost price of finished goods can be presented by the rout-and-technological scheme where we can see from what details the product consists of (see figure).

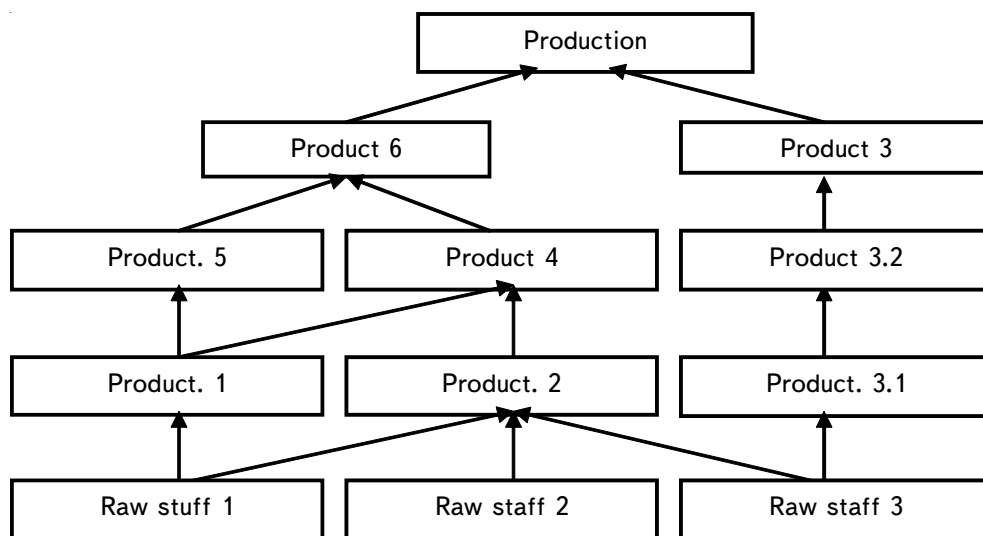


Fig. Flow-process diagram of product

The introduced scheme can become a model of structure of the organization of detailed administrative accounting.

The use of the method of detailed elaboration for administrative accounting is necessary for the purpose of timely definition of problem sites and workplaces in a mode of real time before this problem is reflected in finished goods. Detailed elaboration degree depends on several factors. First of all, it should correspond to the structure of industrial divisions of the enterprise, detailed elaboration should correspond to manufacture sites to their consecutive placing at products release. Another very important point defining degree of detailed elaboration, is technological process, it defines detailed elaboration in industrial sites which are connected also with the sequence of performance of technical operations on each workplace of a site. Definition of the points of technological responsibility and the analysis of variable expenses of each concrete workplace leads to the use of two major factors of formation of expenses in manufacture quantity of materials and labour input of process.

The choice of time intervals of the analysis of modes of functioning of operated system in the administrative accounting depends on the type and conditions of enterprise activity. For industrial enterprises the standard is report made in accordance with the criteria of retrospective analysis. In a general view this process of ideal operative analysis could be described with the derivative equation where the analyzed parameter is equal to a limit of the relation of an increment of function of the given parameter to an increment of an independent variable at aspiration of the last to zero.

$$y' = \lim_{\Delta t \rightarrow 0} (\Delta y / \Delta t),$$

Administrative accounting is targeted at an estimation of intermediate results of activity for short time intervals. It can be characterized as constant tracing of results activity - monitoring intermediate results or operative industrial management.

Operative industrial management is characterized by administrative personnel decision making in really developing or developed industrial situation. In these conditions the developed planned targets or decisions of heads should provide strict and accurate in time per-

formance order the planned works. Thus, administrative accounting is carried out on the basis of continuous tracking a manufacture course. The operative statistical analysis of time numbers carries out the following problems:

- ◆ Promotes the implementation of purpose facing the object, targeted at its complete achievement;

- ◆ Studies all causally-factorial relationships in the process of object functioning;

- ◆ Acts as a starting point of increasing the processing efficiency and consequently, the efficiency of research of objects as sources of time numbers;

- ◆ Promotes timely acceptance of organizational-technological, technical and administrative decisions;

- ◆ Shows new tendencies of object development and expansion of its possibilities;

- ◆ Establishes the reasons of deviations of the processes of functioning, etc.

Especially it is necessary to specify the impossibility in many cases to make the operative analysis of non-stationary time numbers in the process of receiving the information from object because of the necessity of preliminary accumulation of information on an investigated interval. In the administrative accounting basically it is required to analyze intervals of a time number of small duration.

The efficiency of the account is the timeliness of revealing short-term changes occurring in economic processes which threat to deduce operated system from the set direction and rate of development, or signals about the occurrence of the additional reserves allowing quickly transfer to a more effective mode of functioning. Such specificity of the operative administrative account excludes only one answer to the question.

It depends on a number of circumstances:

- ◆ From the content of operated economic indicators, their relations with indicators of naturally-material and other productions, frequency and size of change of these indicators and their influence on development of operated object as a whole;

- ◆ From necessity to predict separate forthcoming short-term changes for production and their economic consequences;

- ◆ the time for carrying out the operative analysis, developments and executions of the

operative decisions providing timely regulation of productions is required.

Administrative accounting can be effective if it is made, firstly, after accomplishing production process, but in optimum admissible intervals of time providing effective functioning of concrete manufacture and possibility of entering the corrective amendments in plans; secondly, before accomplishing the production for operative short-term forecasting, a prediction of short-term changes and their economic consequences for the purpose of developing the most economic variants of forthcoming changes in these processes and recommendations about their realization.

As a conclusion we can say that the peculiarity of administrative accounting for industrial enterprises are rigidly determined relationship of cause and effect between production factors and productive signs, and a small size of time interval during which the initial data for the analysis, and then and its results should be obtained.

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Received for publication on 24.07.2009