
LECTURAS DE ECONOMÍA

Versión preliminar

Analysis and Auditing of Production Costs According to Accounting Information in Industrial Companies

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El presente artículo ha sido aprobado para ser publicado en Lecturas de Economía 104. Sin embargo, se trata de una versión preliminar, la cual está sujeta a cambios asociados al proceso editorial de la revista. Próximamente se contará con una versión definitiva.

Preliminar

Analysis and Auditing of Production Costs According to Accounting Information in Industrial Companies

Heyder G. Wannan Alkarawy¹

Abstract: This paper aims to investigate production costs in industrial companies and verify actual costs through planned cost indicators to improve inventory operations management. The issues related to methodological aspects were identified as separate sections in the management accounting regulation, and through the descriptive systematic analysis, the management accounting accounts were developed, and their interaction with the financial accounting accounts was presented. According to the results of this research paper, the relationship between the development and organization of management accounting techniques, accounting items and accounting units has been proven for the information it provides to managers at various levels by measuring the effectiveness of decision-making and monitoring and evaluating the performance of internal structural units. This has resulted in increased profitability and improved efficiency, as indicated by inventory and cost management. Our proposal facilitated the analysis of the standardized management-reporting guide for production costs in industrial enterprises and verification during the audit of finished products received to be shipped and sold to markets. It serves as a basic criterion for classifying business transactions related to auditing finished products and their sales, thereby improving inventory management.

Keywords: accounting; cost, cost-benefit analysis, contracts, reputation.

JEL Classification: M41; D24; D61; L14.

Análisis y auditoría de los costes de producción según la información contable en las empresas industriales

Resumen: El objetivo de este trabajo es investigar los costes de producción en las empresas industriales y verificar los costes reales mediante indicadores de costes planificados para mejorar la gestión de las operaciones de inventario. Las cuestiones relacionadas con los aspectos metodológicos se identificaron como secciones separadas en la normativa de contabilidad de gestión y, mediante el análisis sistemático descriptivo, se desarrollaron las cuentas de contabilidad de gestión y se presentó su interacción con las cuentas de contabilidad financiera. Según los resultados de este trabajo de investigación, la relación entre el desarrollo y la organización de las técnicas de contabilidad de gestión y las partidas contables y las unidades contables ha quedado demostrada por la información que proporciona a los gestores de distintos niveles al medir la eficacia de la toma de decisiones y supervisar y evaluar el rendimiento de las unidades estructurales internas, lo que permitió aumentar la rentabilidad y mejorar la eficacia, de acuerdo con la gestión de los inventarios y los costes. Nuestra propuesta ayudó en el análisis de la guía estandarizada de gestión de informes para los costos de producción en las empresas industriales y la verificación durante la auditoría de los productos terminados de los materiales almacenados por cobrar de los productos expedidos y es un criterio básico para la

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clasificación de las transacciones comerciales para la auditoría de los productos terminados y sus ventas en la mejora de la gestión de inventario.

Palabras clave: contabilidad, coste, análisis coste-beneficio, contratos, reputación.

Analyse et audit des coûts de production à partir de l'information comptable dans les entreprises industrielles

Résumé :

Cet article vise à étudier les coûts de production dans les entreprises industrielles et à vérifier les coûts réels à l'aide d'indicateurs de coûts planifiés afin d'améliorer la gestion des opérations d'inventaire. Les questions liées aux aspects méthodologiques ont été identifiées comme des sections distinctes dans le règlement sur la comptabilité de gestion et, grâce à l'analyse systématique descriptive, les comptes de comptabilité de gestion ont été développés et leur interaction avec les comptes de comptabilité financière a été présentée. Selon les résultats de ce document de recherche, la relation entre le développement et l'organisation des techniques de comptabilité de gestion, les postes comptables et les unités comptables a été prouvée pour les informations qu'elle fournit aux gestionnaires à différents niveaux en mesurant l'efficacité de la prise de décision et en contrôlant et évaluant la performance des unités structurelles internes qui ont conduit à une augmentation de la rentabilité et à une amélioration de l'efficacité, en fonction de la gestion des stocks et des coûts. Notre proposition a contribué à l'analyse du guide standardisé de reporting des coûts de production dans les entreprises industrielles et à la vérification lors de l'audit des produits finis des matériaux stockés à recevoir des produits expédiés et constitue un critère de base pour la classification des transactions commerciales pour l'audit des produits finis et de leurs ventes dans le cadre de l'amélioration de la gestion des stocks.

Mots clés : comptabilité, coût, analyse coût-bénéfice, contrats et réputation.

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-Introduction. -I. Literature Review. -II. Research Methodology. -III. Results and Discussion. -Conclusions. -Acknowledgements. -Disclosure -Ethics Statement. -References.

Introduction

The process of managing companies in a market economy is challenging due to the global geopolitical scenario, influenced by wars in Europe and the Middle East, in particular, where local products are protected by replacing industrially produced goods imported from abroad, especially from Turkey and Iran, with domestically manufactured goods in Iraq. This is achieved by collecting economic information, including accounting information for each company.

This article aims to analyze the process of creating an effective accounting system for any type of organization, which requires consideration of several factors and conditions, as well as the qualitative characteristics of the information obtained. According to studies by Natalia et al. (2016), Mutawa (2019), and Jundiya, (2020), accounting information may occupy from 70% to 85% of the

accounting system, depending on the total size of the set of qualitative information associated with it. Therefore, in this scenario, a greater level of adaptability is essential, as companies request accounting information and assess what is needed for several levels of the accounting data management process. On this basis, Jundiyah (2020) proposes procedures to measure and determine the optimal and widely accepted level of this extensive and crucial information for administrative decision-making through management accounting.

Management accounting is an essential component of the accounting information system for business establishments. It aims to provide management with the information necessary for planning, directing, controlling, evaluating performance, making decisions, and motivating managers to achieve goals (Al-Budairi, 2017).

This paper aims to provide a general explanation of management accounting, a modern branch of accounting that has emerged to cover a new field. It relies on scientific accounting methods that, when used in conjunction with facility management, can facilitate the achievement of its goals in the areas of sound scientific planning and effective control over the performance of individuals, while working to evaluate their performance, and making appropriate decisions; that is, it aids in addressing all challenges encountered by management in achieving its goals (Jundiyah, 2020).

Accordingly, this paper confirms that management accounting and auditing of finished products and their sales in industrial companies have been and will remain one of the most important functions of facility management, which addresses the information gap required for its effectiveness and achieving the set goals. According to the foregoing, the results are contingent upon the size of the enterprise and the accurate accounting and auditing of finished products and their sales, thus aligning with the company's budget. Therefore, it is essential to investigate the peculiarities of management accounting and the necessary information gap related to production costs in industrial companies. We delve into our analysis of management accounting and the full and timely auditing of finished products and their sales in an industrial company, which leads to an increase in the social benefit of the product.

I. Literature Review

One of the functions of management is organizing accounting, analysis, and control, which involves determining the necessary future actions. Accounting typically performs the function of managerial accounting measurement for events within the economic units and completes it by exercising the function of accounting communication. It aims to deliver accounting information to its users to assist them in making decisions regarding economic units and the multidimensionality of cost accounting, which is the basis for calculating various types of costs and creating a common information space that would take into account the interests of all user groups (Alnaqib, 2004; Issa, 2004). In accordance with this perspective, the current work summarizes the application of characteristics and tools to view the accounting system as a separate process, as it does not meet the needs of accounting information users concerning production. According to Ibrahim (2008), Arab accountants fail to realize that modern accounting information systems must go beyond focusing on transactions as an implementation tool and include an analysis of outputs and keep pace with scientific developments to support accurate and timely decision-making. This criticism highlights the need to develop accounting information systems in the region to better meet the needs of decision-makers and regulatory bodies, rather than being limited to a traditional implementation function focused on inputs. The nature of accounting privacy in the presentation and treatment of accounting information is taken into consideration (Ibrahim, & Iman, 2010).

Accounting theory has long recognized that existing accounting practices are evolving and changing in response to the characteristics of the external institutional environment (Granlund, 2011). Applying characteristics and tools to treat the accounting system as a separate process does not meet the needs of users of accounting information regarding production. Some studies have suggested that accounting information should be used to measure the moderate performance of

companies in terms of their financial position. They provide mixed evidence that the accounting scientific community, which claims that the accounting system serves as a primary source of information for administrative decision-making in the current environment, helps in the accuracy of accounting information provided to users regarding production costs in decision-making (Issam, 2011; Jassim & Mahdi, 2016; Malaescu & Virgil, 2015; Requejo & Saavedra, 2016). Changes in the latter, to varying degrees, contribute to changes in the organization and to how accounting is maintained, which in some cases also affect the generation of accounting information data (Zsuzsanna, 2012). The process of improving the quality of the accounting system entails the transition from the lowest to the highest quality level, depending on the function of each account separately (Azhar, 2015; Mohi, & Hussein, 2015). Providing information about the application of an accounting information system is essential, as it enables the entity to determine its accounting management in an organized manner, thereby facilitating timely decision-making (Requejo and Saavedra, 2016).

Alkarawy (2018) conducted an objective study aimed at organizing the accounting systems for a group of small and large industrial companies in the Republic of Iraq. Based on this analysis and the study's findings, it became evident that the accounting system provides important information within the framework of management accounting regarding companies' commitment related to the cost of two-way production operations: it will provide reliable data on project costs for business operations while obtaining important information for management and the company.

In line with our analysis, we have considered contributions from several related papers. Jassim and Mahdi (2016) found that the peculiarities of industrial companies can be taken into account to address issues with the accounting organization for management accounting, resulting in improvements in the structure of supporting accounting and analytical management. This is due to the difficulty of recognizing the gap in intensifying the use of organizational tools, including the application of technical achievements and innovative technology for the synthetic and analytical calculation system. The results of our paper complement their findings through an analysis of production costs and outputs. We have proven this by organizing an effective management accounting and economic analysis system within the enterprise for accounting service tasks, as well as ensuring reliable and effective control of production costs developed through this research and formulating a solution to address the gap.

Providing information about the application of an accounting information system is essential, as it aids the company in structuring its accounting management and facilitating timely decision-making (Requejo & Saavedra, 2016).

The organization of unified accounting of production costs can be achieved through the application of a variety of control techniques and organizational methods. In this case, the cost elements are determined based on the main production elements that correspond to the institution's characteristics.

Every organization must create a system that generates useful information for accounting, planning, costs, and production to improve the management accounting system; it is the responsibility of the management of a particular organization (Amiri, & Salari, 2012; Hussein, 2017).

According to Hussein (2017), the term "production costs" is used to describe all production costs for a given period. In their professional practice, the analyst-accountant must solve problems in a variety of ways, and depending on them, different cost sets will be of interest. Currently, much attention is paid to the preparation of accounting management reports.

Mutawa (2019) touched on the focus of organizational methods on managing specific operations and processes, where information generated by management accounting and economic analysis systems is generated from a comprehensive, systematic study of a large amount of diverse information about different aspects of the organization's activities in terms of production costs. Research has also been conducted on the strategies and methods used by the institution to protect its assets and achieve accurate data reliability and accounting information, such as developing

operational efficiency and encouraging compliance with accounting policies (Mohammed et al., 2018).

Ilham et al.'s (2022) study represents significant momentum within a moderate regulatory approach, because the purpose of regulation is the process of implementing standards by ensuring companies' compliance through the use of a diverse array of information regarding their activities during the various stages of their operations, with the aim of rationalizing costs and increasing the number of units produced. The results indicated that the preparation of reports from the accounting department will aid management in obtaining the necessary information for informed decision-making.

Conversely, numerous studies have been conducted that describe the sufficiency of applying the accounting product concept to production costs, without conducting a thorough examination of the consequences of applying this methodology

In light of the foregoing, the current work summarizes the application of characteristics and tools to view the accounting system as a separate process, as it does not meet the needs of accounting information users in relation to production. Some studies have suggested that accounting information should be used to measure the moderate performance of companies in terms of their financial position.

However, the scientific community has not yet sufficiently disclosed the problems of improving accounting organization while considering the specifics of manufacturing institutions, as well as the corresponding enhancement of the support structure for accounting and analytical management through the intensification of the use of organizational tools. These include the application of innovative technical and technological achievements.

The purpose of this article is to manage both specific processes and management accounting processes tailored to the organization's activities related to business development.

II. Research Methodology

The most common cost analysis involves classifying costs according to their economic content, which entails dividing them into cost components. We employed a descriptive systematic analysis where data were collected on the cost of production and the actual cost of managing inventory.

Ibrahim (2008) proposed classifying costs by the reference period in product costs reports (production costs) and period costs (periodic costs) for inventory management.

Period costs are costs associated with receiving services and non-production expenses - selling and administrative - during the period for inventory management (Neogy, 2014; Ouda, 2003).

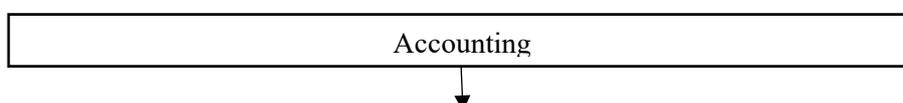
Romney and Steinbart (2012) established imputed costs as a means of classification for a specific production unit, making it possible to note each element of production costs (works and services) at the required level for inventory management.

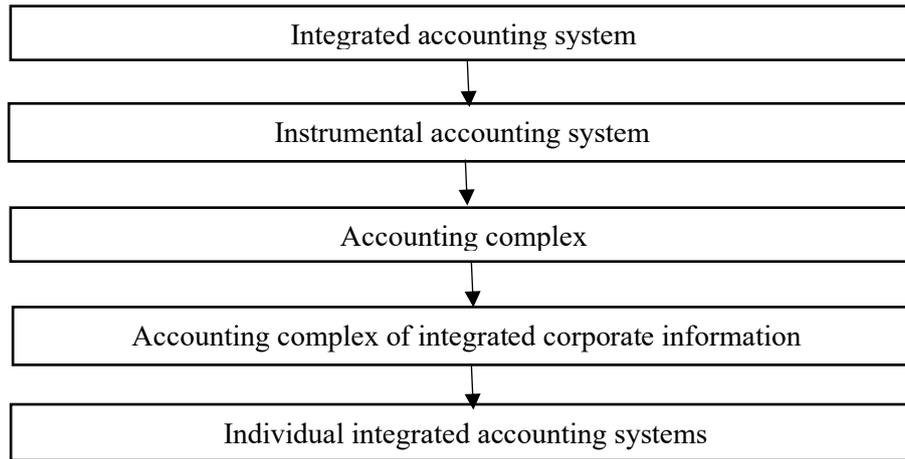
For the purpose of our study on Iraqi industrial companies, the model for these companies was Ashur Industrial Contracting Company, where data were collected on the cost of production and the actual cost for material costs through indicators of total specific weight and specific weight of deviations according to inventory management costs used for general work purposes.

A. Research model

These principles are generally consistent with the direction of reforming national accounting systems. Considering the main driving forces of accounting development, the following key factors are identified (Mahdi & Hussein, 2018) in Figure 1.

Figure 1. *Classification of integrated accounting systems with increasing functionality*





Source: Own elaboration based on Mahdi and Hussain (2018).

It should be recognized that the harmonization of national accounting procedures is one of the fundamental principles of Iraq's well-established management accounting system today (Al-Jajjawi & Al-Masoudi, 2004).

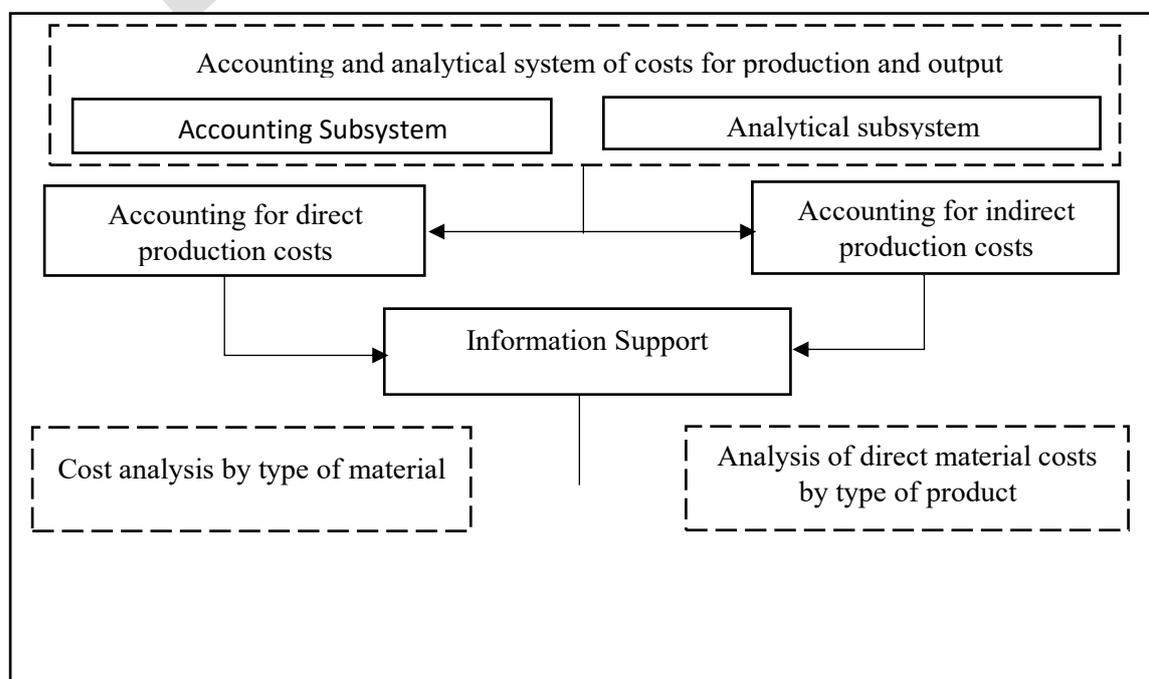
The accounting product is characterized by data on economic activity facts, regarded as information derived from the accounting system through object analysis, assessment, registration and synthesis, all supported by the relevant primary documents, registers, and reporting forms (Feies et al., 2013).

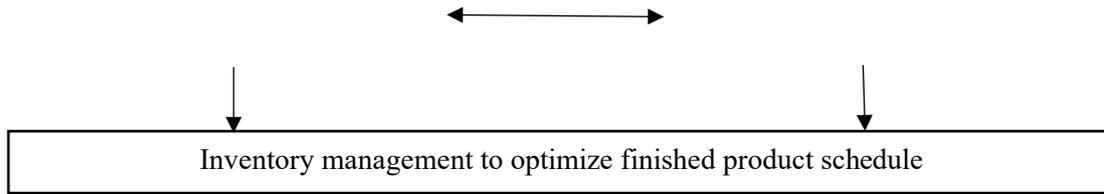
Figure 2 below illustrates the accounting and analytical system for costs associated with production and output.

When organizing a rational system - accounting for a construction company, the tasks of the accounting service also include ensuring reliable and effective control of production costs. These tasks can be significantly simplified by organizing an effective system of management accounting and economic analysis at an enterprise (Granlund, 2011):

1. Division of the organization's costs;
2. Calculation of cost levels;
3. Cost calculation (costs of operating production machinery);
4. The development of additional operational accounting data necessary for making management decisions;
5. Providing operational accounting data to determine the results of evaluating the cost of implementing an accounting system based on the application of cost units.

Figure 2. Accounting and analytical system for production and production costs





Source: Own elaboration.

B. Sample

The sample was created to assist administrative and financial decisions based on information related to production costs, thus creating a clear accounting and analytical system for industrial companies, which amount to 28,854 (large, medium and small) in the Iraqi labor market. The number of companies in the field of contracting was 252, all subject to the accounting system in Iraq. A sample was taken from Ashur Industrial Contracting, a company operating in the Republic of Iraq's market. The list of materials facilitates the systematic collection and classification of material requirement accounts for the same material in a rational manner. It includes raw materials, materials, fuel, energy, components, semi-finished products and other types of different inventories that companies purchase for use in economic activities in exchange for the cost of production and provision of services. To analyze the cost data in our paper, data were collected on the costs of raw materials and the costs of the type of material production.

III. Results and Discussion

The accounting chart for an industrial company (Report, 2022) to ensure the correct organization of cost and production accounting is account 39 “Overhead costs of production” and its subaccount “Production by type of activity”. In this case, the organization attributes part of the money spent to the current year's harvest and part to the following year's harvest. These costs must be considered separately.

To do this, appropriate accounts are opened in analytical accounting. Costs are taken into account by items: wages, depreciation of fixed assets, the cost of raw materials and industrial materials, the cost of works and services, etc. (Jassim, & Mahdi, 2016). Table 1 presents the results of the cost structure analysis for Ashur Industrial Contracting's main production, one of the companies operating in the Iraqi market, by component for the period 2021-2022.

Table 1: *Analysis of the cost structure for main production by item for 2021-2022 year, (million dinars).*

Indicator name	Total year 2021	Specific weight %	Total year 2022	Specific weight %	Deviation (+/-)
Direct material co	36528801	76.46	32892761	79.60	-3636040
It includes:					
- operation of production machines	7871503	16.48	6638477	16.07	-1233026
- fuel for technological purposes	6735824	14.10	5829653	14.11	-906171
- industrial protection means	2948299	6.17	1630371	3.94	-1317928
- spare parts, repair and construction	3597833	7.53	4957327	11.99	+1359494

materials for repairs					
- payment for services and work performed by third parties, and other material costs	15375342	32.18	13836933	33.49	-1538409
Indirect costs	11250316	23.54	8427695	20.4	-2822621
It includes:					
labor costs	6371948	13.33	4285961	10.37	-2085987
contributions for social needs	753984	1.58	649839	1.58	-104145
depreciation	2648293	5.54	1952948	4.73	-695345
other costs	1476091	3.09	1538947	3.72	+62856

Source: Own elaboration.

The costs of organizing production, its maintenance and management expenses needs are accounted for under 39 “General production expenses” and 40 “General expenses”, respectively (Alkarawy & Al-Ssadi, 2022).

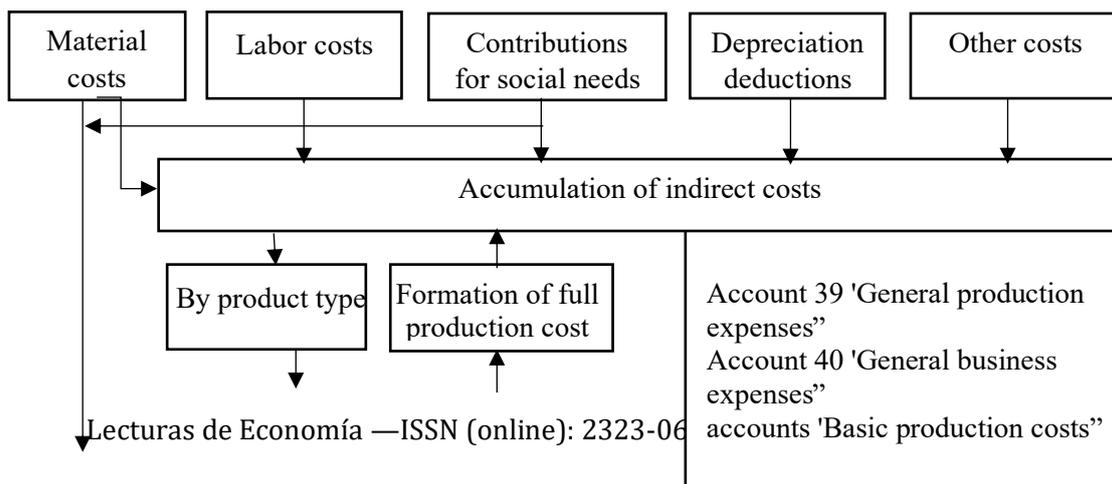
The composition of the main production costs is intended to summarize information about the costs of production that are auxiliary (auxiliary) to the organization's main production. In particular, this account is used to account for the costs of production that provide: services with various types of energy (electricity, gas, etc.); transport services; repair of fixed assets; production of tools, dies, spare parts; building parts, structures or enrichment of building materials (mainly in construction organizations); construction of (temporary) non-title structures, etc. (Ayman, 2021).

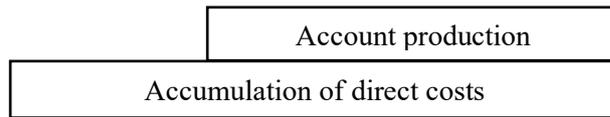
At the end, cost accounts are subject to distribution and are included in the costs of the main production. First, accounts 39 “General production expenses” and 40 “General business expenses” must be closed (Al-Abadi, 2021).

To correlate costs on these accounts, it is necessary to determine the distribution coefficient, which is found by dividing the debit balance of accounts 39, 40 at the end of the period by the debit turnover on account 5 “production accounting” (Al-Abadi, 2021). The resulting coefficient is multiplied by the debit amount of this account for each of the cost objects. Account 40 “General business expenses” is subject to write-off to account 45 “Revenue from internal production activities” (Al-Abadi, 2021).

Production accounting is undoubtedly essential for conducting financial and economic activities. Thanks to efficient staging, production can be organized clearly and correctly. The general model of management accounting organization is shown in Figure 3.

Figure 3. *Composition of the full cost of production on the accounts of industrial companies*





Source: Own elaboration.

The final indicator is distorted if at least one of the elements is not registered correctly or completely. In general, accounting allows industrial companies to prepare reports on their activities for internal use by founders, managers, and property owners, and for external use by investors, creditors, suppliers, and banking and financial authorities. Today, the creation and implementation of a management accounting system is a rather complex and long process.

The role of management accounting has grown significantly since the information it provides enables managers at different levels to measure the effectiveness of decision-making, and monitor and evaluate the performance of internal structural units.

The success of organizing management accounting at enterprises is determined by the existing internal regulatory framework that establishes the accounting procedure. In modern conditions, management accounting must align with the goals and objectives of on-farm management; therefore, the issue of organizing management accounting by responsibility centers is of particular relevance. A responsibility center is a division of an organization, allocated according to its organizational structure, in which the occurrence of costs and the receipt of income is controlled, and the degree of responsibility of a certain individual for the performance of their work is determined.

When creating a management accounting system for responsibility centers, it is necessary to consider that it:

- operates either in parallel with a conventional accounting system or integrated;
- is aimed at meeting the information needs of internal management;
- allows you to control costs and economic results at various levels of responsibility and evaluate the work of centers based on deviation analysis;
- can solve possible problems only with a clear definition of the responsibilities of center managers and the necessary controlled indicators.

The main internal regulatory document governing the management accounting process is the Regulations on Management Accounting (Jundiyah, 2020). Management accounting provides the information basis for managing an enterprise's internal activities, building its strategy and tactics. At the present stage, it is not just an accounting system but is becoming the main core of the entire enterprise management system. To justify the organization of management accounting in crop production, it is first necessary to determine the centers of responsibility for the allocation of costs to products. According to organizational and economic characteristics, the optimal object of management and cost accounting in industrial production is a team, within which the costs of products and expenses that are not related to this center of responsibility are separated.

Industrial companies may use various cost accounting methods and their variations. One of the important stages in constructing a cost formation model is the identification of a cost center, dividing it into direct variables, conditional variable and constant (Shaheen, 2018). In relation to a specific cost center, only those costs that coincide with the responsibility centers are manageable. Moreover, some of these costs can be generated outside the cost location. Therefore, in the production industry, it is more expedient to use the itemized method of grouping costs, as the team consumes a significant amount of auxiliary and maintenance services of production. It is recommended to include the cost of such services in the center's costs element by element.

The presented nomenclature of items and cost elements will allow for a comprehensive consideration of all the costs borne by the center of responsibility, in addition to implementing a process-by-process method of production accounting, and maintaining a traditional cost accounting

option or account for direct costs using the direct costing system to calculate, respectively, the full and incomplete production costs of products (Ilham, Raed, & Osama, 2020).

To enhance the role and importance of cost accounting as one of the sources of information on the formation of financial results, it is advisable to establish appropriate monthly reporting for each department of the company, which acts as the responsibility center. This list of materials facilitates the collection and classification of material requirements accounts for the same material, which includes raw materials, materials, fuel, energy, components, semi-finished products, and other types of inventories.

Such information will allow the organization's management to analyze the performance of each responsibility center and draw up a consolidated management report for the entire organization. Internal reporting is individual and therefore there is no strictly defined form.

For the cost center in question at the enterprise, it is necessary to develop reporting forms that are provided to management, enabling them to make appropriate management decisions.

Table 2 provides a sample report form for the use of concrete materials inventories for Ashur Industrial Contracting.

Table 2. *Cost center report template for building and construction usage (million dinars)*

Indicator	Last year		Reporting year				Deviation (in fact)			
	Plan		Fact		Plan		Fact			
	Price	Quantity	Price	Quantity	Price	Quantity	Price	Quantity		
Primary materials Inventory	61.000	54000	60.000	58000	63.000	58000	62.000	57000	+4000	-1000
Total	3294000		3480000		3654000		3534000		+54000	
Templates and installation Inventory	7000	1800	6870	1960	6800	1900	6650	2000	-120	+40
Total	12600000		13465200		12920000		13300000		-165200	
Other business materials Inventory	45.00	750	46.10	720	46.20	740	47.80	766	+1.7	+46
Total	33750		33192		34188		36614.8		+3422.8	

Source: Own elaboration.

Similar reports can also be generated for cost items, such as wages, freight, dismantling, repair, water and electricity supplies, etc., as well as product outputs.

In addition, controlling these indicators obtained from reports can provide additional information when comparing profitability indicators for certain types of products produced under the conditions of using technologies (to reduce additional costs) for saving product types, with the percentage of profitability for the entire sales volume. This will enable the company to identify types of products with high and low profitability. To document the monitoring results, profitability indicators for specific types of products can be presented in the form of a report (a comparative analysis of the dynamics of profitability of products produced using saving technologies).

The data in Table 3 indicates the profitability of Ashur Industrial Contracting business.

The main influencing factors are higher product prices and lower cost prices due to lower or absent business product costs. The best example of this is the **concrete pouring** by Ashur Industrial Contracting, whose production technology incurs the least additional costs.

As can be seen from the contents of Table 4, during the audit of finished products, the receivable stored materials of shipped products should be checked. Auditors can be recommended to consider this as a basic criterion for classifying a particular business transaction as a retail or wholesale trade movement based on the determination of the buyer's intended purpose of use of the purchased goods.

Table 3. Comparative analysis of the dynamics of profitability of products produced under the conditions of using technologies to reduce additional costs

Types business	Profitability relative to costs, %			Profitability relative to prices %			Deviation of profitability from the profitability of the entire business volume (+,-), %			
	for 2021	for 2022	Change (+, -)	for 2021	for 2022	Change (+, -)	2021		2022	
							On profitability to costs	On profitability to prices	On profitability to costs	On profitability to prices
Primary materials	25	25	-	20	20	-	+7,98	+5,46	+7,63	+5,20
Templates installation	25	13,64	-11,36	20	12	-8	+7,98	+5,46	-3,73	-2,80
Other business	9,09	16,76	+7,58	8,33	14,29	+5,96	-7,93	-6,21	-0,70	-0,51

Source: Own elaboration based on data from Ashur Contracting Company.

Table 4. Network modeling for finished product auditing and sales at Ashur Contracting Company: event simulation

Events	The name and composition of the stage of accounting review of finished products and their sales
0	The customer agrees to conduct an audit of the products and their sales and conclude the contract
1	Determining the purpose and tasks of auditing finished products and their sales
2	Preparing the general audit plan for finished products and their sales.
3	Environmental assessment subject of inspection: internal factors of the system - management; Accounting and internal control, production; staff activities; External factors of the field - economic; Political; social; legal
4	Determining the procedures for each stage of the process of auditing finished products and their sales

Source: Own elaboration.

At the same time, special attention is paid to examining finished products for which buyers have not paid within the terms specified in the contracts.

The organization of this control allows for the prevention of finished product theft by excessive investment in containers. An effective way to identify discrepancies in the volumes of products shipped is to compare invoice data with data on the vehicle loads used to ship those products, as shown in Figure 5.

Table 5. Network modeling of sales activity processes of Ashur Contracting Company: Business modeling

Works (designation)	Duration (days)	Number of auditors (individuals)	Works (designation)	Duration (days)	Number of auditors (individuals)
0-1	3	1	6-7	2	2
0-2	2	1	7-8	1	2
0-3	2	1	2-8	3	1
0-4	4	2	3-8	2	1

Source: Own elaboration.

As can be seen, the period for reviewing and selling the final products by Ashur Contracting Company will be 4 days. We will evaluate the effectiveness of the auditors' workload distribution based on the obtained network diagram, for which we will build a Gantt chart as illustrated in Figure 6.

Table 6. Gantt chart for reviewing finished products and their sales at Ashur Contracting Company

Works	1	2	3	4
0-1	1	1	1	
0-2	1	1		
0-3	1	1		
0-4	2	2	2	2

Source: Own elaboration.

According to the Gantt chart, Ashur Contracting Company needs two auditors to audit finished products and their sales.

Therefore, the effectiveness of allocating auditors' work time during the audit of finished products and their sales at Ashur Contracting Company has increased compared to the original version due to the improved distribution of auditors' work during the auditing process.

Conclusions

The fact that material costs account for a large percentage of total production costs and are transferred to material inventories is indicative of the high material intensity of goods. Reducing the material intensity of goods is the main direction of operational optimization, as the rational use of this inventory leads to an increase in the amount of manufactured products and a reduction in costs.

The increased need for material inventories is reduced by planning to purchase or purchasing a large amount of materials, which leads to an increase in the costs of individual materials. However, production costs can be reduced by increasing the cost rate or reducing fixed costs, as well as by rationalizing the use of materials in the costing process, which ensures a reduction in the costs of specific materials and the cost of manufacturing products.

For this reason, the company determines the designation of production costs and cost elements itself, depending on the need for different levels of control.

In addition, finished products (transport services) cannot be audited unless the audit tasks are performed as prescribed. Since the review has a particular cautionary and preventive nature, it will contribute to increasing the efficiency of Ashur Industrial Contracting's management.

Following the improvement and review of the final products and their sales at Ashur Industrial Contracting, a network simulation was conducted to audit finished products and their sales. As a result, it was demonstrated that the auditing of finished products and their sales at Ashur Industrial Contracting would take four days to complete.

Products and their sales at Ashur Industrial Contracting require two auditors. The efficiency of allocating auditors' working time frame will be optimal. After upgrading the site during the audit work, it improved compared to the initial version.

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Disclosure

Author declare no conflict of interest.

Ethics Statement

This research article did not work with a person or groups of persons to generate the data used in the methodology; therefore, it did not require the endorsement of an Ethics Committee for its realization.

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Preliminar