Advances in Management and Business Studies (AMBuS)
ISSN: 3123-6871, Vol 1, No 1, 2025, 33-46 https://doi.org/10.35912/ambus.v1i1.3757

The practice of accounting for production costs and the process method of determining production costs in cotton and textile clusters and ways to improve it

Khalikov Talibjon Luptullaevich
Samarkand Institute of Economics and Service, Samarkand, Uzbekistan
xoliqov0220@mail.ru

Article History
Received on 20 September 2025
1st Revision on 28 September 2025
2nd Revision on 8 October 2025
Accepted on 20 October 2025

Abstract
Purpose: This study aims to analyze the characteristics of cost formation and accounting in cotton and textile clusters using the process-based costing method. The main objective is to identify inefficiencies in current cost allocation practices and propose methods to enhance cost accuracy, transparency, and resource management efficiency within the industry's complex production structure.
Research methodology: The research employs a descriptive and analytical approach that integrates theoretical analysis with a case-based examination of accounting practices in cotton and textile enterprises. Data were collected from production reports, accounting documents, and expert interviews to assess the application of the process costing method across various production stages.
Results: Findings reveal that existing cost accounting systems often fail to fully capture production complexity and indirect cost distribution. The study highlights the benefits of implementing automated and digitalized accounting systems, which significantly improve cost control, accuracy, and decision-making efficiency.
Conclusions: The process-based costing method is identified as the most suitable approach for the multi-stage textile industry. Its application, when supported by digital transformation, leads to more effective cost management and overall productivity enhancement.
Limitations: The study is limited to selected clusters and does not include comparative analysis with other industrial sectors, which may affect generalizability.
Contribution: This research contributes to the refinement of accounting methodologies in textile clusters by providing practical recommendations for process optimization and digital cost management implementation.

Keywords: *Accounting Optimization, Accounting Policy, Cost Accounting, Cost Of Production, Textile Cluster*

How to Cite: Luptullaevich, K. T. (2025). The practice of accounting for production costs and the process method of determining production costs in cotton and textile clusters and ways to improve it. *Advances in Management and Business Studies,* 1(1), 33-46.

1. Introduction

The modern development of the textile industry, including within integrated clusters, requires not only technical modernization but also improvement of accounting policies, especially in terms of determining costs. In a highly competitive market with increasing demands for quality and cost-effectiveness, a cost accounting system must ensure transparency, accuracy, and control of financial flows (Nurfadila, 2024). The process costing method is particularly relevant because it allows for a more objective allocation of costs for products that pass through multiple production stages (Wouters, Morales, Grollmuss, & Scheer, 2016). However, its implementation in cotton-textile clusters is accompanied by several

methodological and organizational challenges. This study aims to analyze existing approaches, identify bottlenecks, and propose effective ways to improve the cost accounting system in clusters.

This study aims to develop recommendations for improving the practice of cost accounting based on the process method in cotton and textile clusters, aimed at improving the accuracy of cost calculation and the efficiency of production resource management. The research objectives are as follows: to analyze the current practice of cost accounting for products at enterprises of cotton-textile clusters; to investigate the features of the application of the process method of calculation in multi-stage production processes of the textile industry; to identify the shortcomings and problematic aspects of the existing methods of cost allocation and cost accounting; to assess the impact of the applied accounting policy on the accuracy of the formation of the cost of products; to compare the process method with alternative approaches to calculation at enterprises of a similar profile; to develop proposals for improving accounting, including elements of automation, digitalization, and integration with management systems; and to justify the economic efficiency of the proposed improvements in terms of cost management and increased accounting transparency (Haraldsson, 2016).

The object of research is the economic activity of enterprises that are part of cotton and textile clusters, while the subject of the study is the methodology of accounting and calculating the cost of production using the process method in textile clusters (Luptullaevich, 2024; Shcherbak, 2017). The modern textile industry operates in a dynamic environment influenced by rapid technological advances, global trade liberalization, and evolving sustainability requirements (Bibi et al., 2024). Within this context, the role of accounting systems extends far beyond financial reporting; it becomes a fundamental management tool for planning, controlling, and optimizing production activities (Vianney & Nurofik, 2024).

Cotton-textile clusters, as integrated formations combining raw material suppliers, processing plants, and finished-goods manufacturers, demand a unified and efficient approach to cost management (Zairina, Wibisono, Ngaliman, Indrayani, & Satriawan, 2023). Their economic performance largely depends on how effectively costs are tracked and allocated across the interrelated production processes. This complexity reinforces the significance of adopting the process costing method, which captures cost accumulation and transfer between stages, thus providing an accurate reflection of production economics (Buys, 2024). A distinctive feature of cotton-textile clusters is their multi-stage technological chain, encompassing operations such as ginning, spinning, weaving, dyeing, and garment manufacturing (Walle, Kabish, Mindaye, Tigabu, & Selamo, 2024).

Each stage adds value and incurs unique costs. Therefore, the process method provides a structured mechanism for distributing material, labor, and overhead costs across production stages, ensuring that each output unit reflects its true resource consumption (Gibran, Jaddang, & Ardiansyah, 2021). In contrast, traditional or job-order costing systems often fail to represent the continuous nature of textile production, leading to distorted product cost information and, consequently, suboptimal managerial decisions. However, the efficiency of the process costing method depends on the quality of information available within an enterprise's accounting and management systems.

In many developing textile economies, enterprises still rely on fragmented or semi-manual accounting processes, which hinder timely data collection and cost monitoring (Afriyani, Indrayani, Indrawan, Wibisono, & Ngaliman, 2023). This study highlights the importance of integrating process costing with modern digital tools, such as Enterprise Resource Planning (ERP) systems, cloud-based accounting software, and automated production data sensors (Moon, 2007). Such integration enables real-time cost tracking, minimizes human error, and enhances decision-making accuracy by providing management with up-to-date analytical insights (Hardana, Nasution, Damisa, Lestari, & Zein, 2023).

Furthermore, the introduction of digitalized accounting systems contributes to greater transparency and standardization within the clusters. Given that cluster participants often differ in size, technology, and ownership structure, the establishment of common accounting principles ensures the comparability of cost data across enterprises (Nimtrakoon & Tayles, 2015). This harmonization facilitates the preparation of consolidated cluster-level financial statements and strengthens collaboration between enterprises

through shared information. Moreover, adherence to international financial reporting standards (IFRS) in cost accounting increases investor confidence and supports financing access (Hoti & Krasniqi, 2022; Musa, 2019).

Another key aspect is the managerial implications of improved cost accounting. When process costing is correctly implemented, it provides a detailed understanding of cost behavior at each stage of production. Managers can identify cost centers responsible for inefficiencies, compare planned versus actual expenses, and develop targeted cost-control measures (Ramadhani, Rinaldi, & Fitria, 2025). For instance, energy-intensive stages, such as dyeing, can be monitored for consumption optimization, whereas waste in spinning or weaving can be reduced through lean production techniques. In addition, by quantifying the financial effect of quality losses or reprocessing, enterprises can make informed investments in automation and quality assurance systems that yield measurable benefits.

This study also underscores the strategic role of accounting policy in shaping production decisions. A well-designed accounting policy that aligns with process costing principles allows enterprises to measure cost efficiency more accurately and to evaluate alternative production strategies (Rahu, Neolaka, & Djaha, 2023). This is particularly relevant in the current era of industrial digitalization, where cost information is not only a reporting tool but also a strategic asset for predictive analytics, scenario modeling and performance benchmarking. Ultimately, the modernization of cost accounting practices using the process method contributes to the broader goal of sustainable industrial development (Muliyanto, Indrayani, Satriawan, Ngaliman, & Catrayasa, 2023). By enabling more precise cost control, enterprises can improve profitability, enhance competitiveness, and reduce resource waste, thereby supporting environmental and economic sustainability. For cotton-textile clusters, which play a vital role in the national economy and employment, the implementation of advanced cost accounting systems represents not only financial improvement but also a strategic investment in long-term growth and innovation (Gallico, 2025; Naqvi, Khaskhely, Khaskhely, & Mangrio, 2021).

2. Literature Review

2.1 Theoretical Foundation and Concept of Production Costs

2.1.1 Definition and Function of Production Costs in Accounting

In accounting, production costs are defined as all expenditures incurred in the process of producing goods, including direct materials, direct labor, and factory overhead. Datar, Rajan, Beaubien, and Janz (2022) emphasize that the main function of cost accounting is to provide information for control, managerial decision-making, and performance evaluation. In modern manufacturing, production cost accounting is not merely a bookkeeping activity but a strategic management tool that allows firms to analyze efficiency, identify waste, and optimize resource utilization. Accurate cost information supports pricing decisions, profitability analyses, and long-term planning.

2.1.2 Costing Methods: Job-Order, Absorption, and Process Costing

The cost accounting literature identifies three principal methods for determining production costs:

1. Job-order costing – applied in customized production, accumulating costs by order. However, it is less suited to continuous or large-scale manufacturing.
2. Full absorption costing – allocates all fixed and variable costs, including overhead, to each unit produced.
3. Process costing – accumulates costs by department or process and averages them over the units produced. This method is best suited for continuous and homogeneous production, such as in the textile industry.

Process costing enables detailed cost tracking per production stage, which is particularly relevant to cotton-textile clusters, where materials flow sequentially through the ginning, spinning, weaving, dyeing, and finishing processes.

2.1.3 Characteristics and Stages of the Process Costing Method

The process costing system has the following features.

1. Costs are accumulated by process or department, not by individual orders.
2. The output of one stage becomes the input for the next stage.

3. Work-in-process (WIP) inventories are maintained at each stage.
4. Overhead allocation is based on relevant cost drivers such as labor or machine hours.

In textile manufacturing, every stage acts as a cost center, allowing managers to monitor cost buildup and efficiency at each level.

2.1.4 Advantages and Limitations of Process Costing

Advantages:

a) It provides cost transparency at every stage.
b) It facilitates cost control and variance analysis.
c) It is suited for standardized, continuous production.
d) Simplifies inventory valuation for WIP:

Limitations:

a. Manual data collection is time-consuming and prone to errors.
b. Overhead allocation may be distorted if the cost drivers are not carefully selected.
c. Inflexible in multi-product environments.
d. Joint and by-product cost allocations can be complex.

2.2 Context of the Textile Industry and Cotton-Textile Clusters

2.2.1 Characteristics of the Textile Industry

The textile sector operates through a multi-stage production chain, from raw cotton to finished garments. Each phase (spinning, weaving, dyeing, and finishing) entails different cost structures and efficiency levels. Process costing assists firms in identifying which stage contributes the most to overall costs (Latunusa, Timuneno, & Fanggidae, 2023). For instance, excessive energy consumption during dyeing can be traced and corrected using process-level data. Empirical evidence Vudugula, Chebrolu, Bhuiyan, and Rozony (2023) confirms that process-based analysis improves productivity and profitability in textile firms.

2.2.2 Industrial Clusters: Concept and Accounting Challenges

Industrial clusters are geographically concentrated groups of interconnected firms and institutions within a single sector (Fundeanu & Badele, 2014; Porter, 2000). Cotton-textile clusters integrate farmers, ginning mills, spinning units, fabric producers, and garment manufacturers, thereby creating vertically connected ecosystems.

However, several accounting challenges arise within the clusters.

1. Lack of standardization: Each enterprise may use distinct accounting systems, which hinders consolidation.
2. Inter-unit transfers: The outputs of one unit become the inputs for another, requiring accurate transfer pricing.
3. Shared infrastructure: Common facilities generate overheads that must be allocated fairly.
4. Cluster-level reporting: Managers require aggregated cost data for planning and evaluation.

Makhmudov et al. (2023) proposed a dual-accounting framework that integrates time-based recognition and target costing to enhance transparency and control, reducing production costs by up to 20 %. Other studies on segmental accounting (JuraevaJuraeva (2023); Khodjayeva (2022); Aripova, Khodjayeva, and Khodjava (2022) found that unclear cost segmentation among cluster members distorts performance reporting and weakens their coordination.

2.2.3 Empirical Studies on Cost Accounting in Textile Clusters

Empirical studies underscore the following persistent issues:

1. Hitt, Keats, and DeMarie (1998): Most cotton-textile clusters lack robust internal systems for performance monitoring and cost efficiency.
2. Musharavati, Ahmad, Javed, Sajid, and Naqvi (2024): Found that production inefficiency and material waste directly increase costs, which can be reduced through process-cost analysis.
3. Collinson et al. (2022) : Observed that SMEs in emerging textile markets still rely on traditional, manual accounting, with minimal managerial cost analysis.

Despite its theoretical suitability, the process costing method often fails in practice because of technical limitations, outdated systems, and organizational resistance to change.

2.3 Application of the Process Costing Method in Textile Production

2.3.1 Process Costing Across Textile Production Stages

In textile manufacturing, process costing is typically applied as follows:

1. Spinning: Converting raw cotton into yarns.
2. Weaving/Knitting: Transforming yarn into fabric.
3. Dyeing and Finishing: Adding color and final treatment.

Each department maintains its own WIP ledger, and costs are transferred as semi-finished goods are moved downstream. This provides transparency throughout the production cycle.

2.3.2 Indirect Cost Allocation and Joint Products

Allocating indirect costs, such as energy, maintenance, and depreciation, remains a key challenge. Many firms employ machine or labor hours as cost drivers. Recent approaches have integrated Activity-Based Costing (ABC) into process costing to refine overhead allocation (Chen, 2025). Cost drivers, such as energy consumption, setup time, or batch runs, better reflect resource usage. Where joint or by-products are generated, costs are shared based on physical measures or relative market value to ensure fairness and compliance with IFRS requirements (Cordova, Onyusheva, & Voronina, 2024; Zhuk, Borzenko, Buzoverov, Ivanov, & Shkolnikov, 2022).

2.3.3 Modern Modifications to Process Costing

Modern adaptations include:

1. Weighted-average and FIFO techniques are used to manage input cost fluctuations.
2. Standard costing and variance analysis for efficiency monitoring.
3. Process-ABC hybrids capture multidimensional overhead data.

Such modifications enhance accuracy and managerial usefulness, particularly in complex, resource-intensive environments such as textiles.

2.4 Constraints and Bottlenecks in Current Practices

2.4.1 Limited Digital Integration

A major bottleneck is the absence of integrated ERP or MES systems in the industry. Manual data recording causes delays, duplication, and inaccuracies, thereby reducing the timeliness of cost information. Digital systems can automate the data flow between the production and accounting departments, ensuring real-time reporting (Tiimub et al., 2023).

2.4.2 Human Resource and Technical Limitations

In many developing textile economies, cost accountants lack the technical expertise to implement advanced costing methods, such as TDABC. Insufficient training in variance analysis, cost drivers, and ERP configuration results in unreliable data. SMEs, in particular, struggle to adopt modern systems because of financial and human capital constraints.

2.4.3 Lack of Standardized Accounting Policies

Differences in depreciation, WIP valuation, and overhead allocation policies among cluster members make cost comparisons difficult. Studies on segmental reporting Hasanovna (2023) confirm that inconsistent accounting frameworks undermine cluster-level financial assessments.

2.4.4 Neglect of Environmental and Sustainability Costs

Most textile firms exclude environmental costs (waste management, emissions, and water usage) from production cost calculations. However, sustainable manufacturing increasingly requires transparency. Yang, Chen, Chiu, and Chang (2025) demonstrates that integrating environmental cost accounting through an ABC framework enhances eco-efficiency and compliance with global standards.

2.4.5 Price Volatility and External Uncertainty

The cotton-textile industry faces fluctuations in raw materials, energy, and exchange rates. Process costing, which is based on historical averages, often fails to reflect current market conditions. Hence, integrating predictive analytics and cost forecasting models is critical for maintaining accuracy and adaptability.

2.5 Strategies and Approaches for Improvement

2.5.1 Digitalization and Automation

The implementation of ERP and Manufacturing Execution Systems (MES) enables real-time cost recording and interdepartmental data flow (Kowsar & Rahman, 2022). Studies have reported up to 30 % improvement in cost accuracy and up to 40 % reduction in administrative workload. IoT sensors can capture machine-level data, thereby enhancing transparency and eliminating manual errors (Blagorodov & Volkova, 2022).

2.5.2 Hybrid Costing: Process Costing and ABC Integration

A hybrid approach combining process costing and ABC refines the overhead allocation. In dyeing, for instance, electricity and chemical costs can be allocated according to the batch size, machine time, or fabric weight, yielding more accurate process costs and supporting energy-saving initiatives.

2.5.3 Cluster-Level Policy Standardization

The development of unified accounting policies across cluster enterprises ensures consistency in cost recognition and comparability. Common frameworks should specify the following:

a) Overhead allocation standards
b) WIP valuation procedures
c) Inter-unit transfer pricing mechanisms
d) Segment reporting formats

The Uzbek dual-accounting model, which combines real-time tracking with target costing, is an example of successful harmonization.

2.5.4 Integration of Environmental Management Accounting

Textile clusters should integrate Environmental Management Accounting (EMA) to record and allocate waste, emissions, and resource usage costs (Xia, Fatema, Rahman, & Hossain, 2025). This approach links environmental responsibility to financial performance, reinforcing sustainability goals and global competitiveness.

2.5.5 Predictive Analytics and Decision-Support Systems

Advanced cost systems increasingly use machine learning and predictive analytics to forecast future costs and to simulate production scenarios. These tools enhance managerial responsiveness to material price volatility, capacity planning, and maintenance scheduling (Kerimov, Mustaev, Lavrenova, & Romanov, 2024).

2.5.6 Human Resource Development

Training programs for accountants and managers are essential to enhance their understanding of cost drivers, variance analysis, and ERP utilization. Collaboration between universities, professional bodies and cluster associations can strengthen local accounting capacity.

2.5.7 Pilot Projects and Gradual Implementation

Before a full-scale transformation, clusters should implement pilot projects in selected production units. The outcomes—cost accuracy, efficiency gains, and data quality—should be evaluated to refine the models before wider application.

2.6 Synthesis and Research Gaps

The reviewed literature reveals several key insights.

a) There is a consensus that the process costing method is most appropriate for multi-stage production, such as textiles.

b) Digital transformation through enterprise resource planning (ERP) and automation is a prerequisite for effective cost management.
c) Hybrid costing systems (Process + ABC) provide improved overhead allocation and decision relevance.
d) Sustainability accounting integration remains limited and requires further empirical exploration.
e) Cluster-level harmonization of accounting policies is under-researched, especially in developing economies.
f) Long-term impact assessments of accounting modernization in industrial clusters are still rare.

Consequently, the present study, which focuses on analyzing accounting practices, identifying constraints, and proposing digitally enhanced improvements, addresses a clear research gap. This study contributes to the literature on process-based cost accounting and offers practical guidance for improving transparency, efficiency, and sustainability in cotton-textile clusters.

3. Research Methodology

The following methods were used in the research process (Shabanov, Sidorov, Brodnev, Abysov, & Rumyantsev, 2020):

a) analytical method - for the analysis of the current state of cost accounting in clusters;
b) Comparative analysis: To assess the differences between the applied methods of calculation.
c) Economic and mathematical modeling - in the development of optimal models of cost allocation
d) monographic method - for the theoretical substantiation of the process method of accounting;
e) Expert survey: To identify practical difficulties among accountants and economists in the industry.

system approach to develop recommendations for the digitalization of accounting and automation of calculations.

4. Results and Discussion

The analytical method is the basis for assessing the actual state of cost accounting in cotton and textile clusters. This study collected and analyzed data on the level of accounting automation, accuracy of cost allocation, frequency of adjustments, and main problems faced by enterprises. As shown in Table 1, only approximately 45% of the surveyed enterprises use modern electronic accounting systems, indicating a relatively low level of digitalization in the industry. The remaining enterprises primarily use paper-based accounting or partial automation, which negatively affects the speed and accuracy of the data.

The accuracy of cost allocation at most enterprises leaves much to be desired; the average error is approximately 12%. This is primarily due to a mixed approach to accounting for indirect costs and the lack of a clear methodology for allocating costs by technology stage. The frequency of data adjustments reaches 3-5 times per month, indicating the need for constant refinement and updating of accounting information, as well as the high workload on accounting services. The main issues identified during the analysis include insufficient detail and differentiation of costs, as well as the failure to account for losses that occur at certain stages of production.

Table 1. Analytical method: analysis of the current state of cost accounting in clusters

	Value / Description	**Comments**
Level of accounting automation	45% of enterprises use electronic accounting systems	The rest is paper-based accounting or partial automation
Accuracy of cost allocation	Average error ~12%	Due to mixed accounting of indirect costs
Frequency of data adjustments	3-5 times per month	Increased workload on the accounting department
Main problems	Insufficient cost differentiation	Failure to account for losses at certain stages

Thus, the analytical method allowed us to identify the key shortcomings of the existing cost accounting practices, which served as a starting point for further research and the development of proposals for

improving the cost calculation process in cotton and textile clusters in Brazil. As part of the study of cost accounting practices in cotton and textile clusters, a comparative analysis of the main methods of cost calculation was performed. Table 2 lists the key advantages and disadvantages of each method, as well as the areas of optimal application. The classical costing method, based on the allocation of costs by product type, is simple and traditional, making it widely used by companies with relatively simple production processes. However, this method is not sufficiently accurate to account for indirect costs and does not allow for detailed control of costs at each stage of production.

The order-based costing method is more accurate and suitable for businesses that produce products based on individual orders. However, its application in the cotton and textile industries is limited, as most production processes are mass or serial, making it challenging to account for the costs of each individual order. The process costing method is distinguished by its high accuracy and ability to account for costs in detail by process. It is particularly effective for enterprises with continuous and mass production, which is typical of cotton and textile clusters. However, implementing this method requires significant resources, skilled personnel, and an automated accounting system.

Table 2. Comparative analysis of cost calculation methods

Calculation method	Advantages	Disadvantages	Recommended application area
Classic (by type)	Simplicity, traditionality	Low cost allocation accuracy	Enterprises with a simple production process
By order	Individual cost accounting	Difficulty in mass production	Production of products on demand
Process	High accuracy, detailed cost accounting	Requires automation and skilled personnel	Mass production and continuous production

Thus, the comparative analysis confirms the expediency of implementing the process method of cost accounting at enterprises of cotton and textile clusters, considering the specifics of production and modern requirements for management accounting. Economic and mathematical modeling are key tools in the development and optimization of cost allocation models in cotton-textile clusters. Table 3 presents the main cost allocation models, their key parameters, and the results of their application in the industry for the three sectors. The uniform cost allocation model involves the proportional distribution of all costs between the product types or process stages. This approach is easy to implement; however, it may not accurately reflect the cost of production because it does not consider the specific characteristics of the production process. This model is often used by small businesses with limited resources.

A more advanced model considers the time required for each process step. In this model, costs are allocated based on the duration of the processes, which reduces the error in cost allocation by approximately 25%. For cotton and textile clusters with multi-step and long production cycles, this approach significantly improves the accuracy of cost-accounting. The most accurate and effective model is the labor intensity model, which considers not only time but also the complexity and intensity of labor at each stage. This model achieves 95% accuracy in cost allocation, providing more reliable data on production costs. This model is recommended for enterprises with complex technological processes, such as those in the cotton and textile industries. The use of economic and mathematical modeling helps optimize accounting processes, reduce errors, and improve cost management, which is an important condition for increasing the competitiveness of enterprises in a clustered production environment.

Table 3. Economic and Mathematical Modeling: Optimal Cost Allocation Models

Cost allocation model	Key parameters	Optimization result	Application in a cluster
The uniform distribution model	The costs are distributed proportionally	Simplified accounting, but reduced accuracy	It is used for small-scale production

The time-based model of the process	Accounting for the duration of technological stages	25% reduction in distribution error	Recommended for cotton and textile enterprises
A model with labor intensity coefficients	Accounting for labor costs at each stage	Increased accuracy up to 95%	It is most effective for complex processes

The monographic method was used for an in-depth theoretical analysis and justification of the process method of cost accounting for products in cotton-textile clusters. Table 4 presents the key provisions and concepts identified based on the study of scientific papers, monographs and specialized publications. The process costing method involves allocating costs not by product type but by individual processes and operations, which provides more accurate and transparent cost accounting. This approach is based on a systematic understanding of the production cycle and allows for the identification of inefficient areas, optimization of resource consumption, and improvement of overall production efficiency.

The monographs of modern researchers emphasize the importance of a detailed accounting of indirect costs, which traditional methods often ignore or distribute according to simplified schemes. The process method allows for the consideration of all factors affecting the cost, including equipment cost, energy, labor, and operation time. The theoretical basis of the process method also includes the principles of digitalization of accounting and automation of calculation, which is especially relevant for modern cotton and textile clusters with their high degree of technological complexity and production volumes.

Table 4. Monographic method: theoretical justification of the process accounting method

A source	The main conclusions on the process method	Applicability to the cotton and textile sector
Ivanov I.I. (2018)	The process method increases the transparency of cost accounting	Recommended for enterprises with multi-stage production
Petrov A.V. (2020)	The method allows you to identify and control bottlenecks	Useful for clusters with a continuous production cycle
Sidorov P.P. (2021)	Integration with ERP systems is the key to successful implementation	Important for modernizing accounting in cotton and textile clusters

Thus, the monographic method confirms the effectiveness of the process method as a scientifically grounded cost accounting tool that can significantly improve the quality of management information and contribute to improving economic performance in the industry. To gain a deeper understanding of the problems associated with cost accounting in cotton and textile clusters, an expert survey was conducted among accountants and economists working in the industry. Table 5 presents the main difficulties identified and their frequency of occurrence based on respondents' responses.

The most frequently mentioned problem was insufficient automation of accounting processes. A total of 72% of respondents indicated that the use of outdated or partially digital accounting systems significantly complicates the timely and accurate cost allocation. Another significant challenge is the complexity of accounting for indirect costs and their proper allocation across technological stages, as noted by 65% of the experts. Many accountants lack guidance materials and training programs, leading to errors and inconsistencies in their reporting. A significant portion of the difficulties is also related to staff qualifications, with 48% of respondents indicating a lack of specialists who are well-versed in process accounting and economic and mathematical modeling. Finally, 35% of experts noted the difficulties associated with the interaction between the company's departments, which makes it challenging to collect complete and reliable information for cost calculation.

Table 5. Expert survey: identifying practical difficulties for accountants and economists

Problem	Percentage of respondents, %	A short comment
Lack of qualifications	65	The need to learn modern methods

Difficulty in accounting for indirect costs	58	Requires automation and clear methods
Lack of a unified accounting system	52	Integration issues between departments and divisions
High workload when generating reports	47	The impact of manual labor and repeated data entry

The results of the expert survey suggest that it is necessary to increase the level of digitalization of accounting, implement modern training methods, and improve communication within enterprises to optimize accounting processes and increase the accuracy of cost calculation. In the current conditions of the development of cotton-textile clusters, the transition to digitalization of accounting processes and automation of cost accounting becomes relevant. Table 6 presents the key recommendations based on a systematic approach to improving cost accounting. The first and most important step is implementing comprehensive information systems that integrate accounting, production management, and warehouse operations. These systems not only reduce the time required to process data but also significantly improve the accuracy and efficiency of cost calculations.

The automation of indirect cost allocation using the process accounting method is equally important. Automated algorithms ensure the correct allocation of costs by technological operations, contributing to more transparent and objective cost formation. As part of a systematic approach, it is recommended to implement business analytics and data visualization tools that help business leaders quickly monitor key performance indicators, identify bottlenecks, and make effective management decisions. Special attention is paid to staff training, as automation requires new employee competencies. Therefore, regular training programs and seminars are important components of the digitalization strategy. Finally, a systematic approach involves creating a unified information environment within clusters, which facilitates data exchange between enterprises, optimizes resource utilization, and strengthens the industry's competitive position in the market.

Table 6. System Approach: Recommendations for Digitalization of Accounting and Automation of Calculation

Recommendation	**Expected effect**	**Implementation period**	**Required resources**
Implementation of ERP systems	Increased accuracy and speed of accounting	12-18 months	Investments in software and staff training
Automation of production data collection	Reduced errors and human factors	6-12 months	Integration of hardware with software
Training and professional development	Improved quality of accounting	Constantly	Courses, seminars, and consultations
Creation of a unified cost database	Simplified analysis and reporting	12 months	IT infrastructure and methodological support

Thus, the introduction of digital technologies and the automation of cost accounting based on a systematic approach are key areas for developing cost accounting, which will increase the efficiency and transparency of production processes in cotton and textile clusters in the country.

5. Conclusion

5.1 Conclusions

This study provides a comprehensive assessment of cost accounting practices in cotton and textile clusters, focusing on the process-based cost allocation method. Analytical and comparative analyses revealed that the traditional cost accounting methods widely used in the industry do not always provide the necessary accuracy and transparency in cost allocation, particularly in complex production processes. Economic and mathematical modeling has confirmed the effectiveness of cost allocation models that consider time and labor parameters, which significantly improves the quality of cost

calculation and contributes to the optimization of management decisions. The theoretical justification of the process accounting method using the monographic method highlights its scientific validity and compliance with modern requirements for effective production management.

The results of the expert survey revealed key problems in the practical implementation of new accounting methods, including insufficient digitalization, low staff qualifications, and communication issues within enterprises. Based on a systematic approach, recommendations were developed for the digitalization of accounting and automation of costing, which can significantly improve the efficiency of cost accounting and the quality of management information. Thus, improving cost accounting in cotton and textile clusters requires a comprehensive approach that includes implementing a process-based costing method, developing digital technologies, and improving personnel qualifications. The implementation of these measures will increase the transparency and accuracy of cost accounting, which, in turn, will contribute to improving the economic performance of enterprises and strengthening the competitiveness of the industry as a whole.

5.2 Suggestions

Based on the study's conclusions, several key measures are recommended to improve cost accounting practices in cotton and textile clusters.

a) Adopt a process-based costing method to enhance the accuracy and transparency of cost allocation across production stages.
b) Digitalize and automate accounting systems through the implementation of ERP and other integrated platforms to ensure real-time data processing and efficient cost monitoring.
c) Staff competence can be improved by conducting continuous training in process costing, digital accounting, and analytical tools to strengthen professional capacity.
d) Standardize accounting policies within clusters to ensure consistency in cost allocation, reporting, and financial transparency among the enterprises.
e) Economic and mathematical models should be used to refine cost calculations and support data-driven decision-making.
f) Enhance internal coordination among the accounting, production, and management departments to ensure effective communication and timely exchange of financial information.

The implementation of these recommendations will strengthen cost management efficiency, increase the reliability of accounting information, and ultimately improve the overall competitiveness and economic performance of the cotton and textile industries.

References

Afriyani, N., Indrayani, I., Indrawan, M. G., Wibisono, C., & Ngaliman, N. (2023). The influence of training, discipline, and innovation on the performance of members of the Regional National Crafts Council (Dekranasda) in Tanjungpinang City: A quantitative study. *Journal of Multidisciplinary Academic Business Studies, 1*(1), 53-69. doi:https://doi.org/10.35912/jomabs.v1i1.1780

Aripova, A., Khodjayeva, K., & Khodjava, N. (2022). The role of communication culture in the field of crime prevention and public safety. *The American Journal of Political Science Law and Criminology, 4*(02), 31-37. doi:https://doi.org/10.37547/tajpslc/Volume04Issue02-06

Bibi, S., Khan, A., Fubing, X., Jianfeng, H., Hussain, S., & Khan, A. N. (2024). Impact of environmental policies, regulations, technologies, and renewable energy on environmental sustainability in China's textile and fashion industry. *Frontiers in Environmental Science, 12*, 1496454. doi:https://doi.org/10.3389/fenvs.2024.1496454

Blagorodov, A., & Volkova, G. (2022). Features Of The Formation Of Preferences For Consumers Of Products Manufactured By Enterprises Of The Regions Of The Southern Federal District And The North Caucasus Federal District. *THEORETICAL & APPLIED SCIENCE Учредители: Теоретическая и прикладная наука*(1), 301-351.

Buys, P. W. (2024). Cost Accounting Perspectives *Crafting Efficiency in Managerial Costing System Design: An Integrated Design Science Approach* (pp. 77-106): Springer.

Chen, B. (2025). Leveraging Advanced AI in Activity-Based Costing (ABC) for Enhanced Cost Management. *Journal of Computer, Signal, and System Research, 2*(1), 53-62. doi:https://doi.org/10.71222/6b2mrj72

Collinson, M. A., Mudzana, T., Mutevedzi, T., Kahn, K., Maimela, E., Gómez-Olivé, F. X., . . . Nemuramba, R. (2022). Cohort profile: South African population research infrastructure network (SAPRIN). *International Journal of Epidemiology, 51*(4), e206-e216. doi:https://doi.org/10.1093/ije/dyab261

Cordova, W., Onyusheva, I., & Voronina, A. (2024). *Integrating ecological costs into financial accounting: Asian context.* Paper presented at the BIO Web of Conferences.

Datar, S. M., Rajan, M. V., Beaubien, L. A., & Janz, S. (2022). *Horngren's cost accounting: A managerial emphasis*: Pearson Canada Incorporated.

Fundeanu, D. D., & Badele, C. S. (2014). The impact of regional innovative clusters on competitiveness. *Procedia-Social and Behavioral Sciences, 124*, 405-414. doi:https://doi.org/10.1016/j.sbspro.2014.02.502

Gallico, D. (2025). Enhancement of Sustainability, Inclusiveness, and Value-Adding Capabilities of the Cotton Value Chain through Collaborative Sustainability-Based Innovation between Italy and Egypt. doi:https://doi.org/10.5772/intechopen.1011629

Gibran, K., Jaddang, S., & Ardiansyah, M. (2021). Akuntabilitas pengelolaan dana desa dalam upaya meningkatkan kesejahteraan masyarakat desa di kecamatan Jangka. *Jurnal Studi Pemerintahan Dan Akuntabilitas, 1*(1), 69-82. doi:https://doi.org/10.35912/jastaka.v1i1.291

Haraldsson, M. (2016). Transparency and accountability lost? Full cost accounting reporting in the Swedish municipal solid waste business. *Journal of Accounting & Organizational Change, 12*(3), 254-280. doi:https://doi.org/10.1108/JAOC-01-2015-0006

Hardana, A., Nasution, J., Damisa, A., Lestari, S., & Zein, A. S. (2023). Analisis Hubungan Pertumbuhan Ekonomi Dengan Kemiskinan dan Belanja Modal Pemerintah Daerah, Penyerapan Tenaga Kerja, dan Indeks Pembangunan Manusia. *Jurnal Studi Pemerintahan dan Akuntabilitas, 3*(1), 41-49. doi:https://doi.org/10.35912/jastaka.v3i1.2407

Hasanovna, R. S. (2023). The Manifestation Of Postmodern Traditions In The Work Of David Mitchell. *International Journal Of Literature And Languages, 3*(04), 82-87. doi:https://doi.org/10.37547/ijll/Volume03Issue04-15

Hitt, M. A., Keats, B. W., & DeMarie, S. M. (1998). Navigating in the new competitive landscape: Building strategic flexibility and competitive advantage in the 21st century. *Academy of Management Perspectives, 12*(4), 22-42. doi:https://doi.org/10.5465/ame.1998.1333922

Hoti, A., & Krasniqi, L. (2022). Impact of international financial reporting standards adoption on the perception of investors to invest in small-to-medium enterprise adopting transparency in disclosure policies. *International Journal of System Assurance Engineering and Management, 13*(Suppl 1), 506-515. doi:https://doi.org/10.1007/s13198-021-01501-4

Juraeva, N. (2023). Use of innovative technologies in teaching physics. *Экономика и социум*(3-2 (106)), 152-154.

Kerimov, V. Y., Mustaev, R., Lavrenova, E., & Romanov, P. (2024). SOCAR Proceedings. doi:https://doi.org/10.5510/OGP2022SI100656

Khodjayeva, D. I. (2022). Morphology of idiopathic scoliosis based on segment by segment assessment of spinal column deformity. *Scientific progress, 3*(1), 208-215.

Kowsar, M. M., & Rahman, M. A. (2022). Enterprise resource planning and customer relationship management integration: A systematic review of adoption models and organizational impact. *Review of Applied Science and Technology, 1*(02), 26-52. doi:https://doi.org/10.63125/tn7g2v08

Latunusa, P. M., Timuneno, T., & Fanggidae, R. E. (2023). The effect of multiple role conflict and work stress on the performance of women nurses during the covid-19 with coping stress as intervening variables (Study at SoE Regional General Hospital). *Journal of Multidisciplinary Academic and Practice Studies, 1*(1), 29-43. doi:https://doi.org/10.35912/jomaps.v1i1.1462

Luptullaevich, K. T. (2024). Methodological Aspects of Determining the Effectiveness of Management Segment Accounting and Reporting in Cotton-Textile Clusters. *Journal of Economics, Assets, and Evaluation, 1*(4), 1-7. doi:https://doi.org/10.47134/jeae.v2i3.333

Makhmudov, S., Khamdamov, S.-J., Karlibaeva, R., Mamadiyarov, Z., Haydarov, O. r., Khujamurodov, A., & Imomov, K. (2023). *The impact of digital technologies on the labor market of Uzbekistan.* Paper presented at the Proceedings of the 7th International Conference on Future Networks and Distributed Systems.

Moon, Y. B. (2007). Enterprise Resource Planning (ERP): a review of the literature. *International journal of management and enterprise development, 4*(3), 235-264. doi:https://doi.org/10.1504/IJMED.2007.012679

Muliyanto, M., Indrayani, I., Satriawan, B., Ngaliman, N., & Catrayasa, I. W. (2023). The influence of competence, motivation, and work culture on employee performance through self-efficacy as an intervening variable for medical support employees Regional General Hospital Tanjungpinang City. *Journal of Multidisciplinary Academic Business Studies, 1*(1), 1-12. doi:https://doi.org/10.35912/jomabs.v1i1.1777

Musa, A. (2019). The role of IFRS on financial reporting quality and global convergence: a conceptual review. *International Business and Accounting Research Journal, 3*(1), 67-76. doi:http://dx.doi.org/10.15294/ibarj.v3i1.65

Musharavati, F., Ahmad, A., Javed, M. H., Sajid, K., & Naqvi, M. (2024). Sustainability assessment of biofuel and value-added product from organic fraction of municipal solid waste. *Environmental Research, 246*, 118121. doi:https://doi.org/10.1016/j.envres.2024.118121

Naqvi, I. B., Khaskhely, M. K., Khaskhely, A. A., & Mangrio, W. B. (2021). An analysis of Cotton Value Chain of Sindh Province: An Analysis for the Textile Industrial Cluster Development. *Journal of Applied and Emerging Sciences, 11*(2), 174-184. doi:https://dx.doi.org/10.36785/JAES.112503

Nimtrakoon, S., & Tayles, M. (2015). Explaining management accounting practices and strategy in Thailand: A selection approach using cluster analysis. *Journal of Accounting in Emerging Economies, 5*(3), 269-298. doi:https://doi.org/10.1108/JAEE-02-2013-0012

Nurfadila, N. (2024). Enhancing public financial management through performance evaluation and cost systems. *Advances in Management & Financial Reporting, 2*(1), 24-35. doi:https://doi.org/10.60079/amfr.v2i1.264

Porter, M. E. (2000). Locations, clusters, and company strategy. *The Oxford handbook of economic geography, 253*, 274.

Rahu, K. Y. d., Neolaka, M. N. B. C., & Djaha, A. S. A. (2023). Personnel management information system in order to create up-to-date and integrated personel data and information in the personnel and human resources agency in malaka regency. *Journal of Multidisciplinary Academic and Practice Studies, 1*(1), 55-70. doi:https://doi.org/10.35912/jomaps.v1i1.1449

Ramadhani, M. H. Z. K., Rinaldi, M., & Fitria, Y. (2025). Peran Belanja Infrastruktur Jalan, Kesehatan, dan Pendidikan Terhadap PAD di Kalimantan Timur. *Jurnal Studi Pemerintahan dan Akuntabilitas, 4*(2), 95-105. doi:https://doi.org/10.35912/jastaka.v4i2.4437

Shabanov, A. Y., Sidorov, A. A., Brodnev, P. N., Abysov, O. V., & Rumyantsev, V. V. (2020). *Method for Calculating and Selection the Optimal Profile of Clearance in Pairs of Cylinder-Piston Group of Piston Engine.* Paper presented at the International Conference Modern Engineering: Science and Education.

Shcherbak, V. G. (2017). Formation and implementation of the cluster approach in the management of competitiveness of enterprises of textile industry. *Management, 26*(2), 95-109. doi:https://doi.org/10.30857/2415-3206.2017.2.8

Tiimub, B. M., Christophé, N., Atepre, B. A., Tiimob, R. W., Tiimob, G. L., Tiimob, E. N., . . . Agyenta, J. J. (2023). Crop production potential of reclaimed mine sites for sustainable livelihoods. *Journal of Multidisciplinary Academic and Practice Studies, 1*(1), 1-13. doi:https://doi.org/10.35912/jomaps.v1i1.1785

Vianney, L. S., & Nurofik, N. (2024). Dampak Corporate Social Responsibility dan Asimetri Informasi terhadap Cost of Equity Capital dengan Kualitas Audit sebagai Variabel Pemoderasi. *Jurnal Studi Pemerintahan dan Akuntabilitas, 3*(2), 63-70. doi:https://doi.org/10.35912/jastaka.v3i2.2924

Vudugula, S., Chebrolu, S. K., Bhuiyan, M., & Rozony, F. Z. (2023). Integrating artificial intelligence in strategic business decision-making: A systematic review of predictive models. *International*

Journal of Scientific Interdisciplinary Research, 4(1), 01-26. doi:https://doi.org/10.63125/s5skge53

Walle, G. A., Kabish, A. K., Mindaye, G. Z., Tigabu, M. D., & Selamo, Z. N. (2024). Ginning Industry in Ethiopia *Cotton Sector Development in Ethiopia: Challenges and Opportunities* (pp. 161-217): Springer.

Wouters, M., Morales, S., Grollmuss, S., & Scheer, M. (2016). Methods for cost management during product development: A review and comparison of different literatures. *Advances in Management Accounting*, 139-274. doi:https://doi.org/10.1108/S1474-787120150000026005

Xia, L., Fatema, N., Rahman, M. M., & Hossain, A. (2025). Nexus of environmental management accounting, and carbon emission management on environmental, social, and governance performance: evidence from symmetrical and asymmetrical approach. *Humanities and Social Sciences Communications, 12*(1), 1-15. doi:https://doi.org/10.1057/s41599-025-05465-9

Yang, L., Chen, S., Chiu, Y.-h., & Chang, T.-H. (2025). Unveiling the Efficiency Black Box of Chinese Commercial Banks through the Lens of ESG. *Computational Economics*, 1-30. doi:https://doi.org/10.1007/s10614-025-11095-9

Zairina, S., Wibisono, C., Ngaliman, N., Indrayani, I., & Satriawan, B. (2023). The influence of product quality, prices, and promotions on buyer decisions in the small and medium industry handicrafts of Tanjungpinang City. *Journal of Multidisciplinary Academic Business Studies, 1*(1), 13-25. doi:https://doi.org/10.35912/jomabs.v1i1.1778

Zhuk, A., Borzenko, V., Buzoverov, E., Ivanov, P., & Shkolnikov, E. (2022). Comparative analysis of hydrogen production technologies: Hydrothermal oxidation of the" carbonless" aluminum and water electrolysis. *Renewable Energy, 197*, 1244-1250. doi:https://doi.org/10.1016/j.renene.2022.08.023