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PROSPECTS FOR IMPROVING THE COST ACCOUNTING SYSTEM AT COAL MINING ENTERPRISES OF UKRAINE

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Abstract. The article presents the relevance and timeliness of the study concerning the prerequisites for improving the cost accounting system in coal mine enterprises in Ukraine. Future income in coal mine enterprises depends on from expenses. That's why this situation requires constant work on solving the tasks of optimizing the level of costs and ensuring the sustainability of enterprises. The most important factor of development of enterprise is perfect accounting and management of production costs.

The empirical basis was measures of coal mines of the state enterprise Lvivvukhillia, in particular the mines: «Velykomostivska», «Lisova», «Chervonogradska», «Mezhyrichanska», «Stepova».

The result of research showing the existing cost accounting system at the coal mining enterprise does not have a perfect classification of all enterprise costs and their reflection on accounting accounts.

The scientific significance of the article shows as to possibility to analyzing different new methods and approaches of cost accounting in the word and use the best practice in Ukrainian cost accounting at the coal mine enterprises.

The practical significance of the publication involves in building effective system of cost accounting and management. This will make it possible to properly organize accounting at enterprises with a high level of production cost.

The author proves that cost accounting system provides cost accounting, calculation, and cost control of cost objects. The functioning of this system depends on the established interaction between the elements of the system, which are the classification of costs, accounting objects, the accounting method, the order of distribution of indirect costs, the assessment of work in progress, the object and method of costing products, etc. It is the information that is formed in the cost accounting system that serves as the basis for the formation of management decisions regarding changes in the volume of production, assessment of cost indicators, financial results and pricing of a coal mining enterprise. Cost accounting at coal mining enterprises should be based on clear methodological recommendations that will help optimize production processes to determine the correct way to manage cost.

Key words: accounting, coal, cost, cost accounting system, depreciation, expense, life cycle costing, mine, total quality management.

Introduction. The coal mining industry of Ukraine have powerful multifunctional production complex with significant volumes of production and specific working conditions.

A long time ago in coal mining industry we have seen contradiction between importance this industry and its technical, economic conditions. Coal mining industry during long time has been in a state of crisis by financial, social, technical indicators.

But now Ukrainian energy and coal mine economy is in the high level of crisis, more part coal mine enterprises have been destroyed, a significant number have stopped or suspended their activities, and those that are trying to work are suffering financial losses. To increase the cost of coal products was affected economic crisis, martial law in the country, increased prices in materials resources.

Cost accounting system is one of the most important instruments of management of enterprise activities, because help us to received needed information for regulation production process and estimation the rate its effectiveness for anti-crisis management at enterprises.

The main problem of Ukrainians coal mining industry has been related to with low competitiveness Ukrainian coal products, which first depends on with high level of production costs.

In order to operate effectively, a coal-fired enterprise needs to focus on optimizing its own costs due to increasing the technical level of production; improvement of production and labor organization; changes in the volume and structure of products, expansion of the assortment; improving the use of natural resources; introduction and development of new productions; research into the causes of defects and cost reduction; improvement of the accounting system.

Formulation of the problem. Management accounting is an important element of the management system and ensures the formation of data on production costs and production costs, the results of the enterprise.

The complexity of management decisions, which are based on sufficient, complete and true accounting information about production costs and output, necessitate the formation of a holistic approach to the formation of a system of accounting and cost control and product costing.

Analysis of recent research and publications. Cost is the more important part of economic activities at enterprise. Future income depends on receiving cost of production at enterprises. Researching of cost accounting systems was carried out by both Ukrainian and international scientists. Significant contribution to the study of theoretical and methodological approaches to cost accounting made the following scientist: F.F Butynets, Yu. A. Veryga, S.F. Holov, I.Ye. Andryushchenko [4], A.V. Palko, T.P. Nazarenko [11], I.B. Franchuk [11], S.A. Viter [11], O. V. Kravchenko [9], N. V. Hurina [6].

As maintained by T.P. Nazarenko, I.B. Franchuk, S.A. Viter «the system of cost management included itself in three interrelated areas: provision of cost accounting; cost management; development of measures for their optimization» [11].

I.Ye. Andryushchenko, A.V. Palko «distinguish three categories of direct cost: direct material costs include the full cost of used materials that became part of finished products; direct labor costs include the wages of workers who directly manufacture these products; other direct costs» [4].

In opinions Ioan Batrancea, Larissa Batrancea, Anca Nichita and other: «The process of cost calculation is quite complex: it requires a series of cost transfers between managerial accounts and an identification of indirect costs depending on products and services. In line

with managerial accounting of surface exploitation in lignite quarries, total costs are divided into direct and indirect costs» [5].

According to Izabela Jonek-Kowalska, as «part of cost accounting in the life cycle of a selective pit, three key stages are activated: planning direct costs of mining works in a coal mine; settling planned and incurred indirect costs for individual selective pits, preparatory drivage and technological links; assessing the effectiveness of designed and active selective pits, considering the full mining costs throughout the life cycle» [7].

Li-Xia Zeng, Peng He, Jin-Ping Shi thinks, «that the current cost accounting system still exists problems like wrong calculation of the cost of environmental damage and fraudulent accounting problems» [10].

Ioan Batrancea, Larissa Batrancea and other are considering that: «Fixed costs refer to expenditures with a relatively unchanged size or expenditures that change in insignificant proportions with the rise or fall of production volume. Fixed costs include material expenses, wages and other fixed costs of ancillary (maintenance, repair), departmental and mining management» [5].

The purpose and objectives of the study. The aim of the study is to analysis existing cost accounting system at coal mine enterprises and find the most perspective ways of its improving.

According to the aim of the study we propose next tasks: to investigate the existing cost accounting system at the coal mining enterprise; to analyse the existing cost classification system at the coal mining enterprise; to propose methodical approaches for improving the accounting and analysis of costs during the production and sale of coal products.

Methods. In article used the methods analysis, synthesis, comparison, generalization. These methods help to provide perfect study of the state of cost accounting at the enterprise.

Presentation of the main research material. The important elements of activities of a coal mining enterprise are a process of costs accounting, calculation, and management. Nowadays there are many different methodologies, which company can use for cost management system, adapted to the specifics of a coal mining enterprise. The system of cost accounting has possibility allows you to reduce production costs and predict the emergence of threats and risks to the organization, as well as it allows you to get more profit without changing the cost of selling products, if it will well designed.

The cost accounting system at a coal mining enterprise is understood as a system that will ensure the correct organization of cost accounting, grouping and calculation of costs, display of costs in the system of accounting accounts for the purpose of making management decisions.

The main components, which include cost accounting system: methods for cost accounting at coal mining enterprises; accounting process of classification and grouping expenses at coal mining enterprises; analytical and synthetic cost accounting; object of cost accounting; documents flow of cost accounting.

Accounting ensures cost estimation, their registration in primary documents, accounting registers, at accounts and summarization in reporting. Accounting provides not only timely and complete display of the actual amount of expenses, but also control over the use of resources, as well as the volume of products produced in kind and monetary measures.

There are different methods and methodologies for cost accounting and management at coal mine enterprises. Some of them presented in fig. 1.

According to think Izabela Jonek-Kowalska: «The systematization of direct costs planning is the starting point in cost planning in the entire coal mine. Currently, direct costs are planned by the incremental method, based on historical costs incurred in previous periods. Meanwhile, mining production is discontinuous and unconventional, because starting a new excavation is always a project of an individualized character. This approach requires the application of planning based on the use of alternative resource schemes as a cost carrier used for a specific mining project» [8].

Regulatory and legal provision of expenses is national accounting regulation (standard) 16 «Expenses»: «expenses are a decrease in assets or increase in liabilities, which leads to a decrease in the company's equity capital, if expenses can be reliably estimated» [2].

Let's consider the existing cost accounting system at a coal mining enterprise.

In coal mining enterprises coal production cost consist of:

- expenses which related to manufacture of production, namely due to the technology and organization of production.
- expenses which included using nature raw staff (land recultivation costs, water charges);
- expenses for preparation and development of production (for exploration of coal deposits, cleaning of the territory in the zone of open works, sites for storing the fertile layer of soil, which is used in the further recultivation of land, other work);
- expenses for the development of new industries, aggregates, etc.

Cost accounting system at coal mine enterprises is being conducted by next groups of expenses (Fig. 2):

- 1. Materials expenses (excluding returnable waste) includes auxiliary material; fuel; electricity; production services.
- 2. Payroll expenses consist of: payments based on salaries and tariffs; payment of vacations is made with a vacation note and a statement for accruing vacation pay; compensation payments and labor costs.
- 3. Deductions for social events.
- 4. Depreciation.
- 5. Other operational expenses.
- 6. Administrative expenses.

Distribution expenses.

According to the cost component «Materials for technological purposes and services of a production nature» in a coal mining enterprise, fuel, and energy costs (steam, electricity, compressed air, water for hydraulic extraction and coal enrichment) for technological and production purposes are reflected.

	METHODS FOR C	OST ACCOUNTING AT COAL MINE ENTERPRISES AT SYSTEM OF COST ACCOUNTING		
-	TOTAL QUALITY MANAGEMENT	Consists in fully satisfying the desires and needs of the consumer, ensuring an unlimited increase in their level of satisfaction with both product quality and cost.		
	ACTIVITY BASE COSTING (ABC)	The essence of this method is cost optimization. Cost optimization occurs, because the product uses activities, not resources. The peculiarity and the main difference of this method is the accounting of costs for resources spent on the implementation of functional activities and their allocation to products according to the distribution bases, which became the reasons for the emergence of these types of activities (processes).		
	LIFE CYCLE COSTING (LCC)	This method is based on the costs of the entire life cycle of the product. Thanks to this method, the actual information about costs is compared with the planned, creating statistical databases that assess the impact on costs of innovations in business processes and, first of all, take into account the utility of the product for the consumer.		
	TWO-STEP MODELS: FOR DIRECT COST AND FO INDIRECT COST	This model consists of two parts for direct cost use method "from scratch", for indirect cost using the operation of cost accounting and modifying the existing records and the cost settlement model. Both options complement the existing gap in terms of indirect cost planning at the coal mine.		
	STANDARD- COSTING METHOD	the essence of which is to control production costs. Based on pre- established standards, it is possible to determine the amount of expected costs for production and sales of products, as well as calculate the cost price and determine the level of possible income in the coming year. This method is constantly searching for reserves and ways to reduce costs, but it is assumed that the enterprise operates under normal conditions, that is, the output data will be idealized, which can be considered a disadvantage due to the dynamically developing environment.		
-	TARGET- COSTING METHOD	Method provides a new vision of the problem of cost management in contrast to generally accepted management systems. Thus, the traditional approach to calculating the target sales price involves calculating the price depending on the costs obtained as a result of production but does not take into account the fact that these products may not be in demand among buyers due to the discrepancy between quality and price.		
	KAIZER- COSTING METHOD	This method is the continuous improvement costing method or the Kaizen Costing method. At enterprises, this method is used together with budgeting. The fundamental direction of this method is the measurement and analysis of costs necessary to ensure the quality of products. Kaizen Costing allows you to reduce costs incurred in connection with product defects.		

Fig. 1. Methods for cost accounting at coal mine enterprise of cost accountingSource: created by the author from [11; 13; 12; 14]

GROUPS OF EXPENSES AT COAL MINE ENTERPRISES **MATERIALES** This component included auxiliary materials, (such as: wood materials, rails, fasteners for them, explosives, detonators, grates for lowering coal by gravity), which use for mining coal. PAYROLL EXPENSES This component included expenses for the wages of workers engaged mainly in production, machinists of stationary installations and motorists of conveyors, winches, fans, pumps, other machines, and mechanisms. DEDUCTION FOR SOCIAL INSURANCE This component showing expenses which are related to deduction of a single social contribution to the state social insurance authorities. DEPRECIATION This component showing expenses which are related to depreciation of production equipment, builds, machinery and other tangibles and intangibles actives. GENERAL PRODUCTION COSTS This component consists of expenses related to payroll, deduction of social insurance, depreciation, and other shop expenses ADMINISTRATIVE EXPENSES This component of costs reflects the costs associated with the organization of production and management of the coal enterprise as a whole: wages of mine management personnel, cutting control apparatus, management personnel of divisions and workshops with deductions for social insurance, travel expenses, maintenance of passenger vehicles, office, postal, telegraph and telephone expenses, depreciation, etc. DISTRIBUTING COSTS The costs of product delivery to the departure station and other costs related to the sale of products are accounted for by the element of these costs. OTHER OPERATIONAL COST Include expenses that are not reflected in any of the listed items.

Fig. 2. Groups of expenses at coal mine enterprises of cost accounting system Sources: created by the author from [4; 6; 7; 8; 9; 12]

From the cost of materials at a coal mining enterprise, the cost of returnable waste generated during the production of products (works, services).

The following are not included in the returnable waste of a coal mining enterprise:

- the remains of material resources, which, in accordance with the established technology, are transferred to other shops, divisions as a full-fledged material for the production of other types of products (works, services);
- by-products coal, which is mined during the construction of new mines and cuttings. By-products are not included in the volume of production.

The costs of auxiliary workshops of a coal mining enterprise are accounted for by cost components (material costs, labor costs, deductions for social insurance, depreciation, etc.).

The distribution of auxiliary production services to coal mining enterprises is carried out based on the number of costing units of production of these workshops consumed by one or another production: 1 ton of steam, 1 m3 of compressed air, etc. The cost of services of auxiliary productions of a coal-mining enterprise are included in the costs of those productions that received them and are assigned to the corresponding cost items in the total amount.

Calculating the cost of coal by a coal-mining enterprise is carried out according to the process-by-process method of accounting for costs. The object of calculation is coal, and in the sections where mining is carried out by the open method, in addition, overburden and open reserves. Calculation units at the coal mining enterprise are 1 ton of coal. In addition, on the sections, the calculation units are 1 m3 of overburden and 1 t of reserves prepared for extraction.

Estimated (gross) production includes:

- coal mined at active mines (cuts), which is to be sold to the side without beneficiation.
- beneficiation products (concentrate, industrial product, sludge) obtained at beneficiation factories, which are on the balance of mine cuttings);
- coal transferred to the beneficiation factory under the contract for the provision of coal beneficiation services, provided that the cost of raw materials has not been paid by the factory.

The cost price of 1 ton of coal is determined by dividing the total amount of coal mining costs in the reporting period by the number of mined tons of coal.

In this time, expenses are grouped by shops, divisions and other administratively separated structural subdivisions of the coal mine enterprise. At the coal enterprises production are divided on main and auxiliary.

According to the analytical and synthetic cost accounting component of cost accounting system the expenses which are related to coal mining showing in account 23 «Production». Posting to account 26 «Finished goods» is carried out according to the planned cost with subsequent adjustment to the actual cost, due to the impossibility of immediately determining the cost of 1 ton of mined minerals.

If the exploration of coal deposits is carried out by the enterprise at its own expense, then the accounting of costs is carried out on account 39 «Deferred expenses» with subsequent assignment to account 23 «Production» or 949 «Other costs of operational activity» or on account 15 «Capital investments» with further assignment to the composition of intangible

assets. Organizations that provide geological prospecting services, because of the obtained license must keep their records on account 23 «Production».

Accounting of general economic expenses, which are related to management of enterprises and maintenance of departments of production and technological equipment occurred at account 92 «Administrative expenses».

The expenses, which are related to distributing cost are displayed at account 93 «Distribution expenses».

The cost of coal products in accounting is represented by the correspondence of accounts at cost accounting system in table 1.

 ${\it Table~1} \\ {\bf Reflecting~the~cost~of~coal~products~in~the~correspondence~of~accounting~accounts}$

№	Economic operation	Debit	Credit	UAH				
Α	1	2	3	4				
	Mining preparatory, exploitation and exploration works							
1.	Accrued exploration costs, before the exploration of mineral reserves, which are not recognized as assets from the exploration of mineral reserves		20,661, 65,685	500 000				
1a.	They are attributed to the production costs of the reporting period		39	500 000				
2.	Accrued exploration costs exploration costs for mineral reserves, which are recognized as assets for the exploration of mineral reserves		20,661, 65,685	32 000				
2a.	They are recognized as intangible assets	12	15	32 000				
3.	Expenses for the liquidation of a well, mine, etc., were written off	976	39	50 000				
Direct mining								
1.	Direct costs are accrued	23	20, 661, 65,685	250000				
2.	Manufacturing overhead cost: - calculated - written off	91 23	20, 661, 65, 91	150000 150000				
3.	Calculated administrative cost, distributing cost and other operating cost	92,93,94	20, 661, 13, 631, 685	600 000				
4.	The cost of coal mining is displayed	26	23	400 000				
5.	Expenses for ongoing repair of fixed assets, carried out by contracting method, are shown	23	685	600 000				
6.	The VAT tax credit for fixed asset repair services is displayed	641	685	10 000				
7.	The expenses for the liquidation of the consequences of an extraordinary situation (accident) are reflected	949	661, 65, 20	12 000				
8.	The cost of sales of coal is recognized	901	26	400 000				
9.	Write off on financial result cost of coal	79	901	400 000				
10.	Write off on financial result administration expenses, distributing expenses and other	79	92, 93, 94	612 000				
11.	Write off expenses for liquidation of the well	79	976	50 000				

Sources: created by the author from [1; 2; 3; 14]

Let calculated expenses on the exploration and development of mineral deposits in the amount of UAH 200 000, of which UAH 180 000 were written off for production costs, and UAH 20 000 were written off as those that did not lead to an increase in the volume of minerals. The necessary accounting transactions presented in table 2.

Correspondence of mineral exploration accounts

Table 2

No	Economic operation	Debit	Credit	UAH
1	2	3	4	5
1.	Expenses for exploration and development of deposits have been accrued	39	20,66,65,685	200 000
2.	Write off a part of expenses on production	23	39	180 000
3.	The rest were written off as those that did not lead to an increase in the volume of minerals	39	941	20 000

Sources: created by the author from [1; 2; 3; 14]

The formation of the cost accounting system, which will be used by a coal mining enterprise, must be based on normatively determined principles, consider the peculiarities of the enterprise's activities, and contain the main provisions at the Order on accounting policy regarding management accounting.

Conclusions and Prospects for Further Research. According to providing researcher we made next conclusion that implementation of the assigned task at the coal mining enterprise must rely on a competently organized system of cost accounting and management accounting.

Cost accounting system by responsibility centers is a part of management (internal) accounting, as it makes it possible to evaluate the activities of individual responsibility centers (structural divisions) and responsible persons. According to the results of the study, there are obvious advantages of cost accounting by responsibility centers or by places of origin, which allows influencing the costing of products, and the implementation of control will provide an opportunity to work on reducing the cost price, and therefore increasing profits.

Prospects for further research on the cost accounting system of a coal mining enterprise are: strengthening the analytical and informational functions of cost accounting in order to make informed management decisions; establishment of direct links between costs and the conditions of their occurrence; creation of the necessary conditions for the analysis and control of costs; conducting a search for resource saving reserves; formalization plans of accounts of accounting for different department of coal enterprises.

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ПЕРСПЕКТИВИ ПОКРАЩЕННЯ СИСТЕМИ ОБЛІКУ ВИТРАТ НА ВУГЛЕДОБУВНИХ ПІДПРИЄМСТВАХ УКРАЇНИ

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Анотація. Доведено актуальність та своєчасність дослідження системи обліку витрат на вугільних підприємствах України. Майбутні доходи вугільних підприємств залежать від витрат. Тому така ситуація потребує постійної роботи над вирішенням завдань оптимізації рівня витрат та забезпечення фінансової стійкості підприємств. Найважливішим фактором розвитку підприємства є досконалий облік і управління витратами виробництва. Метою публікації є проаналізувати існуючу систему обліку витрат на вугільних підприємствах для виокремлення перспективних шляхів її удосконалення.

Емпіричною основою є показники діяльності вугільних шахт ДП «Львіввугілля», зокрема шахт: «Великомостівська», «Лісова», «Червоноградська», «Межирічанська», «Степова». Автором використані методи аналізу, синтезу, порівняння, узагальнення, що дало змогу комплексно розглянути стан обліку витрат на вугільних підприємствах.

Результати дослідження продемонстрували, що існуюча система обліку витрат на вугледобувному підприємстві не має досконалої класифікації всіх витрат та їх відображення на рахунках бухгалтерського обліку.

Наукове значення дослідження підтверджується здійсненим аналізом нових методів і підходів обліку витрат у світі та використання передового досвіду в українському обліку витрат на підприємствах вугільної промисловості.

Практичне значення публікації полягає в побудові ефективної системи обліку та управління витратами. Це дасть змогу правильно організувати бухгалтерський облік на підприємствах із високим рівнем собівартості продукції.

У висновках зазначено, що дієва система обліку витрат дає змогу правильно організувати облік витрат, калькулювання і контроль собівартості за об'єктами витрат. Функціонування такої системи залежить від налагодженої взаємодії між її елементами: класифікацією витрат, об'єктами їх обліку, методами обліку, порядком розподілу непрямих витрат, оцінкою незавершеного виробництва, методами калькулювання тощо. Саме інформація, яка формується у системі обліку витрат є підгрунтям для ухвалення рішень управлінським персоналом стосовно зміни обсягу виробництва, оцінки показників собівартості, фінансових результатів і ціноутворення на вугледобувному підприємстві. Тому на часі удосконалити методичні рекомендації з обліку витрат на вугледобувних підприємствах, що дасть змогу ефективно ними управляти.

Ключові слова: амортизація, витрати, вугілля, калькуляція життєвого циклу, облік, система обліку витрат, собівартість, управління якістю, шахта.

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