

# FORMATION OF HYBRID COSTING SYSTEM ACCOUNTING MODEL AT THE ENTERPRISE

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## ABSTRACT

*To obtain detailed cost information, a hybrid cost accounting system is needed that combines process and job-order methods, based on the accounting of normative (standard) and actual data, by distributing costs for direct and indirect ones, by allocating the variable and constant parts in indirect costs. The hybrid cost accounting system is based on a symbiosis of the principles and procedures of the cost accounting methods for the Process Costing System and Job-Order Costing system, combines them in accordance with the characteristics of the business and management policies, and increases the efficiency of enterprise cost management. The range of use of the developed cost matrix is quite wide, it can serve as budgeting of the standard costs of the raw cotton processing process and planned costs of the completion of the assignment (order) for the next reporting period, the generalization of actual indicators. A complete cost matrix with analytical cost detailing and the ability to compare standard (planned) costs is much more complex.*

**Keywords:** Hybrid Costing System, Process Costing System, Job-Order Costing System, Cost Accounting Methods, Cost Management.

**JEL Classifications:** M21, O16

## INTRODUCTION

In the management of the enterprise, the main role belongs to accounting, in which by the system of cost accounting and production prime cost calculation occupy a special place. Studying the history of the development of the cost accounting system as a whole and at the enterprise in particular and investigating the world experience of successful implementation of innovative methods in practical activities and the conditions for their effective functioning in domestic companies become especially relevant at the time of an adequate response to the challenges of the modern stage of civilizational development of the economic system in each country.

When designing a cost accounting system, the accountant is faced with a staggering number of methods and approaches to cost accounting and production prime cost calculation, the presence of which testifies to the long struggle of accountants for effective management of cost

information management. In fact, there are few, many more cost accounting systems that underlie these methods, or combinations, of the basic costing and costing methods.

When designing a cost accounting system, an accountant is faced with a staggering amount of methods and approaches to cost accounting and production prime cost calculation, the presence of which indicates a long struggle of accountants for the effective provision of cost information management. In fact, there are few basic methods for cost accounting and production prime cost calculation, there are much more cost accounting systems based on these methods or their combinations.

The scientific hypothesis of the study is the assertion that the evolutionary development of the cost accounting system occurs on the basis of heredity (the ability of the system to change its state in certain time periods to create possible options for future development), natural selection (the basis of competition and a tool for selecting the effective state of the system), and variability (the ability of the system to reproduce its characteristic signs and features in the chain of subsequent changes).

## REVIEW OF PREVIOUS STUDIES

Traditionally, job-order, redistribution, and process methods are distinguished in the national accounting school and practical activities. With that, the difference between the redistribution and process ones is not defined.

A study of foreign accounting theory shows that American and European colleagues use “*costing systems (calculation systems)*” or “*cost accumulation systems*”, which act as analogs of domestic cost accounting methods. So, Dale & Plunkett (2017), depending on the “*cost object*,” distinguish two types of costing systems: job-costing system (work calculation system) and process-costing system (process calculation system).

In the job-order method, accounting for the movement of production costs, that is, cost accounting in the remains of production in progress at the beginning and end of the period, accounting for increases and decreases in costs of production in progress for the period are carried out for each order in the context of calculation items (Larson & Gray, 2017; Garbowski et al., 2019).

When applying the process method, accounting for the movement of production costs (that is, cost accounting in the remains of production in progress at the beginning and end of the period, accounting for increases and decreases in costs of production in progress for the period) are carried out for the processes in the context of the product type. If production costs cannot be fully attributed to a single order or process, a combination of job-order and process methods is used (Shingo, 2019).

If the production process includes mass production and some individual elements, it is advisable to use a hybrid costing system or hybrid cost accounting. This situation was described by Drury, (2006) in case if it is impossible to classify cost accumulation systems in job costing or process costing. The cost of individual work (operations) is determined by the process method, and then the cost of the product types is determined by the job-order method. This cost accumulation system is called a batch/operating costing and is described as a “*combination of both the job costing and process costing systems*”.

Studying the approaches of domestic and foreign scientists to the methodological features of two basic cost accounting models allowed identifying the main factors for their identification:

Product uniqueness. Cost accounting for the execution of the production assignment (order) is used for unique products, cost accounting for processes for standardized ones (Drobyazko et al., 2019; Nesterenko et al., 2019).

Production cycle. Cost accounting for the execution of the assignment (order) is used for small production cycles, cost accounting for processes for large (completed) production cycles (Hilorme et al., 2019).

The complexity of accounting and documentation. Cost accounting for the execution of the assignment (order) requires deeper detailing, especially for projects or special orders, so it is much more complicated, time-consuming and requires more time than executing cost accounting for the processes of calculation items (Karaoglan & Karademir, 2017; Yelisyeyeva et al., 2019).

It should be noted that two basic models were formed at the beginning of the twentieth century, while modern production processes have a complex structure and the use of job-order or process methods cannot provide an adequate reflection of costs. Modern companies may not even realize that they are using a hybrid cost accounting system, they simply adapted their accounting system to the operational and technical requirements of their business process, which is considered as a whole.

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## METHODOLOGY

According to the goal, dialectic, evolutionary, historical, and systemic approaches have been used to study cost accounting methods; the abstract logical method for determining the most promising cost accounting methods for the enterprise in particular.

## RESULTS AND DISCUSSIONS

To develop the recommended cost accounting model, it is necessary to perform a simulation of the production process based on the design of the resource flow and cost data. The next step is to build the optimal cost accounting system for the prime cost calculation, and finally, the feasibility of implementing this model in the real conditions of operation of the enterprise under study should be verified.

The production simulation model is based on the decomposition of the business production process into simple blocks to better understand the conversion of resources into finished products for the Campus Cotton Club Trading House.

The main activity of the company Campus Cotton Club Trading House is the wholesale of pharmaceutical products, the production of pharmaceutical products under its own brand and for other customers.

From the point of view of cost accumulation, the production process is conditionally divided into two main blocks: the processing of raw cotton and the manufacture of products in assortment from it. The processing stage includes the processing of cotton in large volumes. The next block includes work, which is unique to both customer orders and individual batches of products manufactured under its own brand. It is for this type of production that a hybrid system

is the best option for a cost accounting system. The processing stage consists of several successive redistributions and processes a large amount of raw cotton. In such a situation, it is impossible to track the costs incurred for each specific ton of cotton. Therefore, it is most efficient to accumulate costs at the aggregate level for a large batch and then distribute them to 1 ton of processed cotton. This approach is based on the assumption that cotton processing costs are not differentiated, so there is no need to track cost data at the production unit level. The process cost accounting method accumulates costs during the reporting period and distributes to the production volume at the end, thereby determining the average cost of a production unit.

The costs of the process are divided into direct (material, labor) and indirect. Direct material costs are determined by the amount of raw cotton spent during the reporting period, estimated by the method of writing-off of the weighted average prime cost (periodic or constant). Other material costs and labor costs are accumulated during the entire production process, therefore they are taken into account in a different way than material costs. In this case, the standard costing system is the best option. The standard costs are written off in full (other material, for electricity, for labor) for all cotton that is released and processed during the reporting period. The costs in accordance with the availability factor are allocated for the volume of cotton that has not gone through the full processing cycle (work in progress). The deviation between the actual and standard costs is written off for the cost of the processed fiber.

The variable part of indirect costs is distributed similarly, based on the coefficient of the average level of completeness of the cotton processing. The full standard amount of indirect costs is written off for cotton, which went through a full processing cycle for the reporting period. The deviation between the actual indirect costs in the variable part and the standard one is written off for the cost of the processed cotton.

The development of a standard calculation will require a study of prior experience in applying regulatory cost accounting at the enterprise. The operations of each redistribution of the processing must be carefully measured and calculated. Engineering of production processes should be carried out by a technologist under the supervision of the chief engineer. The accountant of the production unit calculates, by the standard-cost method, the cost of 1 ton of fiber obtained as a result of the processing of raw materials as a joint production stage for several types of products. Using standard calculation for the processing is also advisable because of minor and unlikely changes in technology.

The opposite situation is observed with the second production unit. In practice, the calculation of the manufacture of products in the range is adapted to the specific requirements of the customer or market conditions for products under their own brand. Cost fluctuations are related to the performance of specialized specifications such as the degree of cleaning of cotton, the number of layers of cotton on hygienic sticks (tampons), the number of units in the package, and so on.

For the second block of the production process, it is suggested to use the cost accounting system for the assignment (order), which is intended to accumulate costs in individual units or production batches (orders). More attention should be paid on the features of cost writing-off. First of all, direct material costs include the cost of processed cotton obtained from the first production unit. The processed cotton is stored in the warehouse, the value of the released and used cotton is written off for the manufacture of a certain type of production, the remains of unused cotton are returned to the warehouse, and the production cost is adjusted by the "red-ink entry" method.

Electricity costs cannot be calculated in advance, so the best option is to record the actual machine-hours used with the subsequent calculation of the amount of costs included in the cost of production. Direct labor costs are also calculated and written off according to the performance of a specific assignment or order based on actual hours worked. To correctly attribute and write off costs, the assignment or order must be uniquely identified.

Unlike the process cost accounting system, the overhead costs in the variable part are not written off in the same amount but distributed among the cost pools according to a predefined methodology. For example, it is advisable to calculate depreciation of production equipment according to the production method and write off based on the actual time worked.

It is proposed to allocate a constant part of the indirect costs of the production unit (costs for production management, security, storage, etc.) between two blocks according to the Pareto principle, ie 80% of the costs should be attributed to the processing of raw cotton and 20% should be distributed between the cost pools according to the established distribution base. (number of hours worked, direct material costs, etc.).

The final step of a hybrid cost accounting system is to close the assignment or order. During the completion of the assignment or order, all costs are accumulated in the Production account, after the end of production and quality checks, the products are put as finished and sent to the client or to the branch for sale. This approach ensures that the income and costs incurred are consistent with the financial reporting period. The recommended prime cost calculation under the hybrid cost accounting system is presented in Table 1.

Cost pool	Costs, USD USA							Total
	Direct			Indirect		Cotton	Others	
	Material	Salary	Amortization	Others	Variable			
	Cotton	Others						
<b>Raw cotton processing</b>								
1. Bleaching	11934.29	1115.36	2243.49	71.88	11.47	5247.65	-	20624.13
2. Rolling processing	*	2.3	542.2	12.3	5.2	2135	-	2697
3. Combing processing	*	3.1	451.2	15.4	2.3	3145	-	3617
Total cost of the process	11934.29	1120.76	3236.89	99.58	18.97	10527.65	3468.12	30406.26
Cost of 1 ton of fiber								<b>28.3112</b>
<b>Production</b>								
A. Hygienic sticks	423.5421	0.45	758.2	7.1	1.2	234.89	173.406	1598.7881
B. Cotton wool	19315.3245	0.62	1234	5.4	2.4	653.04	433.515	21644.2995
C. Cosmetic pad	10667.3934	0.71	1534	4.6	3.1	432.45	260.109	12902.3624
<b>Total costs</b>	<b>30406.26</b>	<b>1.78</b>	<b>3526.2</b>	<b>17.1</b>	<b>6.7</b>	<b>1320.38</b>	<b>867.03</b>	<b>36145.45</b>

Traditional cost accounting systems distinguish a type of product, work or service as a cost object and prime cost calculation. This approach is not acceptable for the enterprise under study. Therefore, a hybrid cost accounting system is proposed, in which the center of costs is the cost pool, a set of all types of costs in the middle of the cost object. In addition, in the matrix, the cost information is grouped and summarized in terms of direct costs by economic elements and indirect ones as part of the variable and constant parts.

## RECOMMENDATIONS

Each cost item provides for preliminary engineering of operations and mathematical justification of the calculation methodology. Therefore, it is appropriate to use the previous experience of production cost standardization at a new level. The potential of using the recommended matrix, except for direct documenting, includes the control and cost analysis of the manufacturing unit and the entire company. There are several options for deploying cost categories that meet the information management needs or the use of databases in the company information system.

## CONCLUSIONS

So, the hybrid cost accounting system allows accumulating costs for performing analysis and adequately comparison with revenue generated in the reporting period. The proposed hybrid cost accounting system will be an indispensable cost management tool. It is useful when taking a management decision in relation to making an additional order, own production or subcontract, manufacture of new types of products, income and expense budgeting, financial result analysis, and pricing.

In addition, the cost pool may be a specific assignment of manufacture of products under its own brand or customer order. In this case, the cost pool is accompanied by data on the assignment (order) number, start and end dates, the number of units produced, and others as needed. The presented form will allow accumulating all direct and indirect expenses for the establishment of the real state of the incurred expenses, as well as analyzing the effectiveness of the assortment and price policy of the company.

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