

**INFORMATION AND ANALYTICAL SUPPORT
OF PRODUCTION STOCKS MANAGEMENT
AT THE ENTERPRISE FOR CRISIS PREVENTION****Lyudmyla Svystun*, PhD in Economics, Associate Professor
Alina Kalinichenko, Master Student
National University "Yuri Kondratyuk Poltava Polytechnic"****ORCID 0000-0002-6472-9381*

*© Svystun L., 2023**© Kalinichenko A., 2023**Стаття отримана редакцією 16.06.2023 р.**The article was received by editorial board on 16.06.2023*

Introduction. The successful operation of any enterprise depends on the effective utilization of its working capital, among which production inventory plays a crucial role. Without an adequate quantity of inventory, production becomes impossible, leading to reduced profits and loss of competitiveness in the market. This is especially relevant for enterprises operating in conditions of an unstable economy and experiencing the threat of crisis phenomena in economic activity. However, analyzing production inventory is a complex economic category, especially due to the large number of stockkeeping units that are challenging to investigate manually. This can result in insufficient control over inventory and its associated costs, leading to losses for the enterprise. Thus, for the successful functioning of the enterprise, it is necessary to implement optimization processes that automate the analysis of production inventory. This will not only increase the efficiency of inventory utilization and reduce costs but also provide the enterprise with a reliable basis for making management decisions based on accurate and up-to-date data.

Analysis of recent research and publications. The article examines the scientific works of the authors: Podderyogin A.M., Kireitsev H.G., Blank I.O., Romaniv E.M., Gudzenko N.M., Hybalo Yu.V., Ishchenko O.V., Dmitriev S.V., Klymenko O.O., Kononova O.V., Zhdanova Yu.A., Shiryayeva N.S., Shpatikovska T.A., Gadzevych O.I., Koval N.I., Butynets F.F. and others.

Highlighting previously unresolved parts of the overall problem. Changes in business conditions require further research into the process of optimizing the analysis of production stocks at the enterprise.

Objectives of the article. The purpose of the study is to identify opportunities and advantages of information and analytical support for stock management at agricultural enterprises, identify resources and potential that can be used to increase the efficiency of stock management, as well as develop recommendations for them using. An important aspect is studying the possibilities of using software to optimize the production stocks analysis.

The main material of the study. Production stocks are an important component of working capital of any enterprise, because without them the production process is impossible. Effective use of production stocks is one of the key conditions for the successful operation of a commercial enterprise and the achievement of profit.

Analysis is an extremely important component of successful management at any enterprise, regardless of its form and industry. A qualitative analysis of production stocks is a guarantor of economic stability, prevents bankruptcy and increases the competitiveness of the enterprise. In addition, the company's management needs to determine the optimal level and quality of production stocks in order to have an advantage over competitors and ensure economic benefits from business activities.

Since production stocks are an important element in the economic activity of any enterprise, it is necessary to use them qualitatively and in a timely manner. Production stocks are the subject of labor and are used during

one production cycle, transferring their value to finished products. When they are consumed, they become material costs, which reduces the cost of production due to the economical use of resources.

Production stocks belong to circulating production funds, which make up about 70% of the total costs for the production of products. Increasing the efficiency of the production program can be achieved through the analysis of production inventories, which will reduce material costs, reduce the volume of exploited inventories, improve quality and lower resource prices. Insufficient accounting and analysis of production stocks can lead to the loss of cost control in structural divisions, where deviations from constant cost norms usually occur.

For a complete analysis of production stocks at any enterprise, data presented in financial reporting forms are used, namely: Form No. 1 "Balance Sheet", No. 5 "Notes to Annual Financial Statements", No. 1-enterprise, No. 50-sg "Report on the main economic indicators of the work of agricultural enterprises", turnover information for the reporting period, etc.

Inventories belong to low liquid assets, i.e. those that are slow to realize. They can be realized or used for barter to pay off the debts of the business entity. Inventories are part of current assets that cannot be directly realized and are exposed to market changes and inflationary processes. It is worth noting that in case of forced sale of these assets, the company will receive a much smaller amount of money compared to the costs of their acquisition.

For the analysis of current assets, as well as production stocks, a different method is used, which are depicted in Table 1.

The analysis of production stocks is carried out on the basis of analytical accounting according to the directions shown in Figure 1.

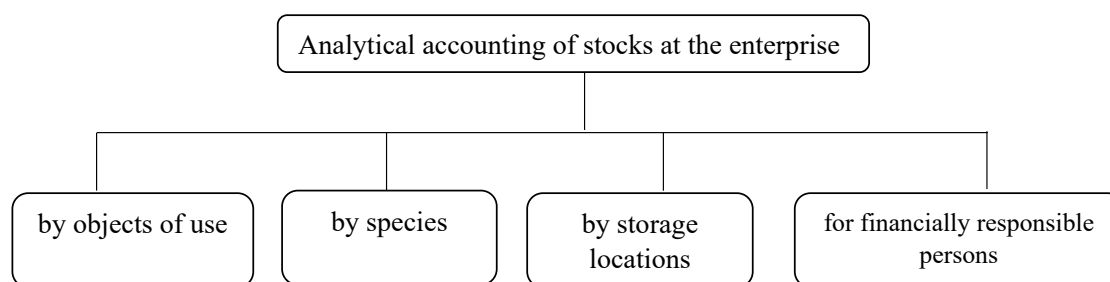


Figure 1. The procedure for keeping analytical records of stocks

Source [2; 10]

However, inventory analysis is a complex economic category due to the large number of nomenclature items that are difficult to research manually.

In this regard, the implementation of optimization processes for the automation of the analysis of production stocks is a necessary step for the successful functioning of the enterprise and increasing its competitiveness in the market. To achieve this goal, it is necessary to have high-quality information support and master the methods of analyzing production stocks, which will allow timely detection of problematic moments and making reasonable management decisions based on accurate and up-to-date.

Automation of the analysis of production stocks at the enterprise can be implemented with the help of various software tools and technologies. Here are some ways that can be used to automate this process:

1. Use of an automated inventory management system (ERP). Such a system allows you to collect, analyze and control information about stocks at the enterprise in real time. It also helps track the movement of inventory from the time it is ordered to the time it is used, and control inventory levels in the warehouse.

2. Use of automatic identification technology (Auto-ID). For example, barcodes, RFID technologies or QR codes, which can be installed on each product or at each storage location. This allows for quick and accurate inventory information without having to manually scan each item.

3. Use of intelligent analytical systems. Such systems allow for the analysis of large volumes of inventory-related data in real time. This helps to identify trends and forecast the demand for goods, allowing the company to purchase the necessary inventory in time.

4. Using a supply chain management system (SCM). Such a system allows for effective coordination between the enterprise and its suppliers, which allows for timely and efficient provision of inventory needs.

Table 1

Basic methodological techniques of economic analysis of production stocks

№	Method	Essence
1	2	3
1	Dynamic (horizontal)	Absolute and relative deviations are determined as a result of calculating the change in indicators over a certain period of time.
2	Trend analysis	The trend is calculated, that is, the main tendency of indicators in the dynamics, using information for several periods by means of forecasting economic indicators for the following periods.
3	Structural (vertical) analysis	Specific structural indicators of the research object, such as property, income, are determined in order to compare the relative indicators of enterprises that differ in absolute terms.
4	Analysis of relative indicators (coefficients)	The relationship between individual values of the enterprise's activity and the definition of their relationships are calculated.
5	Inter-farm comparative analysis	The analysis is carried out in comparison with the indicators of other enterprises in a similar field of activity or with the average industry indicators.
6	Balance method	Ratios and proportions of interdependent economic indicators are determined, the results of which must be identical.
7	Economics – statistical methods	Analytical grouping and some types of analysis are carried out: correlation-regression, index, component. These methods are based on the use of probability theory and statistics.
8	ABC analysis	There is an interconnected grouping of objects based on how strongly they affect the final result. The distribution of such objects is most often divided into three groups: A, B and C according to the ratio of specific gravity, respectively 80:15:5.
9	XYZ analysis	The analysis helps companies assess their current situation, understand which factors may be important for its future success and prepare for possible risks and challenges. X is an analysis of the company's internal factors, such as its capacity, resources, financial performance, human resources. Y is an analysis of external factors affecting the company, such as economic, political, social and technological factors. Z is an analysis of the future, i.e. forecasting the possible development of the company based on identified potential opportunities and threats.
10	Functional-cost analysis	It is manifested in a complex study of the object to find out and develop its main functions, provided that they are evenly distributed according to their importance according to each end user and the costs and their implementation.
11	The method of expert evaluations	It is aimed at interviewing highly qualified persons or those who are competent in this problem and they have a sufficient amount of knowledge about the object. It is used in the study of complex processes, when no influence of factors on the final result can be accurately measured.
12	Factor analysis	With its help, the method of quantitative measurement of the influence of specific factors on the size of the performance indicator is studied. Two types of models are used for this analysis: stochastic and deterministic using elimination techniques and economic-stochastic models.

Source [1; 2; 5; 8; 10–15; 17; 19]

5. Use of mobile applications and Internet technologies. Mobile applications can help employees monitor and track stock movement in a warehouse, order new stock, and perform other inventory management operations. With the help of Internet technologies, it is possible to access various resources and databases with information about stocks, which allows you to quickly and efficiently perform various operations of stock management.

6. Using the Internet of Things (IoT). IoT allows various devices and sensors to be networked that can send inventory data in real time. This allows you to control the movement of stocks in the warehouse, monitor their level and receive notifications about the need to order new stocks.

7. Use of artificial intelligence (AI). AI can be used to analyze and process large volumes of inventory data to identify trends and forecast demand for goods. In addition, AI can help the enterprise to carry out automated optimization of stocks, which allows to reduce the costs of their storage and management.

8. Use of blockchain technologies. Blockchain allows you to store and share inventory data in a secure and efficient way. In addition, blockchain allows tracking the movement of inventory from the supplier to the end user, which helps ensure the reliability and transparency of the supply chain.

9. Use of inventory management systems (Inventory Management Systems). Inventory management systems allow businesses to automate the processes of ordering, receiving, storing, and tracking inventory. These systems allow businesses to keep accurate inventory records and reduce risks associated with shortages or excess inventory.

10. Use of data analysis and reporting. Data analysis allows you to identify trends and forecast demand for goods, which allows businesses to ensure adequate inventory levels. In addition, reporting systems allow businesses to monitor inventory movements and keep accurate records of inventory management costs.

Thus, the automation of inventory management at the enterprise can be carried out with the help of various tools and technologies. This allows enterprises to effectively keep records and manage stocks, reduce the risks associated with shortages or excess stocks, as well as reduce the costs of their storage and management.

There are many software, complexes and databases that are used for planning and analysis of production stocks in an agricultural enterprise. Examples are shown in Table 2.

Table 2

Software for the analysis of production stocks

№	Name	Characteristic
1	2	3
1	Agroptima	Software for keeping records of production at agricultural enterprises. It allows you to monitor all stages of growing plants, from soil preparation to harvesting. In addition, Agroptima helps to plan work in the fields, control the stocks of seeds and fertilizers, as well as carry out financial accounting.
2	SAP Agricultural Contract Management	A complex for managing contracts in agriculture. It allows you to create and manage contracts with suppliers, control product inventories, and conduct cost and profit analysis.
3	FarmWorks	Software for planning and accounting for production on farms. It allows you to monitor all processes of growing plants and animal production, control product stocks, manage costs and profits.
4	Granular	A complex for farm management that allows you to monitor all stages of production in the fields and barns. It allows you to plan work in the fields, control the stocks of products and fertilizers, manage the work of personnel and costs.
5	Cropio	Software for planning and analysis of field production. It allows you to monitor the condition of crops, keep records of costs and profits, as well as conduct production analysis and plan work in the fields. In addition, Cropio connects farmers and suppliers, making it easy to order supplies.
6	AgriXP	Farm management software that allows you to plan and execute field work, control product and material inventories, and manage costs and profits. AgriXP also has functionality for production analysis and crop forecasting.
7	FarmLogs	Field production monitoring software. It allows you to monitor the condition of the crops, control the stocks of products and fertilizers, as well as plan work in the fields. FarmLogs also has functionality for production analysis and crop forecasting.
8	FieldX	Software for keeping track of production in the fields. It allows you to monitor the state of crops, control the stocks of products and fertilizers, plan work in the fields and conduct production analysis.
9	FarmERP	Farm management software that allows you to monitor all stages of production on farms. It allows you to plan work in the fields and barns, control product and fertilizer stocks, analyze production and manage costs and profits.

Source [3; 4; 6; 7; 9; 16; 18; 20]

These software, complexes and databases help to increase the efficiency of production in agricultural enterprises, providing more accurate planning and analysis of production, control over stocks of products and materials, and improving communication between farmers and suppliers.

Each software, complex or database has its own features and functionality, therefore, before choosing, it is necessary to carefully research each of the offers and choose the one that is best suited for a specific agricultural enterprise.

In addition, it is important to understand that the use of software, a complex or a database is not a panacea and does not guarantee success in production at agricultural enterprises. They are only a tool that can help improve production efficiency and make it more transparent and controllable.

Automation of inventory analysis at agricultural enterprises has a number of advantages.

First, it provides more accurate and faster data collection, processing and analysis, which allows to increase production efficiency and reduce the risk of losses.

Secondly, the automated analysis of production stocks makes it possible to identify the need for necessary materials in a timely manner, which ensures planning and optimization of procurement and warehouse management processes.

Thirdly, reducing losses of material resources and costs for their storage and processing, which affects the increase in the profitability of the enterprise.

Fourthly, the automated analysis of production stocks allows to increase the accuracy of production forecasting and the establishment of optimal production development strategies. In general, the automation of inventory analysis is an important tool for increasing the efficiency and profitability of agricultural enterprises.

Conclusions. Therefore, information provision and methods of analysis of production stocks are important components of the management of the production process and the achievement of the profitability of the enterprise. Automating the process of inventory analysis reduces time and effort for analysis and provides more accurate and up-to-date data. To achieve this goal, it is necessary to use modern information technologies and inventory management systems that allow collecting and analyzing data on production inventory in real time, optimizing their use, and minimizing inventory maintenance costs.

Thus, the use of high-quality information support and modern methods of analysis of production stocks are important factors affecting the efficiency of the enterprise. Automation of the process of analysis of production stocks allows to increase the efficiency of stock management and to ensure more accurate and up-to-date management decisions. Prospects in this field are associated with the constant improvement of information technologies and management systems, which allow to provide a more accurate and quick analysis of production stocks and ensure the effective use of working capital at the enterprise.

A number of advantages that can be provided by the process of automating inventory analysis were also identified: ensuring more accurate and faster data collection, processing and analysis, which allows to increase production efficiency and reduce the risk of losses; timely identification of the need for necessary materials; reduction of losses of material resources and costs for their storage and processing, which affects the increase in the profitability of the enterprise; increasing the accuracy of production forecasting and establishing optimal production development strategies.

REFERENCES:

1. Romaniv Ye.M. et al. (2017) Accounting, Analysis and Audit: training manual. Lviv: Ivan Franko National University, p. 772.
2. Banera N.P. et al. (2017) Accounting and Audit: training manual / edited by Skasko O.I. Lviv: RASTR-7, 504 p.
3. Al-Sudani A. & Al-Tamimi A. (2018) Automated inventory management system based on RFID technology. *International Journal of Advanced Computer Science and Applications*, no. 9(8), pp. 90–97.
4. Ben-Taher S., Gedan A. & Khan L. (2017) Automated inventory management system based on data analysis and forecasting. *International Journal of Logistics Management and Systems*, no. 27(2), pp. 195–209.
5. Volkova N.A. et al. (2020) Economic Analysis: training manual. Odesa: PPC "Belka", p. 240.
6. Fagioli L., Zhung S. & Charles V. (2019) The use of the Internet of Things and data analytics for optimizing inventory management in manufacturing enterprises. *Journal of Manufacturing Systems*, no. 50, pp. 128–139.
7. Poddierogin A.M., Babyak N.D., Bilyk M.D. et al. (2017) Financial Management: textbook / editorial board: Prof. Poddierogin A.M. 2nd ed., revised. Kyiv: KNEU, 534 p.
8. Mykytiuk V.M. et al. (2018) Fundamentals of Economic Analysis / edited by Mykytiuk V.M. Zhytomyr: Ruta, 440 p.
9. George J. & Venkatachalam M. (2016) Automation of inventory management in production logistics. *International Journal of Engineering and Technology*, no. 8(3), pp. 1748–1755.
10. Holov S.F. (2019) Managerial Accounting. TsUL, 400 p.
11. Inventory: National Accounting Standard 9 dated October 20, 1999 No. 246. URL: <https://zakon.rada.gov.ua/laws/show/z0751-99#Text> (accessed March 24, 2023).
12. Ishchenko Ya.P., Podolianchuk O.A., Koval N.I. (2020) Financial Accounting 1. Vinnytsia: Publishing House FOP Kushnir Yu.V., 496 p.
13. Krupka M.I. et al. (2019) Financial Management. Lviv: Ivan Franko National University, 440 p.
14. Krupka Ya.D. (2015) Methods of property and investment valuation in accounting and reporting. *Economic Journal of Lesya Ukrainka Eastern European National University*, no. 1, pp. 76–83.
15. Kulyk A.V. (2018) Theory of Economic Analysis. Kyiv: DP "Vydavnychiy Dim "Personal", 452 p.
16. Nazarova I.Ya., Muravsky V.V. (2016) Information Systems and Automated Workplace of an Accountant. Ternopil, 301 p.

17. Semenova S.M., Shpyrko O.M. (2018) Accounting for production inventory and analysis of their utilization efficiency. VD "Artek": monograph. Kyiv, 239 p.

18. Svystun L.A. (2016) Prospects for the use of modern information technologies in the implementation of financial planning at the enterprise. *Economy and the region*, no. 3, pp. 13–21.

19. Yehorova O.V., Dorohan-Pisarenko L.O., Tyutiunnyk Yu.M. (2018) Economic Analysis. Poltava: RVVD PDAU, 290 p.

20. Zadorozhnyi M.V. et al. (2020) State and Prospects of Development of Accounting and Management Accounting in the Context of Globalization: monograph. Ternopil: Universytetska Dumka, 296 p.

UDC 657:658.153:65.011.56

JEL M41, M11, G30

Lyudmyla Svystun, PhD in Economics, Associate Professor. **Alina Kalinichenko**, Master Student, Yury Kondratyuk Poltava Polytechnic National University. **Information and analytical support of production stocks management at the enterprise for crisis prevention.**

The use of information support and automated methods of analysis of production stocks are important factors affecting the efficiency of the enterprise. This is especially relevant for enterprises operating in conditions of an unstable economy and experiencing the threat of crisis phenomena in economic activity. Automation of the process of analysis of production stocks allows to increase the efficiency of stock management and to ensure more accurate and up-to-date management decisions. The article considers the role and importance of information support and methods of analysis of production stocks at agricultural enterprises. Among others, it is proposed to use the following methods: economic-statistical, ABC-, XYZ-, functional-cost analysis, etc. The authors emphasize that the use of software, complexes and IT databases can improve production efficiency by providing accurate planning, analysis and control of stocks, raw materials and materials, as well as improving communication with suppliers. The article highlights the benefits of automated inventory analysis, such as faster data collection and analysis, timely identification of material needs, reduced resource wastage, and improved production forecasting accuracy. Thus, the authors of the article recommend using modern information technologies and inventory management systems to improve the efficiency and profitability of agricultural enterprises and to prevent the risk of a crisis on them.

Key words: production stocks, analysis, information and analytical support, automation, management, crisis prevention.

УДК 657:658.153:65.011.56

JEL M41, M11, G30

Свистун Людмила Анатоліївна, кандидат економічних наук, доцент. **Калініченко Аліна Сергіївна**, магістр, Національний університет "Полтавська політехніка імені Юрія Кондратюка". **Інформаційно-аналітичне забезпечення управління виробничими запасами підприємства з метою попередження криз.**

Використання якісного інформаційного забезпечення та сучасних методів аналізу виробничих запасів є важливими факторами, що впливають на ефективність діяльності підприємства. Це особливо актуально для підприємств, що працюють в умовах нестабільної економіки та відчують загрозу виникнення кризових явищ у господарській діяльності. Автоматизація процесу аналізу виробничих запасів дозволяє підвищити ефективність управління запасами та забезпечити більш точне та актуальне прийняття управлінських рішень, які мають бути виваженими і вчасними. У статті розглядається роль і важливість інформаційно-аналітичного забезпечення управління виробничими запасами на сільськогосподарських підприємствах. Серед інших, пропонується використовувати методи: економіко-статистичного, ABC-, XYZ-, функціонально-витратного аналізу та ін. Автори наголошують, що використання програмного забезпечення, програмних комплексів та інформаційно-технічних баз даних може покращити ефективність виробництва, забезпечуючи точне планування, аналіз та контроль запасів, сировини та матеріалів, а також покращення комунікації з постачальниками. У статті наведено переваги автоматизації аналізу виробничих запасів, такі як: швидше збирання та аналіз даних, вчасне виявлення потреб у матеріалах, зменшення втрат ресурсів та підвищення точності прогнозування виробництва. Таким чином, автори статті рекомендують використовувати сучасні інформаційні технології та системи управління запасами для покращення ефективності сільськогосподарських підприємств та запобігання ризику виникнення кризи на них у період ведення військових дій в країні.

Ключові слова: виробничі запаси, аналіз, інформаційно-аналітичне забезпечення, автоматизація, управління, запобігання кризі.