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**TÍTULO:** Contabilidad y análisis de inventarios de materiales y producción de las empresas.

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**RESUMEN.** El artículo está dedicado a la consideración de las peculiaridades de la contabilidad y el análisis de los inventarios de materiales y producción de las empresas. En el curso del estudio se hace un análisis de las definiciones de inventarios en el Reglamento contable ruso "Contabilidad de inventarios" (RAR 5/2012), NIC 2, US GAAP, y del impacto de las diferencias en la lista de indicadores incluidos en las reservas bajo el RAR y NIIF sobre el estado financiero de las organizaciones en la lista de indicadores. Se propone una técnica para analizar los inventarios de la organización.

**PALABRAS CLAVES:** NIC 2, RAR 5/01, análisis de materiales e inventarios de producción, recursos materiales de las empresas, inventarios contables.

**TITLE:** Accounting and analysis of inventories of materials and production of companies.

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**ABSTRACT:** The article is dedicated to the consideration of the peculiarities of the accounting and the analysis of the inventories of materials and production of the companies. In the course of the study an analysis of the definitions of inventories is made in the Russian Accounting Regulation "Inventory Accounting" (RAR 5/2012), IAS 2, US GAAP, and the impact of the differences in the list of indicators included in the reserves under the RAR and IFRS on the financial status of the organizations in the list of indicators. A technique is proposed to analyze the inventories of the organization.

**KEY WORDS:** IAS 2, RAR 5/01, analyses of material and production inventories, material resources of the enterprises, accounting inventories.

## **INTRODUCTION.**

Acceleration of the social and economic development of the state implies an increase in the efficiency of social production on the basis of all-round saving of material, labor and financial resources. The resource-saving policy is the actual source of meeting the increasing needs of civil society. In order to realize this in real conditions, you need to know all the subtleties of accounting for the availability and movement of resources, first of all, the inventories, which form the basis of the company's activities.

The presence of reserves is an indispensable condition for ensuring the normal functioning of the production organization. In the most general sense, reserves serve to weaken the dependence between suppliers and producers (production stocks of material and technical resources), producers and consumers (stocks of finished products). Presence of stocks allows the organization to ensure the production of material and technical resources of optimal size in lots.

## DEVELOPMENT.

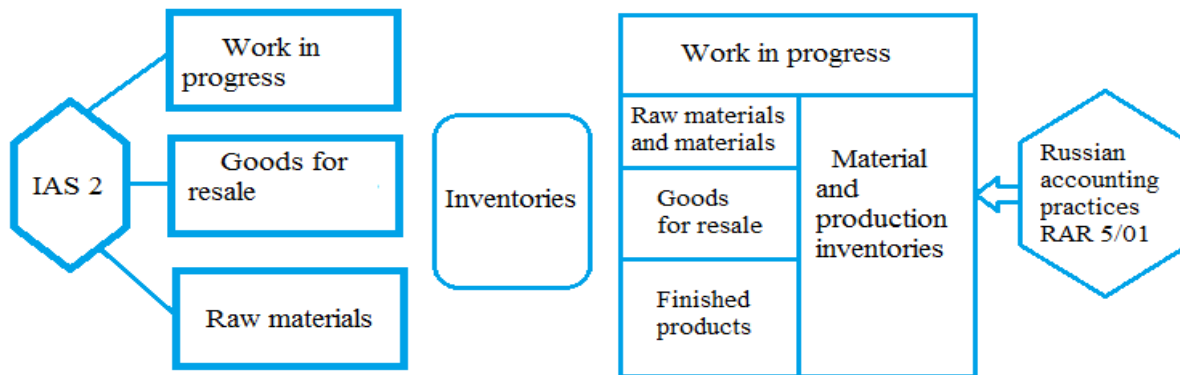
### Methods.

The work of a large number of Russian and foreign researchers has been devoted to the study of the problems of organizing accounting and analyzing material stocks at enterprises.

A significant contribution to the aspects of theory and practice of accounting and analysis of material and production inventories was made by such scientists as Alekseeva A.I. [2011], Udalov A.A. [2013], Savitskaya G.V. [2014] and others.

In the course of the study, an analysis of the definitions of inventory in the draft Russian Accounting Regulation “Inventories accounting” (RAR 5/2012), IAS 2, US GAAP. Figure 1 shows the systematization of reserves in Russian and international accounting practices.

**Figure 1 - Structuring of inventories in Russian and international accounting practices.**



Thus, work in progress, which is one of the groups of stocks under IAS 2 [Mezhdunarodnyj standart finansovoj otchetnosti (IAS) 2 «Zapasy», International Financial Reporting Standard (IAS) 2 “Stocks”, 2011], RAR 5/01 [Order of the Ministry of Finance of Russia from 09.06.2001 N 44n (as amended on May 16, 2016)] does not apply. At the same time, assets characterized as work in progress refer to inventories in accordance with RAR 4/99 “Accounting statements of the organization” [Order of the Ministry of Finance of the Russian Federation of 06.07.1999 No. 43n (as amended on 08.11.2010) “Ob utverzhdenii Polozhenija po buhgalterskomu uchetu

“Buhgalterskaja otchetnost' organizacii” (PBU 4/99)” [“On approval of the Accounting Regulations”, “Accounting statements of the organization” (RAR 4/99)].

It should be noted that in the transition to IAS and the entry into force of RAR 5/2012 “Inventory Accounting”, there will be a need to revise the definitions of inventories. In this regard, a number of regulatory legal acts on accounting of Russian Federation will lose force, in particular - orders of the Ministry of Finance of Russia:

- June 9, 2001 No. 44n, which approved RAR 5/01 “Accounting for inventories”.

- December 28, 2001, No. 119n “On approval of the Methodological Guidelines for the Accounting of Inventories”, etc.

Existing differences in the list of indicators included in reserves under the RAR and IAS, have an impact on the financial condition of organizations. It should be noted that the issues of presentation of inventories in financial statements were examined in the works of Milbradt, K. [2012], Liapis, K.J. and E.P. Christodouloupoulou [2011], Easton, P. and J. Pae [2004], Liapis, K.J. and C.L. Galanos [2010].

Thus, when moving future expenses to the organization's intangible assets, the organization's absolute liquidity is reduced, when the goods shipped to the cost of sales are written off and revenue is reflected from their sale, its profitability (core activity, sales, marginal, etc.) increases.

In the system of material reserves of the organization, there are often violations and deviations from existing regulations. Consequently, accounting and auditing inventories are vital for functioning organizations.

There is an opinion that the main purpose of material accounting is the precise definition of profit (and, as a consequence, the valuation of equity), rather than the actual cost of stocks. The majority of investors and creditors make their decisions based on the valuation of the reserves and the

amount of profit indicated in the financial statements [Babaev Ju.A., Petrov A.M., Mel'nikova L.A., 2011].

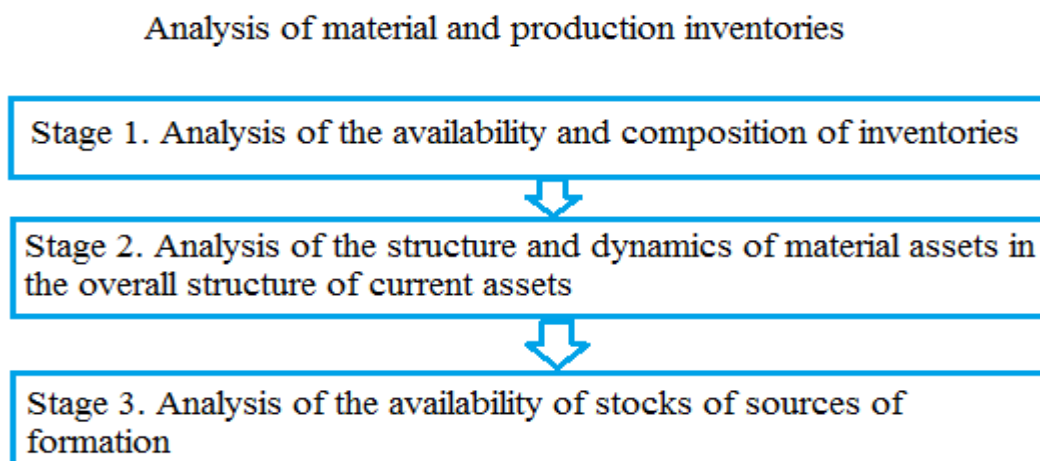
RAR 5/01 specifies that material and production inventories are accepted for accounting at the actual cost price. In this provision, provision is made for the reduction of the value of tangible assets. Allowance for impairment of inventories is a conditional conditional depreciation of inventories that is determined or calculated on the basis of accounting assumptions in the absence of an accurate method of determining it [Kulikova, L.I., 2011].

All provisions for inventory accounting should be reflected in the accounting policies of the enterprise.

To ensure the reliability of accounting and financial statements, organizations are required to carry out an inventory of material values.

An important moment in the activity of any business entity is the organization of economic analysis, including the analysis of its material resources. A number of scientific analysts (Savitskaya G.V., Udalov A.A, Alekseeva A.I.) suggest analyzing material resources in several stages. Having studied different points of view, we propose a technique for analyzing material and production inventories, which includes three stages, as shown in figure 2.

**Figure 2 — Analysis of material and production inventories**



At the first stage, the dynamics of material and production inventories. They are characterized by interchangeable indicators — index, growth rate or rate of growth, absolute growth; structure - the specific weight (in percent) or the share of each component of section 2 of the balance of Russian enterprises in the total amount.

Analysis of the structure and dynamics, the turnover of material costs allows you to determine the reserves of reducing the need for working capital by optimizing reserves, their relative decline compared with production growth. Particular types of analysis of inventories are ABC- and XYZ-analysis.

ABC-analysis is a study of the range and volume of sales of products by dividing it into three groups that differ in their importance and contribution to the turnover or profit of the enterprise: A - the most valuable, B - intermediate, C - least valuable. To determine the groups A, B and C, you need to calculate the sales shares for each item in the assortment range in the total turnover, calculate these fractions with a cumulative total, and assign the group values for each product type. Based on this analysis, we can conclude that the profitability of a product in the company's product line. XYZ-analysis, which is a mathematical-statistical method that allows you to analyze and predict the stability of sales of certain products by the coefficient of variation.

The next stage determines the level of supply of the enterprise with raw materials and materials. For this, the actual number of purchased materials is compared with the planned demand.

The third stage of the analysis reveals the reserves to reduce the cost of production by reducing material costs, that is, the analysis of the availability and sufficiency of supply sources is considered, applying a system of general and particular indicators of the material consumption of products, material output of output, the specific weight of material costs in production costs, fuel capacity, energy intensity of products [Udalov, A.A., 2013]. Features of accounting and analysis of

material and production inventories in a commercial enterprise are considered on the example of OJSC «Aktanyshskoye HPP».

### **Results and Discussion.**

Open Joint Stock Company «Aktanyshskoe chlebopriemnoe predpriyatie» is an agricultural organization of the Aktanysh district of the Republic of Tatarstan of Russian Federation, the main activity of the organization is storage and storage of grain.

At the end of the reporting period, the organization's reserves are 170 305 thousand rubles. As a part of stocks, raw materials, materials and other similar values amounted to 154 521 thousand rubles. In the reporting year, a provision was made for impairment of inventories in the amount of 13 thousand rubles. As of December 31, 2016, 24 596 tons of grain are in custody for a total of 202,632 thousand rubles.

Information on inventories is reflected in the financial statements at a cost determined by the methods used to estimate reserves.

Synthetic and analytical accounting of inventories in OJSC «Aktanyshskoye HPP» meets the requirements established by the legislation.

The accounting policy of the enterprise does not take into account the specifics of the agricultural sector in terms of accounting, which could more accurately reflect the actual data on the availability and movement of inventories.

Material values in OJSC «Aktanyshskoye HPP» are reflected in the accounting at the actual cost price and are recorded on the balance account 10 "Materials". The accounting of material values is made at the acquisition price. Write-off of material values when they are released into production or other disposals is made by the method of the average cost price.

Finished goods in OJSC «Aktanyshskoye HPP» are reflected in the balance account at the actual cost of account 43 "Finished products", without using account 40 "Release of finished goods, works, services."

The composition and structure of the reserves at OJSC «Aktanyshskoye HPP» is presented in table 1.

**Table 1 - Structure of material and industrial reserves of OJSC «Aktanyshskoye HPP» for 2014-2016.**

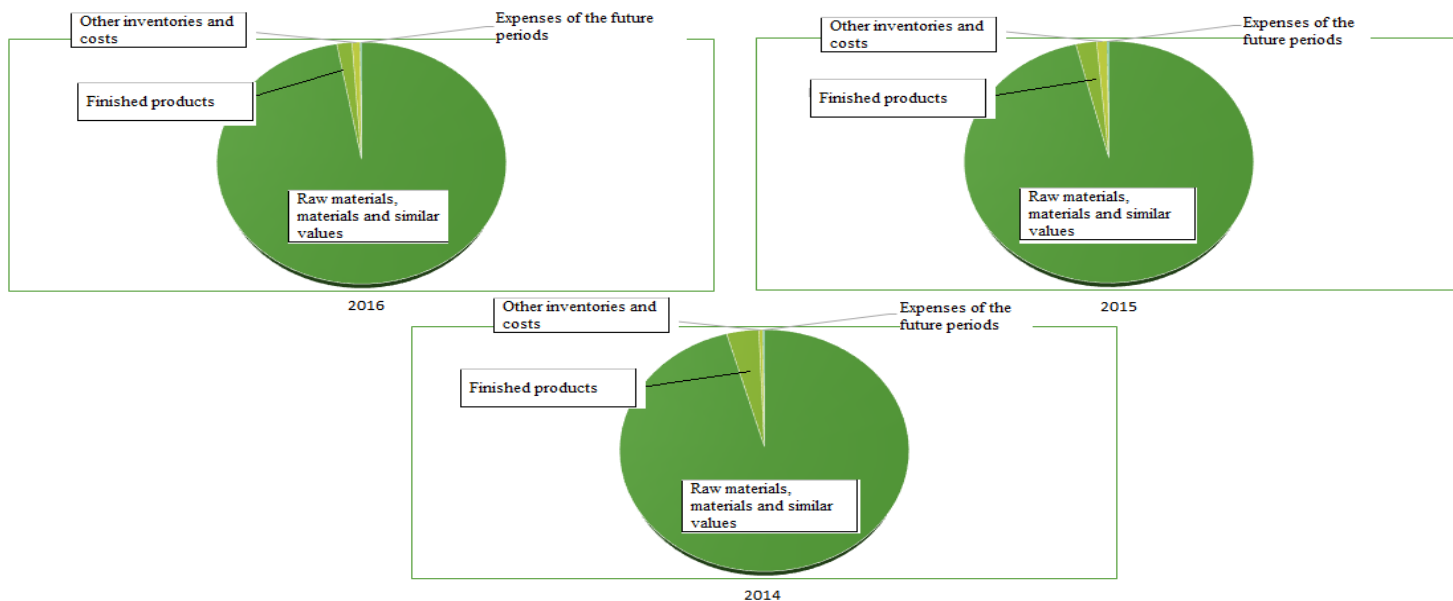
Indicators	2016, thousand roubles	Specific gravity, %	2015, thousand roubles	Specific gravity, %	2014, thousand roubles	Specific gravity, %	Relative deviation		Growth rate	
							2016 /2015	2015 /2014	2016/2015	2015/2014
<b>Raw materials, materials and similar values</b>	165482	97,17%	102225	96,21%	66238	95,66%	0,96%	0,55%	161,88%	154,33%
<b>Finished products</b>	2988	1,75%	2546	2,40%	2576	3,72%	-0,64%	-1,32%	117,36%	98,84%
<b>Other inventories and costs</b>	1578	0,93%	1294	1,22%	318	0,46%	-0,29%	0,76%	121,95%	406,92%
<b>Expenses of the future periods (for objects of the analytical account which are reflected in balance in structure "Reserves")</b>	257	0,15%	189	0,18%	111	0,16%	-0,03%	0,02%	135,98%	170,27%
<b>Total</b>	170305	100,00%	106254	100,00%	69243	100,00 %	-	-	160,28%	153,45%

The data in Table 1 indicate a relatively large absolute need for reserves.

The diagram in figure 3 clearly shows the structure of the composition of stocks in OJSC «Aktanyshskoye HPP» for the analyzed period 2014-2016.



**Figure 3 - Structure of the composition of stocks in OJSC «Aktanyshskoye HPP» for the analyzed period 2014-2016.**



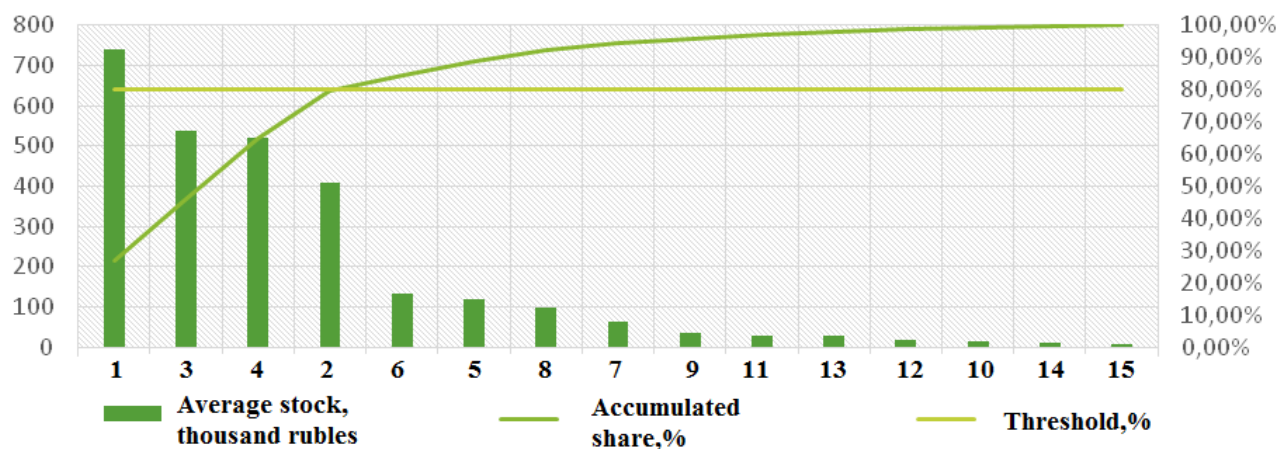
The ABC-analysis of commodity stocks of OJSC «Aktanyshskoye HPP» is presented in table 2.

**Table 2 — ABC-analysis**

№	Name of commodity position	Average supply, thousand rubles.	Contribution, %	Savings account, %	Group
1.	Flour of the first grade	741,45	26,80%	26,80%	A
2.	Bran	537,13	19,41%	46,21%	A
3.	Feed for feed cattle	519,03	18,76%	64,97%	A
4.	Feed for dairy cows	407,23	14,72%	79,68%	A
5.	Rapeseed oil cake	133,08	4,81%	84,49%	B
6.	Groats of peas	120,26	4,35%	88,84%	B
7.	Rapeseed oil	96,75	3,50%	92,34%	C
8.	Flour Extra Class	63,13	2,28%	94,62%	C
9.	Fodder waste	34,56	1,25%	95,87%	C
10.	Sunflower oil cake	30,10	1,09%	96,95%	C
11.	Rye flour	30,10	1,09%	98,04%	C
12.	Sunflower oil	17,75	0,64%	98,68%	C
13.	Extrudate	14,81	0,54%	99,22%	C
14.	Feed mug	12,23	0,44%	99,66%	C
15.	Feed for calves	9,40	0,34%	100,00%	C

For greater clarity, we construct the Pareto diagram in figure 4.

**Figure 4 - The Pareto Chart.**



## CONCLUSIONS.

Thus, in the first place, it is necessary to control the stocks of goods included in group A - it is the first grade flour, mixed feed for cattle, mixed feed for milk cows and bran.

More accurately configure the inventory management system will allow the results of XYZ analysis in table 3.

**Table 3 - XYZ analysis of commodity items**

№.	Realization for the quarter, rubles.				Realization on average for the quarter, rubles.	Standard deviation of implementation.	Coefficient of variation, %.	Group
	I	II	III	IV				
1.	14258,51	16874,24	17651,44	17741,25	16479,99	1629,09	9,89%	X
2.	9041,07	9065,68	8101,32	10001,32	9051,32	775,74	8,57%	X
3.	3101,65	10101,65	8102,39	7100,91	7101,65	2944,00	41,46%	Z
4.	6847,71	7362,74	7362,29	6851,41	6862,29	296,16	4,32%	X
5.	3139,16	4839,63	4940,03	5639,70	4639,63	1061,73	22,88%	Y
6.	1225	3200,25	8778,08	3587,54	4389,08	3224,08	73,46%	Z
7.	1888,47	2935,47	2435,92	2482,82	2435,47	428,74	17,60%	Y
8.	1603,47	2650,87	2150,94	2147,14	2150,47	427,79	19,89%	Y
9.	667,92	1165,90	1612,07	1113,46	1139,92	386,04	33,87%	Z
10.	672,33	686,83	771,19	582,47	684,83	77,29	11,29%	Y

11.	581,05	669,79	676,92	681,42	668,92	47,74	7,14%	X
12.	529,95	657,41	669,45	530,45	571,45	77,08	13,49%	Y
13.	385,40	444,90	410,75	368,36	397,90	33,29	8,37%	X
14.	184,63	302,22	312,64	229,75	271,75	60,88	22,40%	Y
15.	75,86	144,82	144,55	124,13	124,34	32,47	26,11%	Z

Group X includes 5 commodity items, Y group - 5, others in group Z. Compatible results of ABC and XYZ-analysis in Table 4.

**Table 4 - Combining ABC and XYZ analysis.**

Indicator of analysis	A	B	C
X	1,2,4		11,13
Y	5	7	8,10,12,14
Z	3	6	9,15

Thus, the goods of the AX group are characterized by high sales volume and stability. It is necessary to ensure the constant availability of goods, but there is no need to create excess insurance stock, as the demand for goods of this group is well projected. Further, the analysis of the particular indexes of the material consumption of OJSC «Aktanyshskoye HPP» is given in table 5.

**Table 5 — Analysis of particular indicators of material consumption of OJSC «Aktanyshskoye HPP»**

Indicators	Indicator value		Change
	2015	2016	
<b>Output of products, mln. Rub.</b>	215116	266774	+51658
<b>Material costs, million rubles.</b>	161337	210994	+49657
<b>Including:</b>			
<b>- raw materials, materials and semi-finished products</b>	148430	193950	+45520
<b>- fuel</b>	2975	4629	+1654
<b>- energy</b>	9931	12415	+2484
<b>Total material consumption, cop.</b>	75	79,12	+4,12
<b>Including:</b>			
<b>- raw material resources</b>	69,1	72,82	+3,92
<b>- fuel capacity</b>	1,3	1,7	+0,4
<b>- energy intensity</b>	4,6	4,6	0

The data in table 5 show that the increase in the material consumption of products was mainly due to the increase in the fuel-carrying capacity of the products. This growth is caused not only by the increase in fuel tariffs, but also by their overexpense in comparison with the established norms.

Summarizing, analysis of the dynamics and structure of inventories showed that the high specific weight of raw materials and materials in the structure of circulating assets is associated with a large expenditure of raw materials per unit of output. Analysis of the efficiency of the use of inventories in OJSC «Aktanyshskoye HPP» showed that the company has a negative trend in the use of material and production inventories, but there are reserves for improving the efficiency of the use of reserves.

Thus, at the enterprise there is a decrease in the efficiency of the use of material resources, as material output decreases over a period, as a result of which the consumption of materials increases.

Based on the results of the study, a program is proposed to improve the accounting and analysis of inventories, which consists of two sections:

1 section. The program for improving the accounting of inventories: implementation of control measures, the automation of the inventory of inventories and the improvement of the chart of accounts of OJSC «Aktanyshskoye HPP».

2 section. Improving the use of inventories: sales of illiquid and stale reserves at a discount in order to extract additional cash and reduce inventory, optimize inventories using ABC- and XYZ-analysis, optimize material output and material consumption, determine the optimal size and optimal order time with application of model EOQ (economic order quantity).

## **CONCLUSIONS.**

Thus, reserves are one of the main factors ensuring the permanence and continuity of reproduction.

When the transition to IAS 2 and the entry into force of RAR 5/2012 "Inventory Accounting", there will be a need to revise the definitions of inventories. In this regard, a number of regulatory legal

acts on accounting will become invalid. For the purpose of the most complete analysis of the organization's reserves, a methodology for the analysis of inventories was proposed, which consists of three stages, which was considered by the example of OJSC «Aktanyshskoye HPP». Based on the results of the analysis, measures were proposed to improve the accounting and analysis of inventories.

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