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THE ROLE OF INTERNAL INVENTORY IN OPTIMIZING MANAGEMENT ACCOUNTING

Summary. *This article explores internal inventory as a tool for enhancing the efficiency of management accounting in modern business environments. The relevance of the study stems from the growing need to improve inventory management practices to strengthen an organization’s financial stability and ensure the accuracy of accounting data—an essential prerequisite for sound managerial decision-making. The novelty of the research lies in the comprehensive systematization and analysis of contemporary internal inventory procedures, including physical counts, cycle counting, differentiated inventory control based on ABC analysis, and advanced automation technologies using the Internet of Things (IoT). The study outlines and examines internal control and stock audit procedures in detail, evaluating their impact on improving the reliability and quality of management accounting data. Special attention is given to analyzing the effectiveness of practical IoT applications in inventory monitoring, which significantly reduce the influence of human error and improve the responsiveness of control processes. The research is focused on identifying the mechanisms through which internal inventory contributes to optimizing management accounting processes. To achieve this, the study applies methods such as comparative analysis, analytical review, and synthesis of current academic sources. The conclusion highlights the specific positive effects of implementing the described internal inventory methods on the performance*

indicators of management accounting. The article is intended for professionals in management accounting, financial management, internal auditing, and inventory control.

Key words: *management accounting, internal inventory, cycle counting, ABC analysis, IoT technologies, accounting automation, inventory control, internal audit, financial indicators, inventory optimization.*

Introduction. Management accounting, focused on the internal needs of organizational governance, relies on accurate inventory data for planning, control, and decision-making. Effective inventory management enhances operational efficiency and financial stability, while poor inventory control may lead to overstocking, capital being tied up, or product shortages—all of which negatively impact costs and customer service levels.

In response to these challenges, many companies adopt internal inventory as part of their internal control systems. Internal inventory refers to the regular process of checking and reconciling physical inventory levels with accounting records within the organization. The goal is to ensure the reliability of inventory data used in management reports. Implementing effective internal inventory procedures contributes to improved accounting accuracy, optimized stock levels, and, consequently, better key financial indicators. Thus, the relevance of this study lies in understanding the role of internal inventory in improving management accounting and the methods by which inventory control can enhance accounting processes.

The purpose of this analytical article is to examine the impact of internal inventory procedures on the optimization of management accounting. The study explores key methods of internal inventory (including physical counts, cycle counting, ABC analysis, and others), analyzes their effect on accounting accuracy and financial performance, and presents implementation outcomes based on current literature.

Materials and Methods. This article draws on research and materials from the following sources. Carr, Riggs & Ingram¹ investigated internal control procedures and their effectiveness in inventory storage and management. T. Allers² proposed approaches to inventory auditing aimed at identifying stock surpluses and shortages. D. Patil and A. Bhaumik³ demonstrated, using warehouse locations as case studies, the benefits of IoT technologies in inventory processes, showing significant improvement in data accuracy. M. Kuuse and P.J. Scott⁴ elaborated on the principles and advantages of ABC inventory analysis for differentiated control. H.D. Pramudito and co-authors⁵ analyzed the relationship between internal control systems and the quality of accounting information at a manufacturing enterprise. KnowledgeLeader⁶ provided practical recommendations for implementing best practices in inventory management. Materials from CFI Education Inc.⁷ related to inventory auditing were also used to ensure alignment with internal control standards.

The research methods included comparative analysis, analytical literature review, data systematization, and synthesis of results.

Results. Internal inventory involves a range of procedures aimed at verifying and controlling inventory within an organization.

A full (complete) inventory involves periodically physically counting all of the organization's goods and materials and comparing them with accounting

¹ Carr, Riggs & Ingram. (2019). Using internal controls to keep a record of your inventory: Storing & managing inventory. <https://www.criadv.com/insight/internal-inventory-controls-storage-management/>

² Intuendi. (2024). Inventory audit (T. Allers, Author). <https://intuendi.com/resource-center/inventory-audit/>

³ Patil, D., & Bhaumik, A. (2024). IoT innovations as a strategy for minimizing construction expenses. *Journal of Machine and Computing*, 349–359. <https://doi.org/10.53759/7669/jmc202404033>

⁴ Kuuse, M., & Scott, P. J. (2024). ABC analysis (80/20 rule) in inventory management. <https://www.mrpeasy.com/blog/abc-analysis/>

⁵ Pramudito, H. D., Kamar, K., Bakri, A., Husaini, & Pratiwi, N. (2024). Analysis of internal inventory control systems and accounting information systems for product stock inventory in a national corporate wear manufacturing company. *Jurnal Informasi dan Teknologi*, 5(4), 305–311. <https://doi.org/10.60083/jidt.v5i4.457>

⁶ KnowledgeLeader. (2019). How to use the 5 best practices of inventory management. <https://info.knowledgeleader.com/how-to-use-the-5-best-practices-of-inventory-management>

⁷ CFI Education Inc. (n.d.). Auditing inventory. <https://corporatefinanceinstitute.com/resources/accounting/auditing-inventory/>

records. This approach provides the most thorough check, but is typically conducted infrequently (e.g., annually) due to the significant time and resource costs. Cycle counting, on the other hand, spreads the inventory checks over time: specific categories or segments of inventory are counted regularly (daily, weekly) according to a rotating schedule. This method is considered a best practice, as it allows for maintaining a high level of data accuracy without interrupting operations. Companies that implement continuous cycle counting report improved inventory movement control and a reduction in operational disruptions⁸.

Another key tool is ABC analysis of inventory, based on the Pareto principle. It divides all inventory items into categories A, B, and C depending on their contribution to the total inventory value and quantity share. Typically, category A includes about 20% of inventory items, which account for about 80% of the total inventory value; category C, on the other hand, may include up to 50% of low-cost items, contributing only about 5% of the total inventory value⁹ (see Fig. 1). Through ABC analysis, a company can focus control efforts (e.g., frequency of counts) on the most valuable items (category A). According to recommendations, ABC analysis is often used as an inventory audit procedure: high-value items are counted more frequently, while items in category C are counted less often¹⁰. This differentiated approach improves the efficiency of internal audits.

⁸ KnowledgeLeader. (2019). How to use the 5 best practices of inventory management. <https://info.knowledgeleader.com/how-to-use-the-5-best-practices-of-inventory-management>

⁹ Kuuse, M., & Scott, P. J. (2024). ABC analysis (80/20 rule) in inventory management. <https://www.mrpeasy.com/blog/abc-analysis/>

¹⁰ CFI Education Inc. (n.d.). Auditing inventory. <https://corporatefinanceinstitute.com/resources/accounting/auditing-inventory/>

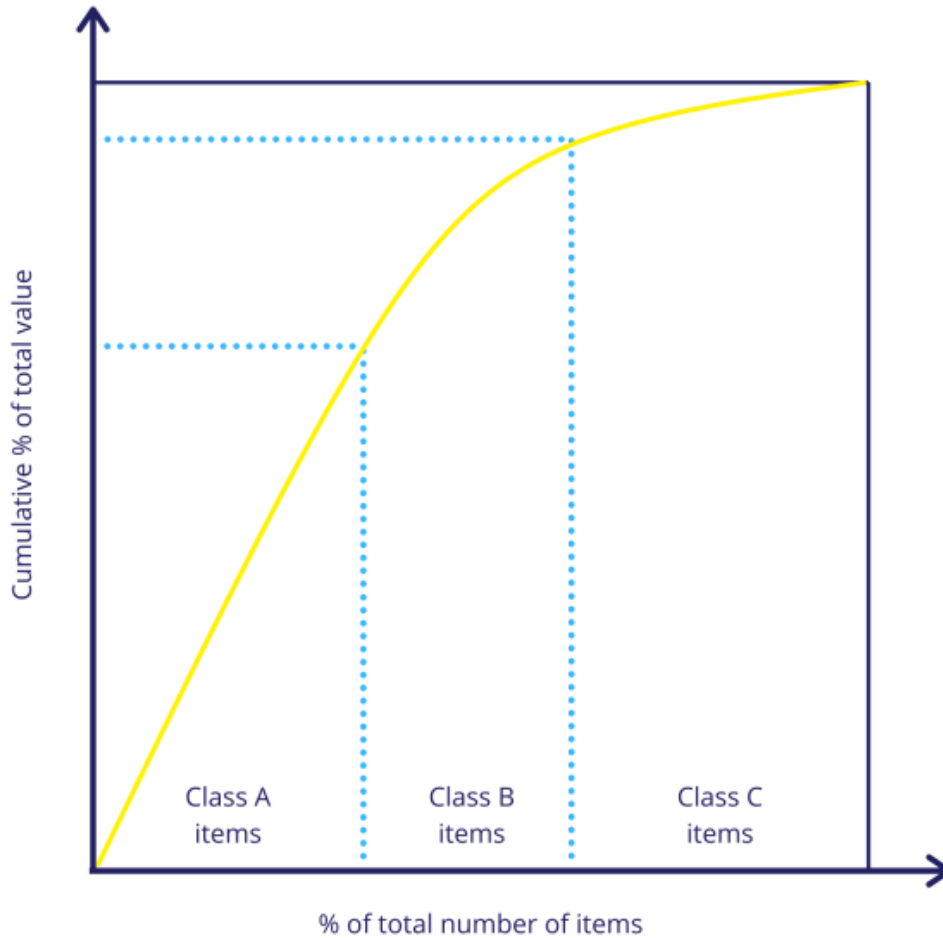


Fig. 1. ABC Classification of Inventory¹¹

Inventory Control and Audit Procedures. Various control procedures are implemented within internal inventory processes. Figure 2 shows an example of the impact of implementing an automated accounting system (using IoT technologies) on the accuracy of inventory tracking at six different warehouses (locations). The red bars indicate the inventory accuracy after implementing the system, while the yellow bars represent accuracy before implementation. It can be seen that in all cases, after using IoT technologies, the accuracy of inventory tracking significantly increased (e.g., from about 80% to 90–95%), demonstrating the benefit of automation for inventory control. IoT devices allow real-time

¹¹ Kuuse, M., & Scott, P. J. (2024). ABC analysis (80/20 rule) in inventory management. <https://www.mrpeasy.com/blog/abc-analysis/>

tracking of inventory levels and movements, automatically recording arrivals, departures, and product movements¹². As a result, the impact of human error and mistakes in accounting is reduced, ensuring more accurate records of stock levels. Research confirms that the use of IoT trackers and sensors leads to a continuous increase in the accuracy of accounting and the reliability of inventory monitoring systems. For example, Patil et al. (2024) demonstrated an average accuracy improvement of 5–10 percentage points after implementing IoT systems across six warehouses (see Fig. 2)¹³, which potentially leads to a reduction in costs related to accounting errors and an improvement in financial performance.

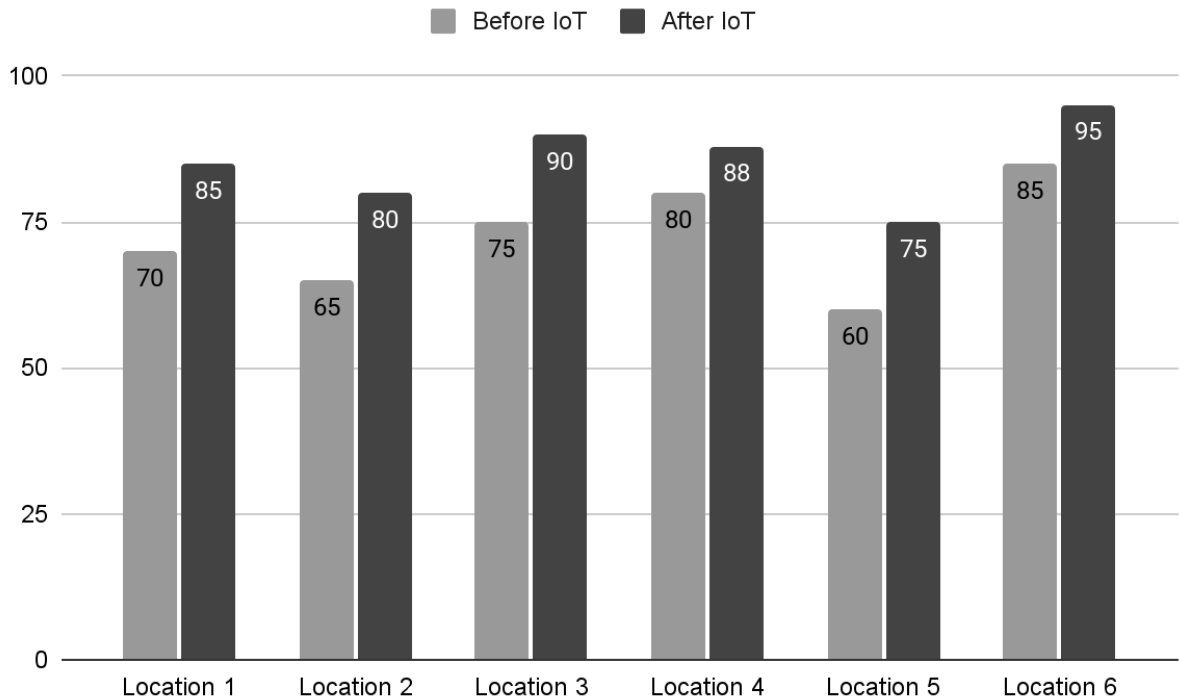


Fig. 2. Inventory Accuracy Before and After Implementing IoT Monitoring Systems at Six Locations¹⁴

¹² Patil, D., & Bhaumik, A. (2024). IoT innovations as a strategy for minimizing construction expenses. *Journal of Machine and Computing*, 349–359. <https://doi.org/10.53759/7669/jmc202404033>

¹³ Same

¹⁴ Same

In addition to technical tools, organizational control measures play an important role. According to the COSO conceptual model, an effective internal inventory control system includes: control environment (policies, management responsibility), risk assessment, control activities (specific procedures, such as segregation of duties when handling inventory), information systems, and monitoring¹⁵. The implementation of a well-designed internal control system can increase the productivity of operations, prevent theft, and ensure compliance with accounting procedures. For example, restricting warehouse access, dividing responsibilities (with one set of employees responsible for receiving goods, while another group is responsible for recording them in the accounting system), and conducting regular independent audits—these are all elements of internal control that reduce the likelihood of fraud or errors¹⁶.

Table 1 summarizes the main methods and procedures of internal inventory and stock control used in practice, along with their brief descriptions.

Table 1

Main Methods of Internal Inventory and Stock Control¹⁷

Method / Procedure	Description
Full Physical Inventory	Periodic (e.g., annual) complete counting of all stock and comparison with accounting data. It ensures high accuracy but requires halting operations and significant resources.

¹⁵ Pramudito, H. D., Kamar, K., Bakri, A., Husaini, & Pratiwi, N. (2024). Analysis of internal inventory control systems and accounting information systems for product stock inventory in a national corporate wear manufacturing company. *Jurnal Informasi dan Teknologi*, 5(4), 305–311. <https://doi.org/10.60083/jidt.v5i4.457>

¹⁶ Carr, Riggs & Ingram. (2019). Using internal controls to keep a record of your inventory: Storing & managing inventory. <https://www.criadv.com/insight/internal-inventory-controls-storage-management/>

¹⁷ KnowledgeLeader. (2019). How to use the 5 best practices of inventory management. <https://info.knowledgeleader.com/how-to-use-the-5-best-practices-of-inventory-management>
CFI Education Inc. (n.d.). Auditing inventory. <https://corporatefinanceinstitute.com/resources/accounting/auditing-inventory/>

Patil, D., & Bhaumik, A. (2024). IoT innovations as a strategy for minimizing construction expenses. *Journal of Machine and Computing*, 349–359. <https://doi.org/10.53759/7669/jmc202404033>

Method / Procedure	Description
Cycle Counting	Continuous counting of parts of the inventory according to a schedule (daily, weekly). This allows maintaining up-to-date data without interrupting warehouse operations. Priority is given to more valuable or fast-moving items.
ABC Inventory Analysis	Classification of inventory by importance: Category A – the most expensive and critical items, B – medium, C – least valuable. Used to differentiate the frequency and thoroughness of control.
Barcoding / RFID	Use of automatic identification technologies (barcodes, RFID tags) for tracking product movement. Speeds up receiving and issuing operations and reduces the risk of errors when entering data manually.
IoT Inventory Monitoring	Installation of sensors and use of the Internet of Things (IoT) for constant tracking of inventory levels (see Fig. 2). Automating data collection improves accounting accuracy and the timeliness of information updates.
Internal Inventory Audit	Periodic checks of inventory management processes by internal auditors. Assesses compliance with established procedures, reporting accuracy, and the effectiveness of the control system. Audit results help identify and address deficiencies.

Thus, the analysis of literature sources and practical reports demonstrates that the proper execution of internal inventory directly affects the quality of management accounting and business efficiency. The main findings identified in the study are as follows:

1. Improvement of accounting data accuracy. The implementation of regular inventory checks significantly improves the accuracy of inventory data. Companies that have transitioned from occasional inventory counts to systematic cycle counting generally achieve nearly complete alignment between accounting records and actual stock levels in the warehouse. For example, according to one study, the average accuracy of inventory records after implementing a cycle counting program exceeded 95%, compared to approximately 85-90% before implementation¹⁸. As a result, the likelihood of distorting financial indicators

¹⁸ Same

decreases. Since the value of inventory impacts the calculation of the cost of goods sold and profits, more accurate data means more reliable internal cost and performance reports. Thus, management accounting becomes a more reliable tool for decision-making.

2. Optimization of inventory levels and cost reduction. Accurate data on current stock levels enables managers to optimize inventory—identifying excess or outdated items in a timely manner and preventing shortages of fast-moving goods. Reducing excess inventory leads to a reduction in associated costs (storage, insurance, and frozen working capital). For example, the transition to a just-in-time (JIT) system reduces the need for safety stock and decreases related maintenance costs. According to Intuendi, conducting regular inventory checks helps identify surpluses and shortages early on, which allowed one of the studied companies to reduce total inventory costs over the year by selling off unused materials and more accurately planning orders¹⁹. These results are closely related to improvements in management accounting indicators: the reduction of storage costs and write-offs reflected in lower cost of goods sold and improved profitability.

3. Prevention of theft and fraud. Internal audits and clear inventory procedures serve as a deterrent to potential theft of goods. When employees are aware that inventory is regularly counted and controlled, the incentive for theft or over-reporting decreases. Inventory audits help verify asset valuations, identify shortages and write-offs, and improve inventory security. In organizations with a strong internal control system, cases of inventory loss due to theft are notably rare. Thus, the company's assets are preserved, and management reporting remains free of hidden losses.

4. Improvement of financial planning and analysis. Management accounting uses inventory metrics in budgeting and performance analysis (e.g.,

¹⁹ Intuendi. (2024). Inventory audit (T. Allers, Author). <https://intuendi.com/resource-center/inventory-audit/>

inventory turnover, days of inventory). After increasing the accuracy of data, these key performance indicators (KPIs) become more reliable. Inventory turnover – an important metric calculated as the cost of goods sold divided by the average inventory – increases when excess inventory is eliminated²⁰.

5. Integration with accounting information systems. Practical results also show that the greatest effect is achieved when inventory procedures are integrated with automated accounting information systems (ERP, warehouse management systems).

In general, the results indicate that internal inventories are a powerful tool for optimizing both operational activities and management accounting. They provide transparency and accuracy in accounting – a foundation for effective planning and control. The consolidated data from various studies confirm a positive correlation between a high level of inventory discipline and the financial performance of companies. For example, a company consistently implementing an inventory optimization and control policy can expect a reduction in the proportion of inventory in current assets, faster capital turnover, and increased profitability. These improvements are reflected in management reports and allow for more informed strategic conclusions.

Discussion. The results presented above demonstrate the importance of internal inventory procedures for optimizing management accounting. This section discusses the interpretation of these results, their practical implications, and limitations.

First and foremost, it is evident that the accuracy of inventory data is the cornerstone of reliable management accounting. If the accounting information regarding the quantity and value of inventory is inaccurate, it leads to erroneous management decisions. For example, overestimating stock levels can create an illusion of resource abundance and lead to unacceptably low procurement or

²⁰ Alnaim, M., & Kouaib, A. (2023). Inventory Turnover and Firm Profitability: A Saudi Arabian Investigation. *Processes*, 11(3), 716. <https://doi.org/10.3390/pr11030716>

production volumes, which results in supply chain disruptions. Conversely, consistently underestimating stock levels provokes excessive purchasing and increased storage costs. Internal inventory processes act as a feedback mechanism, allowing the accounting data to be regularly calibrated to reflect the actual situation. The data from this study confirm that companies that have implemented regular stock counts (in any format, whether full or partial) provide high reliability in their management reports on inventory.

An important consequence is the optimization of storage and procurement costs. By identifying excess or obsolete inventory, a company can take timely action – such as selling off the stock or reducing orders for such items – thereby reducing costs and freeing up warehouse space. This aligns well with lean production principles and JIT (just-in-time) systems, where minimizing inventory leads to lower overhead costs. However, it is important to note that excessive stock reduction without accounting for demand variability can increase the risk of shortages. Therefore, finding a balance between sufficient and minimized inventory is a matter of particular attention in management accounting. The use of inventory data should be supported by demand analysis and forecasting to ensure that inventory optimization does not harm service levels.

Regarding fraud prevention and loss reduction, the results show a significant decrease in shortages with strong internal control. This supports the thesis that an internal control system (including inventory management) increases operational transparency and employee discipline. When every item of resource inflow and outflow is recorded and checked, opportunities for abuse are drastically reduced. However, in practice, implementing such systems can face resistance from employees or may require changes in corporate culture. Employees may perceive increased control as a sign of distrust. Therefore, the role of leadership is crucial in explaining the goals – not punishment, but the overall success of the company – and in motivating employees to adhere to procedures.

The technical aspects of automation (barcode scanning, RFID, IoT) have shown a noticeable impact on improving the accuracy of accounting. The studies discussed confirm that the digitization of inventory processes is one of the most promising directions. However, the cost of implementing such technologies should be considered. For small businesses, large-scale adoption of RFID or IoT sensor networks may be financially challenging. In such cases, a combined approach may be optimal: for example, using mobile barcode scanners to simplify manual counting or basic accounting software instead of a full sensor system. It is important to note that even small improvements, such as implementing a barcode system, significantly reduce data entry errors and speed up the inventory process.

Integrating inventory results with information systems can also pose a challenge. Many companies face compatibility issues between outdated accounting systems and new data collection tools. A solution could be the modernization of IT infrastructure or the use of add-on modules that aggregate data from various sources. For example, IoT sensors can transmit data to an intermediate server, from which it is then uploaded into the ERP system. Training employees to work with new systems is another crucial aspect. If employees are not skilled in using the tools or do not trust them, the effectiveness will be lower than expected.

An interesting observation is that the effect of internal inventories is reflected not only in figures but also in improved managerial decision-making. Managers who receive timely and accurate reports on inventory can confidently conduct "what if" analyses, budgeting, and plan adjustments. Management accounting becomes proactive rather than reactive: instead of finding out the causes of deviations after the fact (e.g., why costs increased – because lost materials are written off), management can spot trends in advance (such as slow-moving stock growth, declining accuracy of inventory for specific warehouses, etc.) and take action. For example, in one case, after the implementation of regular

inventory monitoring, branch managers began holding monthly meetings on inventory status, using reports from cyclical inventories. This led to better coordination between the sales and production departments, as real stock data was communicated to all process participants promptly.

However, the limitations of the conducted study should also be acknowledged. First, most of the sources examined are general guides. Quantitative assessment of the contribution of internal inventories to financial results is challenging, as other improvements (such as demand planning systems and procurement optimization) are often implemented simultaneously. Therefore, isolating the effect of inventories requires additional data (e.g., controlled experiments or modeling). Second, each industry sector has its own specifics: for example, in retail, losses from theft (shrinkage) constitute a significant portion of expenses, and there, the benefits of frequent inventories are obvious, while in manufacturing, the emphasis is placed on the accuracy of accounting materials and work-in-progress. This paper provides an overview and does not account for all industry differences. However, the general principles of internal inventory management are widely applicable.

Discussions on the topic sometimes express concerns that frequent inventories are costly and distract from core activities. Indeed, if counting requires halting operations, a compromise arises between control and efficiency. This is why, nowadays, priority is given to methods that minimally impact the operational process, such as selective cyclical counts and automated accounting. Successful companies show that a well-organized internal inventory system becomes part of the daily routine and does not interfere with work – on the contrary, it organizes it. For example, some warehouses implement a practice where, before the end of each shift, the staff counts 1-2 items from category A and verifies them with the accounting system. This takes 10-15 minutes but allows discrepancies to be immediately detected and corrected. As a result, by the

time of the global inventory (for example, at the end of the year), the company already has a high level of confidence in the data.

Thus, when discussing the role of internal inventory, we see that it is not just a technical procedure for reconciling stock levels, but an integral part of the management accounting and control system. Without it, accounting data risks becoming unreliable, and managerial decisions ineffective. On the contrary, with well-organized inventory work, the organization gains a competitive advantage in the form of accurate information, cost savings, and confidence that "household" matters are in order, which, by the way, positively affects the external image – as external auditors and partners also trust the company more when they know about its strong internal control.

Conclusion. The analysis conducted confirmed that internal inventory management is a critical tool for optimizing management accounting. First, it ensures the reliability and timeliness of data about inventory, which forms the foundation for many management decisions. Regular inventory checks help identify and eliminate discrepancies between accounting records and actual stock levels, leading to improved accuracy in financial calculations and reporting. Management accounting, based on accurate data, more fully reflects the real situation, thereby enhancing the quality of planning and control.

Second, internal inventory management helps reduce costs and increase efficiency. Optimizing inventory levels (eliminating excess stock, preventing shortages) leads to lower storage costs, reduced write-offs and losses, and improved capital turnover. All these effects are reflected in management metrics: inventory turnover increases, the share of inventory in assets decreases, and cost indicators improve. Therefore, management accounting, supplemented by inventory data, more clearly signals opportunities for enhancing efficiency.

Third, by performing internal control functions, inventory management protects company assets and strengthens financial discipline. Preventing theft and fraud through transparent accounting safeguards assets and reduces unproductive

losses. This means that the financial results presented in management reports are not distorted by hidden leaks, allowing management to confidently use them for assessing performance and profitability.

Fourth, modern methods of internal inventory management, especially with the use of information technologies, enable faster information exchange and real-time integration of accounting. For example, the use of IoT and barcode systems provides almost immediate updates on inventory movement. This brings management accounting to a new level of operational efficiency, where reports are generated not weeks after an event, but almost simultaneously with it. This allows the company to respond more flexibly to changes in demand, supply disruptions, and other factors.

In conclusion, internal inventory management is an integral component of lean, adaptive organizational management. In an environment of increasing competition and rapidly changing markets, companies that can manage their inventory accurately and efficiently gain financial benefits and strategic advantages. Management accounting in such companies transforms from mere transaction recording to a tool for deep analytics and decision-making support.

The results of this study confirm the need for investment in improving internal inventory management processes. Managers are encouraged to assess the current level of inventory accuracy and, if necessary, implement the methods described in this article: establish a system of regular checks (with a focus on valuable inventory through ABC analysis), introduce modern accounting technologies, develop clear procedures, and train staff. It is also important to establish feedback mechanisms: using inventory data to revise inventory standards, adjust procurement and production plans, i.e., integrate results into management accounting frameworks.

Effective internal inventory management is a continuous process of improvement. It requires attention to detail, discipline, and modern approaches, but it brings tangible dividends in terms of transparency, savings, and confidence

that the information used by management is accurate. And accurate information is the foundation of successful management.

References

1. Alnaim, M., & Kouaib, A. (2023). Inventory Turnover and Firm Profitability: A Saudi Arabian Investigation. *Processes*, 11(3), 716. <https://doi.org/10.3390/pr11030716>.
2. Carr, Riggs & Ingram. (2019). Using internal controls to keep a record of your inventory: Storing & managing inventory. URL: <https://www.criadv.com/insight/internal-inventory-controls-storage-management/> (access date: 01.04.2025).
3. CFI Education Inc. (n.d.). Auditing inventory. URL: <https://corporatefinanceinstitute.com/resources/accounting/auditing-inventory/> (access date: 01.04.2025).
4. Intuendi. (2024). Inventory audit (T. Allers, Author). URL: <https://intuendi.com/resource-center/inventory-audit/> (access date: 01.04.2025).
5. Kuuse, M., & Scott, P. J. (2024). ABC analysis (80/20 rule) in inventory management. URL: <https://www.mrpeasy.com/blog/abc-analysis/> (access date: 01.04.2025).
6. Patil, D., & Bhaumik, A. (2024). IoT innovations as a strategy for minimizing construction expenses. *Journal of Machine and Computing*, 349–359. <https://doi.org/10.53759/7669/jmc202404033>.
7. Pramudito, H. D., Kamar, K., Bakri, A., Husaini, & Pratiwi, N. (2024). Analysis of internal inventory control systems and accounting information systems for product stock inventory in a national corporate wear manufacturing company. *Jurnal Informasi dan Teknologi*, 5(4), 305–311. <https://doi.org/10.60083/jidt.v5i4.457>.

8. KnowledgeLeader. (2019). How to use the 5 best practices of inventory management. URL: <https://info.knowledgeleader.com/how-to-use-the-5-best-practices-of-inventory-management> (access date: 01.04.2025).