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ACCOUNTING STRATEGIES FOR ACHIEVING SUSTAINABILITY: RATIONALIZING COSTS UNDER THE CURRENT ECONOMIC CONDITIONS OF IRAQI COMPANIES

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Abstract

General Background: Modern management accounting emphasizes the importance of controlling production costs to sustain organizational competitiveness. **Specific Background:** Companies increasingly rely on cost–value analysis and cost management models to identify inefficient operational expenses and improve financial performance. **Knowledge Gap:** Empirical research examining cost optimization strategies in Iraqi manufacturing companies remains limited. **Aims:** This study aims to identify key cost drivers and develop a cost optimization model using empirical data from Baghdad Soft Drinks Company. **Results:** The Relative Importance Index and factor analysis reveal that direct labor costs represent the dominant component of total production costs, with a relative importance index of 0.989 and an explanatory contribution of 92.3%. Using the cost–volume–profit model, three strategic scenarios were tested: expansion, market penetration, and operational efficiency. The expansion scenario generated the highest profit growth (+55.9%), the efficiency scenario produced moderate growth (+15%), while the penetration strategy caused a substantial decline in profitability (−67.8%). **Novelty:** The study integrates cost-driver identification with scenario-based cost modeling in an Iraqi industrial context. **Implications:** These findings provide a practical basis for managerial decision-making and sustainable financial planning through systematic cost optimization.

Highlights:

• Direct labor expenditure emerges as the primary component shaping production cost structure.
• Scenario simulations show capacity investment produces the largest profitability growth.
• Operational efficiency strategy yields stable gains with minimal financial risk

Keywords: Cost Optimization; Cost Volume Profit Model; Cost Value Analysis; Managerial Accounting Strategy; Production Cost Structure

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Published date: 2026-08-03

Introduction

Law was initially understood more as a normative discipline that focused on the study of written legal rules and methods of juridical interpretation. [1]. Interpretation is necessary to explain things in such a way that people understand and accept them. [2]. This approach is based on the view that law is a system of norms that is logical, systematic, and independent, so the method used in legal research tends to be dogmatic-judicial or normative. [3]. In this context, law is seen as something sui generis, which has its own rules and cannot be fully explained by social or exact science approaches [4].

In an increasingly competitive business environment, companies are forced to optimize their processes in order to increase profitability. [1]point out, one of the directions addressed to achieve this objective is related to cost management in a modern vision. [2] argue that cost management is not synonymous with cost minimization, but rather the search for that level of costs "appropriate and adequate" to the strategy that managers have in mind. Since processes are built and costs derive from these choices, costs can no longer be considered as a burden, they result from the decisions of the manager [3] Productivity, market share, production cycle times, quality, flexibility and many other non-financial criteria provide an implication on the final result long before that result can be estimated. [4] emphasizes that to be a good cost manager, the accounting analyst must himself resort to the management of the factors that cause costs, and those factors are essentially non-financial.

Summarizing the context in which management accounting is organized in Arab countries, citing [5]mentions that "in almost all Arab companies studied, there is no separate department organized for management accounting, it being integrated into financial accounting. On the other hand, the main characteristic of management accounting is that it is based on budgets, the information generated by it being used by management in decision-making and performing managerial control". These observations are in agreement with research conducted by [6], who explored management accounting practices in the countries of the Gulf Cooperation Council, demonstrating the frequent integration of management accounting into general financial functions.

[7] confirmed these trends in their study of internal audit practices in the Middle East and North Africa. [8]very eloquently emphasizes that "management accounting deals with the future and not with historical issues; we need them to see the road ahead like the headlights of a car show the way to go".

Currently, in Iraq there is an intense concern about the certification of financial professionals in cost and pricing. [9]demonstrates the importance of international diffusion of modern management accounting practices in emerging economies, which also applies to the Iraqi context. Organized by Unichrone "Costing and Pricing Certification in Iraq is a strategic move for business development that can have a positive impact on a company's financial situation. In this case, certified professionals have increased awareness of best practices in costing and pricing, as well as cost structures and pricing strategies. They promote informed decision-making, and organizations can adapt quickly to various market fluctuations and economic fluctuations. The main role of certified professionals is to assert that pricing strategies are competitive and yet profitable. At the same time, this signals a company's dedication to financial excellence" [10]

In this context, the purpose of this study is to identify the main factors that influence the level of costs related to manufactured products using the Relative Importance Index technique and to create a cost optimization model based on an empirical study conducted at the Soft Drinks Company in Baghdad.

Literature Review

The interest in cost management led to the publication of around 60,000 papers (articles, editorials, books, etc.) in the period 2020-2025, but the concerns of Iraqi researchers were quite modest.

To narrow the scope of the literature and to better understand the regional context of cost management research in the region, we conducted a Web of Science search using the keywords "cost management" correlated with the Middle Eastern states. This query of the Web of Science database generated a number of 15,556 articles, revealing a moderate interest in this topic in the Middle East. However, to ensure a pertinent and focused bibliometric analysis, we applied strict relevance criteria, selecting a representative sample of 500 papers that specifically address this concept. This sample of papers was subsequently subjected to advanced bibliometric analyses, the results being further presented through specific visualizations.

The thematic distribution of the articles highlights a strong orientation towards engineering and energy fields, with a clear predominance of works classified in Energy Fuels (2,087 works), Environmental Sciences (1,722) and Engineering Electrical Electronic (1,625). This thematic distribution is not accidental, but reflects the evolution of the paradigm of the field towards integrated approaches, in which cost optimization becomes an important vector of sustainability and competitiveness.

In the context of research on cost management, the co-occurrence map (figure no. 1) of keywords reflects a dense network of fundamental concepts and significant connections between major thematic directions. Terms such as "management", "impact", "performance", "optimization" and "model" are at the center of the network, indicating the dominant concerns of the authors in this field. The interest in optimization is reinforced by the repetitive presence of terms associated with performance and impact, supporting the idea that cost reduction is not an isolated practice, but a process integrated into the logic of economic efficiency and sustainability.
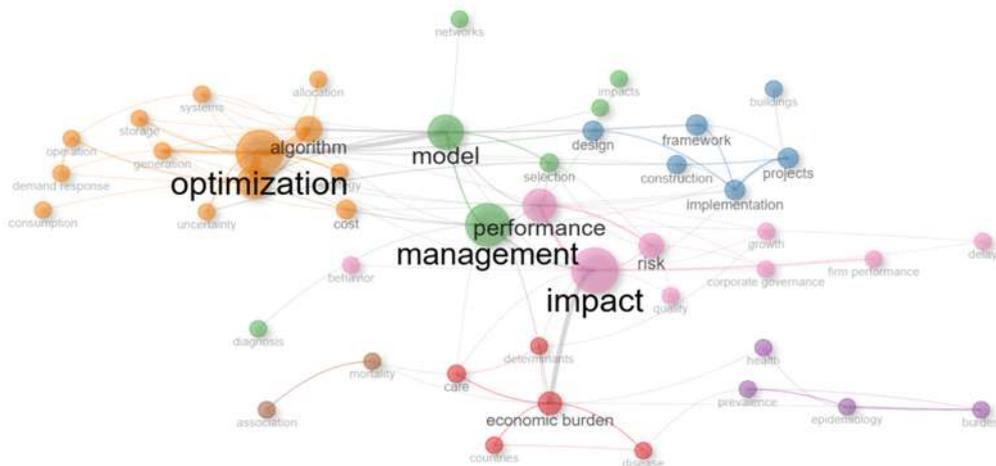
Figure 1. *Keyword co-occurrence map*
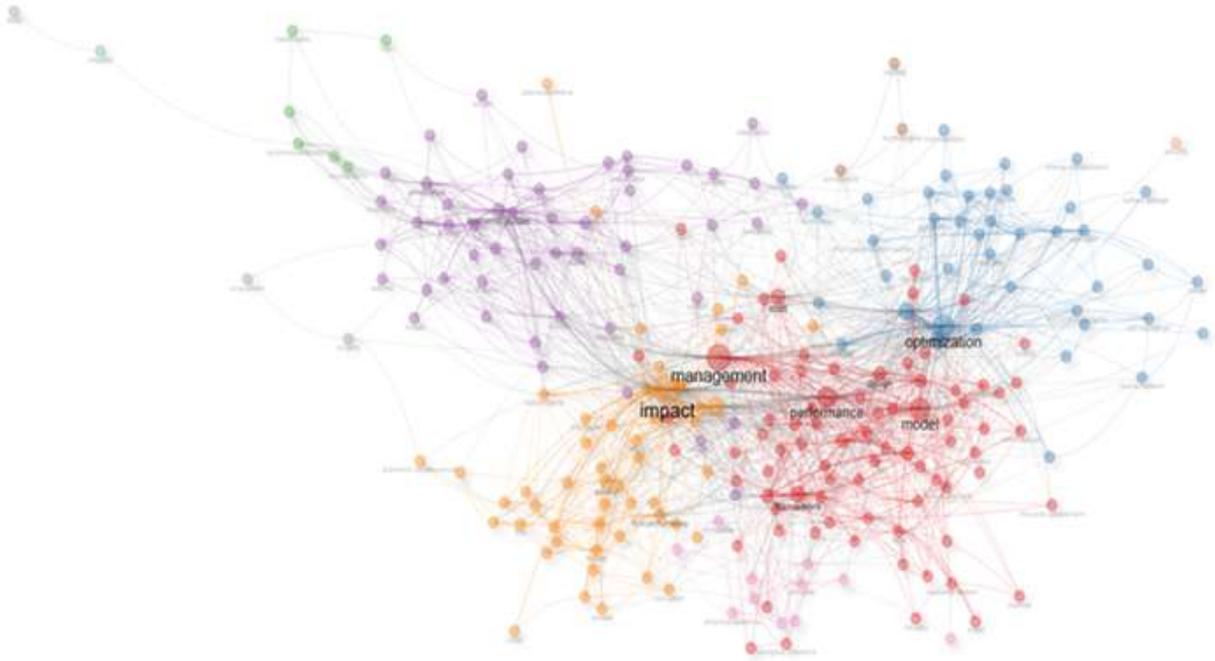
Source: Own processing using Biblioshiny (Bibliometrix R-package), based on results extracted from the Web of Science Core Collection (May 2025)

In order to provide a more focused analysis and highlight the essential structures of the conceptual field, we performed a methodological refinement, applying additional filters that led to the development of a simplified map, presented below (figure no.2).

Figure 2. *Simplified co-occurrence map*

Source: Own processing using Biblioshiny (Bibliometrix R-package), based on results extracted from the Web of Science Core Collection (May 2025)

The simplified co-occurrence map, built on a small sample of keywords, provides a clearer and more structured view of the dominant thematic cores in the specialized literature. The orange cluster, dominated by terms such as "algorithm" and

"optimization", indicates a pronounced orientation towards the development and application of rigorous methods for the efficient allocation of resources, an essential step for companies aiming to reduce overall costs, in line with the approach of [10].

The central cluster, in shades of pink and green, outlines the concerns for "performance", "efficiency" and "design" – concepts closely related to the assessment of the impact of strategic decisions on direct and indirect costs. This structure suggests an increasing integration of management accounting in organizational optimization processes, in line with the studies of [11]connecting cost and profitability systems.

A careful analysis of this simplified visualization reveals the existence of distinct but interconnected thematic cores, which reflect the diversity of theoretical and methodological approaches in the field of cost management.

By deepening the analysis of the specialized literature, we identify multiple theoretical frameworks and explanatory models that underpin cost optimization approaches. These approaches, discussed below, provide the conceptual and methodological tools necessary for understanding and solving practical challenges. Cost optimization models are mathematical tools that help companies minimize costs while maximizing profits. [12] demonstrates that they are important for any company that wants to improve its efficiency, competitiveness and sustainability. Mathematical models, identified as a distinct thematic core in our bibliometric analysis (visible in the orange cluster in Figure 2), constitute a rapidly expanding field of research. Theoretically and practically, cost optimization models can help companies in the following directions:

- identifying the combination that generates the most units of production;

- allocating limited resources, such as materials, labor, time, and capital, to the most productive and profitable activities;

- reducing waste, inefficiency, and redundancy in production or delivery processes;

- evaluating the tradeoffs and impact of different decisions or scenarios on business costs and performance.

These directions of practical application are reflected in the dominant thematic concerns identified previously, where terms related to optimization, efficiency and performance occupy central positions in the conceptual network. The results of our bibliometric analysis thus confirm the relevance and topicality of these models in the contemporary literature, being consistent with the thematic distribution presented in Figure 2, where engineering and scientific fields are predominant.

[11]have developed comprehensive frameworks for the integration of cost systems in order to improve the profitability and performance of companies. Their analysis is particularly relevant for companies that, like those in Iraq, operate in competitive environments with constant pressure on prices.

From the set of rich analyses supported by [13]at ISEOR, we consider significant those relating to the identification and measurement of hidden costs and malfunctions recorded during work. Hidden costs are defined as those costs that are not detected as such by the information systems owned by the company. Their evaluation is carried out in a logic of taking into account the existing links between the malfunctions, the measures they require and the costs that are generated. The ISEOR model allows the identification of the types of costs retained and the understanding of the approach to quantifying them.

This perspective on hidden costs, although less visible in the dominant terms of the co-occurrence map, represents an emerging research direction with significant potential for companies in the Middle East. For example, in our sample of 500 articles selected from a total of 15,556, we identified multiple studies that address the issue of hidden costs, confirming the relevance of this perspective for cost management in the region.

Any productive organization is considered a set of structures and human behaviors in permanent interaction. The "structures - behaviors" system determines the emergence of dysfunctions that generate hidden costs and reduce economic performance. According to [13], economic analysis tends to demonstrate that dysfunctions contain an unexplained part inherent in the functioning, no matter how good it may be, and an explainable part, whose experimentation shows that they result from a relatively ineffective coupling of the system. Such a theory, intensively validated through numerous experiments, offers a structural-behavioral conceptualization of the organization, which is of socioeconomic essence. Indeed, the evaluation of economic performance only makes sense under conditions of simultaneous expression through economic and social variables.

Authors such as [14], referring to economic strategies in terms of sustainability, foreground the concept of avoiding costs or unnecessary expenses and which "aims to take proactive measures to identify potential cost factors and implement ways to reduce or eliminate them". In practice, [14] does not distinguish between avoiding costs and reducing them. This approach aligns with the study of [7]who, analyzing management accounting practices in the food and beverage industry, highlight the importance of proactively identifying cost factors.

Ines [15]starts from the belief that cost reduction is one of the main challenges for a company, and implementing a cost reduction strategy is one of the levers that allows a company to increase productivity and, therefore, turnover, and places particular emphasis on reducing overall costs.

Cost reduction is a key strategy to ensure business competitiveness and create space for investment in new areas, thus meeting the growing expectations of consumers and stakeholders. However, these reductions are often implemented with an objective focused exclusively on immediate results, without a holistic approach or a thorough analysis of the long-term impact. Such an approach can weaken critical operations, compromise the quality of products and services, and harm the company's ability to

attract and retain talent. [12] emphasizes in his work the importance of a strategic approach to cost management, which takes into account both short-term and long-term objectives.

The company [16]published an informative and pedagogical article on cost reduction strategies, which acts as a guide in the field and emphasizes how to perform cost analysis to identify economic opportunities. This practical orientation, focused on identifying opportunities, is consistent with the dominant trends observed in the analyzed literature. Of the 15,556 articles initially identified by querying the databases, a significant number address this applied dimension, confirming its relevance for managerial practice in the Middle East.

Cost reduction is not an isolated approach, it is linked to value creation. The "cost/value" couple, like the "risk/profitability" couple in finance, has been at the center of the concerns of researchers and practitioners of managerial control in the last twenty years. The idea is to no longer perceive costs as inevitable but, on the contrary, to be able to act on them and, thus, contribute to the creation of value for the company [17]. To this end, numerous methods of calculating and reducing costs have emerged.

[18] examines the international diffusion of new management accounting practices, providing valuable insight into how advanced cost management techniques can be adapted in emerging economies such as Iraq. This framework is particularly relevant for improving cost optimization practices in Iraqi companies.

Moving away from simple cost reduction, [10] discusses different types of cost optimization models, depending on the complexity of the business problem (linear programming, nonlinear programming, integer programming, dynamic programming). A particularly important issue that supports cost optimization is the approach to identifying and measuring cost factors, in its structure variable cost and fixed cost, factors related to the level of activity – meaning physical output or output expressed in hours of activity. [10]argues that by understanding cost drivers, one can better estimate cost behavior, allocate resources efficiently, and implement cost reduction strategies.

Objectives And Hypotheses

Considering the concerns of researchers confirmed by the studies developed and published, vis-à-vis the strategic movement for business development that aims to certify financial specialists in costs and prices, the objective of this article refers to the optimization of costs, both from the perspective of cost factors that can be analyzed in order to reduce them, and the analysis of the cost-value couple as a model for optimizing costs and company performance based on an empirical study conducted using data collected from Soft Drinks Baghdad, Iraq.

Consequently, the present research aims to investigate, through the prism of a rigorous methodology, the following hypotheses that derive from the theoretical framework analyzed:

Hypothesis 1: there is at least one cost factor that can be analyzed in order to reduce the total cost of the production obtained;

Hypothesis 2: Based on the analysis of the cost-value pair, at least one cost optimization model can be created in order to increase the efficiency of the entire activity.

Data And Indicators

In order to meet the proposed purpose, the technological process of the Soft Drinks company in Baghdad was analyzed and data were extracted regarding the production cost structure in accordance with the technological process.

The Baghdad Soft Drinks company, as a whole, specializes in obtaining six types of soft drinks (pepsi-cola, miranda, 7-up, green apple, shani and lemon), and in a general manner, their manufacture is carried out in compliance with the technological scheme.

The products produced differ from each other in the content of auxiliary materials that are added in the blending phase and where 7 technological lines can be found. Currently, only four product assortments are produced (pepsi, miranda, 7-up and mountain drew) which means that from a functional aspect, the technological capacity is only used by 90%.

Apparently simple, in reality the technological process is diverse and complex in which a series of top-down and bottom-up restrictions appear that leave their mark on the determination of production capacity.

In the case of the analyzed company, we refer to the restrictions imposed by the interruptions of activity imposed by the technological process for washing and disinfecting the facilities, the capacity of the stapling machines, material means of production whose possibility of extension depends on the investment program, etc. Under these conditions, the production capacity is not identified with calendar time, it represents the maximum time available at the enterprise level to achieve a certain volume of production that requires a determined working time.

Following the monthly evolution of the production cost structure and monthly turnover recorded by the Soft Drinks Baghdad company in 2020, the descriptive data is presented in table no. 1.

Table no 1. *Descriptive Statistics*

	N	Minimum	Maximum	Mean	Std. Deviation
direct material costs (DMC)	12	3358468.36	9855089.82	6247764.8717	1896415.45161
direct labor costs (DLC)	12	7414678.49	28054213.50	16230922.8475	6048667.52837
indirect variable costs (IVC)	12	1522149.31	4002889.86	2784642.9426	774328.07987
fixed costs (FC)	12	1395473.26	4001094.91	2552899.8608	762611.59432
total costs (TC)	12	13690769.42	45913288.08	27816230.5208	9465006.02832
Turnover (TR)	12	21394307.00	45643941.00	33678823.7500	8108220.70828
Valid N (listwise)	12				

Source: author's processing based on data collected from Baghdad Soft Drinks Company Guide, http://www.isx-iq.net/isxportal/portal/companyGuideList.html and https://english.mubasher.info/markets/ISX/stocks/....../profile

Research Method

The investigation methodology includes the main research methods, namely qualitative research and quantitative research, by highlighting the particularities of the study from a theoretical perspective, in a descriptive-conceptual manner.

We can observe that the listed research methods represent a combination of longitudinal and transversal methods, these being used to lay the foundations of a descriptive research, theoretically and conceptually substantiating aspects regarding managerial accounting, ways of capitalizing on information and their usefulness in the decision-making process without neglecting empirical research.

Starting from theory to reach practice, that is, starting from existing theories, concepts, models and methods to put them into practice, makes the present research fall into the category of research that is based on deductive approaches but which then moves towards inductive approaches due to the theoretical and conceptual transposition of the identified practical aspects.

Result And Discussions

According to the two hypotheses formulated, we place the formulated discussions on two distinct levels, associating the investigation methodology with appropriate research methods.

A. Hypothesis no. 1: there is at least one cost factor that can be analyzed in order to reduce the complete cost of the obtained production

The answer to the formulated hypothesis can be obtained by using at least two investigation methods, namely the Relative Importance Index technique and Factor Analysis using SPSS.

1. Using the Relative Importance Index

Performance management has become central to ensuring efficiency, effectiveness, and accountability in the face of increasing pressure to deliver essential services to communities while simultaneously reducing costs [19]

The relative importance of variables chart presents predictors in order of their effect on model improvement across all basic functions for a predictor. The variable with the highest improvement score is set as the most important variable, and the other variables follow in order of importance. The relative importance of variables standardizes importance values for easier interpretation. Relative importance is defined as the percentage of improvement relative to the most important predictor, which has an importance of 100%.

Relative importance is calculated by dividing the importance score of each variable by the highest importance score of the variables. then multiply by 100%.

The relative importance values of variables range from 0% to 100%. The most important variable always has a relative importance of 100%. If a variable is not used at all in the model, it is not important.

Considering the principles of the Relative Importance Index technique and the possibility of its customization, the calculation relationship (1) that can be applied in the present study is:

$$IIR = \frac{\sum W_n}{A*N} 100 \qquad (1)$$

where:

Wn – constant expressing the weight given to each element of the total cost;

A – the highest weight

n – frequency of responses

N – total number of responses

If we consider the data collected from Soft Drinks in Baghdad, regarding the production cost and its components (direct material costs, direct labor costs, indirect variable costs and total fixed costs), regardless of the size of the monthly values (total and structural elements), it results that the total cost represents the most important predictor, which allows us to apply the calculation relationship of the Relative Importance Index.

Using the SPSS 26 software, the Relative Importance Indices of the four variables that make up the total cost, are presented in table no. 2.

**Table 2.** *Calculation of the Relative Importance Index*

	N	Mean	W	IIR
DMC - direct material costs (Weight)	12	.22750652	0.583505	0.389896436
DLC - direct labor costs (Weight)	12	.57725890	0.583505	0.98929555
IVC - indirect variable costs (Weight)	12	.10211438	0.583505	0.175001722
FC - fixed costs (Weight)	12	.09312020	0.583505	0.159587664
Valid N (listwise)	12			

Source: made by the author using SPSS 26

The results obtained can be classified and graphically represented (figure no. 3) in the following manner:

a. Low level (RII <50% or 0.5): consumption of direct materials (0.3898964), variable indirect costs (0.17501722) and fixed costs (0.159587664);

b. Medium level (50% < RII < 70%): no variable meets this criterion;

c. Very high level (>70% or 0.7): consumption of direct labor (0.98929555).

Figure 3. *IIR graph*
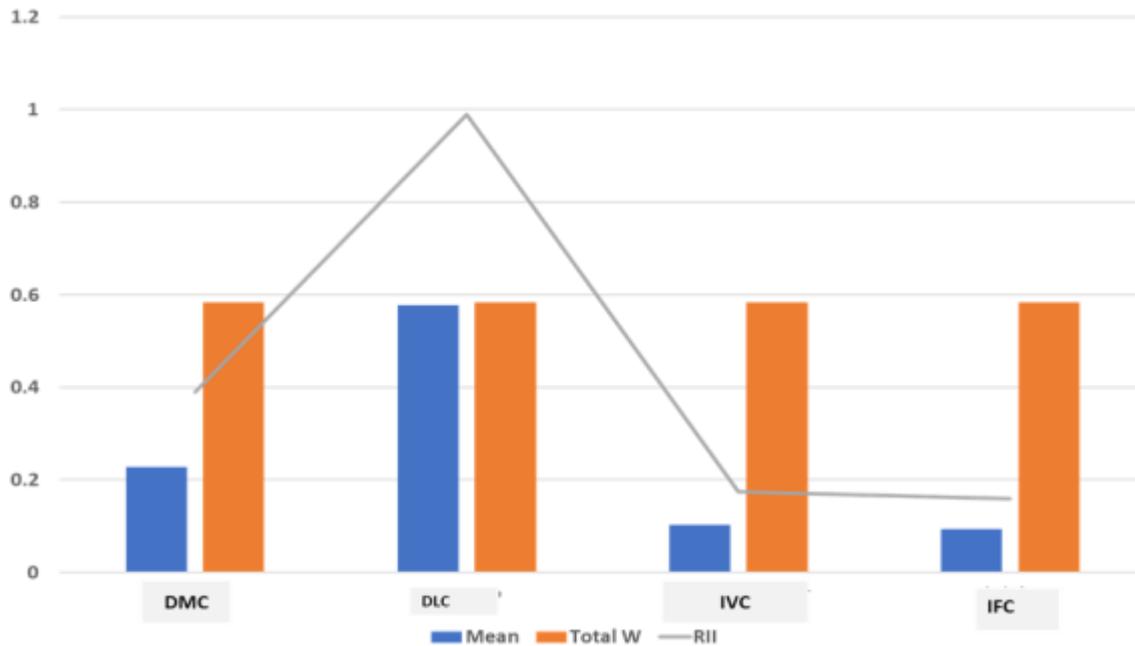
Source: belongs to the author

As we can see from table no. 2, the factor that has the greatest importance in the total cost structure is represented by direct labor expenses and suggests that in relation to this we find the largest reserves for reducing the total cost of production.

In the context of factor analysis, it is necessary to use two statistical tests, namely the Kaiser-Meyer-Olkin (KMO) test and the Bartlett's Test of Sphericity test to assess the adequacy of the data for extracting significant factors.

Applying the KMO test to the study we are undertaking (table no. 3) shows us that the KMO value is 0.742, which suggests that there is a high degree of common variance, the data being suitable for factor analysis.

2. Factor analysis

In the context of factor analysis, the use of two statistical tests is required, namely the Kaiser-Meyer-Olkin (KMO) test and the Bartlett's Test of Sphericity test to assess the adequacy of the data for extracting significant factors.

Applying the KMO test to the study we are undertaking (table no. 3) shows us that the KMO value is 0.742, which suggests that there is a high degree of common variance, the data being suitable for factor analysis.

Table 3. *KMO and Bartlett's Test*

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.742
Bartlett's Test of Sphericity	Approx. Chi-Square	178.226
	df	6
	Sig.	.000

Source: author's processing with SPSS

On the other hand, the Bartlett test returns a good indicator (178.226) at a significance level of 0.05 and indicates that the variables are sufficiently correlated to continue the factor analysis. Considering the intended goal, namely reducing production costs, we set the Total Cost as the target, and the rest of the variables (structural components of the total cost) as predictors and we obtained that the only variable that has a defining effect on the total cost (92.3%) is represented by direct labor costs (figure no. 4).

Figure 4. *Effect of the variable Direct labor costs on total overhead*
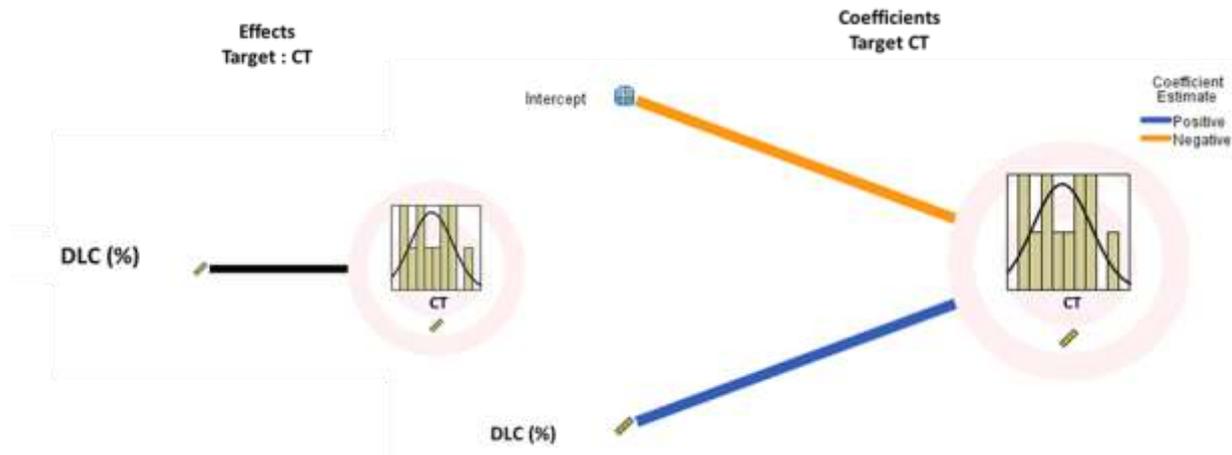
Source. Author's processing

From the analysis presented by the two methods discussed, hypothesis no.1 is confirmed.

B. Hypothesis no. 2: Based on the analysis of the cost-value pair, at least one cost optimization model can be created in order to increase the efficiency of the entire activity

It is known that traditional calculation is based on grouping expenses into direct and indirect, but the same expenses can be grouped into variable expenses and fixed expenses, so as to establish a cost-activity level-profit, or cost-volume-profit relationship [20]

The specialized literature [21]mentions that this problem was analyzed for the first time in the railway sector due to the very high costs. Dionysius Lardner (1850) observed that some costs are independent of traffic, others are proportional and that, when traffic increased, unit costs decreased, increasing profit, leaving room for price reduction possibilities for the continued growth of demand.

A few years later, [22] studied the relationship between unit cost and activity level. Continuing this line of thought, [23]took a stand against the full cost method and converted costs into fixed and variable costs at the activity level. In fact, costing based on variable and fixed costs, also known as the "partial cost method" or the "direct-costing" method, was conceived simultaneously and independently by two authors, Jonathan Hariss and Charter Harrison, and applied for the first time in the USA, after which, starting in the 1950s, with the introduction of the electronic computer, it spread rapidly to countries across the Atlantic, providing managers with a useful cost modeling tool for analyzing and making numerous management decisions [24]).

Since variable costs are dependent on the volume of production, while fixed costs remain constant at its level, the traditional cost calculation model becomes:
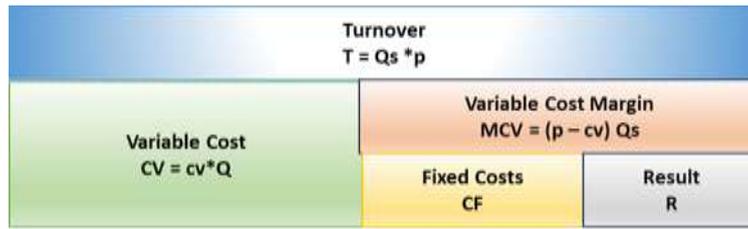
CT = CVT + CFT (2)

where:

CT – Total Expenses (Costs)

CVT – Total Variable Expenses

CF – Total Fixed Expenses

is transformed into a cost optimization model based on the scheme in figure no. 5

Figure 5. *Scheme of the result formation in the concept of variable and fixed expenses*

Source: after C.Iacob et all. (2016), Management accounting – fundamental instrument of managerial activity, Universitaria Publishing House, Craiova, p. 172

According to the presented scheme, the cost and results optimization model, also called the cost-volume-profit model, under conditions where multiple products are obtained, is mathematically based on the relationship:

$$R = \sum_{i=1}^{n}(p_i - cv_i)Qs_i - CF \qquad (3)$$

where:

p – unit selling price

i – product sold

cv – unit variable cost

Qsi – production sold from product "i"

pi - cvi – unit margin on variable cost related to product "i"

This relationship describes the variation of turnover, total expenses and operating result depending on the volume of production, selling price, variable expenses and fixed expenses.

The cost-volume-profit model is a classic tool in the management panoply. It is a tool that answers questions such as: What will be the repercussions on turnover and expenses if we sell more? If we increase or decrease sales prices, what will be the effect on sales volume? If we outsource sales (by occupying an external market segment) what will be the consequences on costs?

Therefore, the basic concept of the cost-volume-profit model takes into account the "hypothesis - consequence of the hypothesis" couple and is based on the behavior of turnover and operating expenses, an aspect that leads to the notions of margin and break-even point.

Based on this decomposition, the differential income statement allows the establishment of margins at each stage of production and highlights the relationships that exist between costs (variable and fixed), sales volume and profit.

Since it is a mathematical function of the result expression, the optimization of the component elements can be achieved using linear regression using the R Studio program.

According to the R Studio program, it was first necessary to conduct a detailed analysis of the data of the Soft Drinks Baghdad Company regarding costs, production and prices (at the company level) and to encode the determined indicators (table no. 4)

Table 4. *Indicator coding and data source*

Acronym	Description	Data source	Company financial indicators	
			Value	UM
QP (kL)	Quantity Produced (thousand liters)	author's processing		
LH (kH)	Labor Hours (thousand hours)	author's processing		
UMC (IQD/L)	Unit Material Cost (per liter)	author's processing		
TMC (kIQD)	Total Material Cost (thousand IQD)	author's processing		
MC%	Material Cost % of Total Cost	author's processing		

ULC (IQD/L)	Unit Labor Cost (per liter)	author's processing		
TLC (kIQD)	Total Labor Cost (thousand IQD)	author's processing		
LC%	Labor Cost % of Total Cost	author's processing		
UVC (IQD/L)	Unit Variable Cost (per liter)	author's processing		
IVC (kIQD)	Indirect Variable Cost (thousand IQD)	author's processing		
IVC%	Indirect Variable Cost % of Total Cost	author's processing in R Studio	333,795	Mii IQD
TVC (kIQD)	Total variable costs	author's processing		
UFC (IQD/L)	Unit Fixed Cost (per liter)	author's processing		
TFC (kIQD)	Total Fixed Cost (thousand IQD)	author's processing in R Studio	30,635	Mii IQD
FC%	Fixed Cost % of Total Cost	author's processing		
TC (kIQD)	Total Cost (thousand IQD)	author's processing		
QS (kL)	Quantity Sold (thousand liters)	author's processing in R Studio	146,779	Mii litri
SP (IQD/L)	Selling Price (per liter)	author's processing		
TR (kIQD)	Turnever (thousand IQD)	author's processing in R Studio	404,145	Mii IQD
R (kIQD)	Result (thousand IQD)	author's processing in R Studio	70,351	Mii IQD
MCV (%)	Varable Cost Margin	author's processing in R Studio	17,4	%

Source: Author's processing based on data collected from Baghdad Soft Drinks Company Guide, http://www.isx-iq.net/isxportal/portal/companyGuideList.html and https://english.mubasher.info/markets/ISX/stocks/....../profile

The analysis of the current data (performed at the level of the entire production) reveals a unitary marginal contribution of 480.17 IQD/liter, representing 17.4% of the selling price of 2,753.45 IQD/liter. This margin indicates the company's potential to generate additional profit by increasing production volumes, constituting the basis for evaluating strategic scenarios. The current cost structure, with variable expenses of 333,795 thousand IQD and fixed expenses of 30,635 thousand IQD, provides a solid platform for modeling development alternatives

For the purpose of empirical analysis, starting from the fundamental model (relationship 2), three distinct strategic sub-hypotheses were formulated, each reflecting a different approach to improving organizational performance. The hypotheses were designed to test realistic development scenarios in the context of the Iraqi market, covering expansion, penetration and operational efficiency strategies (table no. 5).

Table 5. *Summary of the formulated strategic sub-hypotheses*

Sub - Hypothesis	Strategic Description	Proposed Changes	Justification

SH1: Expansion	Increase in production capacity through investment	+45% quantity; +20% fixed costs; constant price	Exploiting market potential through infrastructure investments
SH2: Penetration	Market penetration through price competitiveness	-5% selling price; +20% quantity; +12% variable costs	Stimulating demand by reducing price and gaining market share
SH3: Efficiency	Operational optimization without major investments	+15% target profit; constant costs; constant price	Improving results through operational efficiency

a. Sub-hypothesis no. 1 considers an expansion strategy and tests the aggressive growth scenario through investment in production capacity.

Starting from the hypothesis that the market can absorb a 45% increase in production (from 146,779 thousand liters to 212,850 thousand liters), at the current price of 2,753.45 IQD/liter, total fixed costs will increase by 20% (from 30,635 thousand IQD to 36,752 thousand IQD through the acquisition of equipment and the expansion of production facilities.

b. Sub-hypothesis no. 2 considers the market penetration strategy, in which it reduces the price to gain market share.

The second hypothesis models a defensive approach by reducing the price (SP) by 5%, from 2,753.45 to 2,615.78 IQD/liter, to stimulate demand. A demand elasticity is assumed that generates a 20% increase in the volume sold (QS), from 146,779 to 176,135 thousand liters, but with operational pressures that increase variable costs (TVC) by 12% due to increased activity and possible inefficiencies.

c. Sub-hypothesis no. 3 pursues an efficiency objective in which it sets a profit growth target of 15%.

The third hypothesis adopts a conservative approach, setting as a target a profit growth of exactly 15%, from 70,351 to 80,904 thousand IQD, without changes in the cost structure or prices (SP). The strategy focuses on optimizing existing processes and improving operational efficiency to achieve the performance target.

To test the hypotheses, the cost-volume-profit (CVP) model was applied, which allows quantifying the impact of changes in volume, price and cost structure on profitability. The method is recognized in the specialized literature for the analysis of strategic scenarios in the context of managerial decision-making [2] [25]The mathematical simulations were performed using the R Studio software version 4.4.1, with the dplyr packages for data manipulation and ggplot2 for visualizations. The choice of this tool is justified by the capacity to process complex calculations, the flexibility in modeling scenarios and the reproducibility of results by saving the source code. The simulations were performed based on aggregated annual data, using the unitary marginal contribution as the key variable for calculating the impact of additional quantities.

The implementation of the CVP model for the three scenarios generated differentiated results (table no. 6), demonstrating the distinct impact of each strategy on financial performance. The results presented below reflect the exact calculations performed in R Studio and form the basis for the final strategic decision.

Table 6. *Results of testing strategic sub-hypotheses*

Indicator	Current Situation	SH1: Expansion	SH2: Penetration	SH3: Efficiency
Quantity - QS (kL)	146,779	212,830	176,135	146,783
Unit price - SP (IQD/L)	2,753.45	2,753.45	2,615.78	2,753.45
Turnover - SR (kIQD)	404,146	586,017	460,731	404,157
Variable costs - TVC (kIQD)	333,795	439,582	407,447	333,799
Fixed costs - TFC (kIQD)	30,635	36,762	30,635	30,635
PROFIT (kIQD)	70,351	109,673	22,649	80,904
Profit change (kIQD)	0	+39,322	-47,702	+10,553
Profit change (%)	0.0%	+55.9%	-67.8%	+15.0%

Source: Own calculations in R Studio

Testing the first sub-hypothesis demonstrates that investment in capacity generates the most significant positive impact on

profitability. Profit increases by 39,322 thousand IQD (+55.9%), from 70,351 to 109,673 thousand IQD. The turnover (SR) reaches 586,017 thousand IQD, and the efficiency of the investment is highlighted by the fact that a mere 20% increase in fixed costs (TFC) by 6,127 thousand IQD generates a 55.9% increase in profit."

The second sub-hypothesis produces significantly opposite results. Profit drops considerably by 47,702 thousand IQD (-67.8%), reaching only 22,649 thousand IQD. Although the turnover (SR) increases to 460,731 thousand IQD by stimulating volume, the increase in variable costs (TVC) by 34.4% (73,652 thousand IQD) substantially exceeds the benefits of the price reduction (SP), demonstrating insufficient elasticity of demand.

In the third scenario, to achieve the 15% profit growth target (80,904 thousand IQD), a minimum additional quantity (QS) of only 4 thousand liters, demonstrating the efficiency of the current cost structure and the potential for optimization through simple operational measures.

The comparison of the results (table no. 7) reveals fundamental differences in the risk-return profile of the strategies. The expansion strategy offers the highest absolute growth potential (+55.9%), but requires validation of the market absorption capacity for the additional volume of 66,051 thousand liters. The penetration strategy proves to be contraindicated, indicating insufficient elasticity of demand to compensate for the erosion of the unit margin. The efficiency strategy presents the most favorable risk-benefit ratio, offering guaranteed growth with minimal investment.

Table 7. *Strategy evaluation matrix*

Strategy	Benefit - Profit (kIQD)	Investment Required	Market Risk	Operational Risk	Recommendation
SH1: Expansion	109,673 (+55.9%)	High (TFC +20%)	Medium	Low	PRIORITY
SH2: Penetration	22,649 (-67.8%)	Minimum	High	High	AVOID
SH3: Efficiency	80,904 (+15.0%)	Minimum	Low	Low	SAFE

Source: Own analysis

The results should be interpreted in the context of the specificities of the Iraqi market, where economic stability and demand predictability can influence the practical feasibility of the tested strategies (table no. 8).

Table 8. *Validation of sub-hypotheses*

Ipoteza	Status	Justificare	Impact Profit
SH1: Expansion	VALIDATED	Greatest positive impact on profitability	+55.9%
SH2: Penetration	REJECTED	Devastating negative impact on results	-67.8%
SH3: Efficiency	VALIDATED	Optimal risk-benefit balance	+15.0%

Source: Own assessment

The expansion strategy assumes a growing market capable of absorbing additional production, while the efficiency strategy is based on optimizing existing resources, being less dependent on external conditions.

Based on the quantitative analysis, the expansion strategy (SH1) represents the option with the highest growth potential, generating a 55.9% increase in profit by reaching a turnover of 586,017 thousand IQD. However, the implementation of this strategy requires a rigorous prior assessment of market demand to validate the absorption capacity of the additional production of 66,051 thousand liters and ensure the feasibility of the investment of 6,127 thousand IQD in fixed costs.

As a conservative option, the efficiency strategy (SH3) offers a guaranteed gain of 15% (10,553 thousand IQD) with minimal investment and low risk, representing a viable alternative in the context of an uncertain market. This strategy can be implemented immediately by optimizing existing processes and can serve as an intermediate step towards the expansion strategy.

The penetration strategy by reducing prices (SH2) should be categorically avoided in the current context, as it generates a dramatic deterioration in profitability by 47,702 thousand IQD (-67.8%). The result demonstrates that the price reduction by 5% is not compensated by the volume increase by 20%, especially in the conditions of the variable costs increase by 12%. This strategy could be reconsidered only after a detailed analysis of the elasticity of demand specific to the company's products

Research Limitations.

The modeling performed in the work assumes linear relationships between variables and does not take into account exogenous factors such as currency fluctuations, regulatory changes or competitive reactions. It is also assumed that the cost structure remains stable over the considered activity intervals, which may not reflect the practical reality in the case of substantial volume changes.

Conclusion

Both cost avoidance and cost reduction can contribute to a company's sustainability goals. While cost avoidance tends to be aligned with long-term sustainable development goals, cost reduction targets current activity, but a sustainable development strategy can integrate both approaches to ensure a balanced and successful path to economic growth.

The bibliometric analysis conducted on the sample of 500 articles, selected from the total of 15,556 initially identified, provides a comprehensive picture of the research field in the field of cost management, with a focus on the Middle East context. The presented visualizations reflect, in order, the detailed structure of the conceptual relationships and the essence of the dominant thematic cores, confirm the interdisciplinary nature of the field and its practical relevance for companies in the region, with the emphasis on cost reduction and optimization.

In the context of cost management research, the keyword co-occurrence map reflects a dense network of fundamental concepts and significant connections between major thematic directions. Terms such as "management", "impact", "performance", "optimization" and "model" are at the center of the network, indicating the dominant concerns of authors in this field. The interest in optimization is reinforced by the repetitive presence of terms associated with performance and impact, supporting the idea that cost reduction is not an isolated practice, but a process integrated into the logic of economic efficiency and sustainability.

This trend manifested in the specialized literature represents a priority research direction towards which the concerns of Iraqi theoreticians and practitioners should also be directed in the approach to the sustainable development strategy.

A minimum cost strategy involves increasing organizational efficiency by obtaining total costs for products and services lower than those of competitors. This requires determining the cost factors that can be analyzed in order to reduce them, as well as analyzing the cost-value pair as a cost optimization model.

Due to the specifics of the technological process of the Soft Drincs Baghdad company, labor costs represent the largest component of the total production cost (IIR = 98.92%), their effect on the total cost being 92.3%, representing the largest reserve for reducing the production cost. This aspect involves better management of working time, reducing over-planning, limiting new employees, detecting and eliminating hidden costs, etc. and guarantees increased profitability.

Cost optimization is a comprehensive and continuous strategy that aims to minimize expenses, while maximizing value for the business. It involves identifying unnecessary expenses, finding more profitable alternatives and better allocating resources to achieve the desired objectives at a lower cost.

Cost reduction is not an isolated approach, it is linked to value creation. The "cost/value" couple, like the "risk/profitability" couple in finance, has been at the center of the concerns of researchers and practitioners of managerial control and is based on the differential income statement model. This presentation of the income statement can serve as a framework for reflection for various management decisions: what volume of sales would be necessary; can the price be changed; can new orders be accepted at a lower price; what will be the impact of a promotional campaign on the net result; is it profitable to purchase new equipment; can a new salesperson be hired; if the company produces multiple products that are sold on different markets, what minus result will we obtain if we split the production and sale of the product or give it up? and the questions can go on.

Although the mathematical model is standard, the same cannot be said about the solutions that can be accepted, as they vary from company to company, from field to field, as is the case with the Soft Drinks Baghdad company for which three sub-hypotheses were analyzed, namely: the activity expansion strategy, the market penetration strategy and the efficiency increase strategy.

The study revealed that the expansion strategy represents the option with the greatest growth potential, generating a 55.9% increase in profit by reaching a turnover of 586,017 thousand IQD. However, caution is required in implementing this strategy since it is necessary to take into account the market demand for soft drinks, which is a saturated market.

The efficiency strategy, although it offers a gain of only 15%, can be a guaranteed gain with minimal investment and low risk. This strategy can be implemented immediately by optimizing existing processes and can serve as an intermediate step towards the expansion strategy.

The penetration strategy by reducing prices, in the conditions of the researched company, should be avoided because it generates a dramatic deterioration in profitability by 47,702 thousand IQD (-67.8%). The result demonstrates that the price reduction by 5% is not compensated by the volume increase by 20%, especially in the conditions of the variable costs increase by 12%. This strategy could be reconsidered only after a detailed analysis of the elasticity of demand specific to the company's product.

The research conducted outlines the idea that cost reduction and optimization is a solution for managing production costs and, at the same time, a key factor in the action of elaborating sustainable growth strategies.

References

1   M. &. H. Mowen, *Cornerstones of cost management,* United State of, 2017.

2   Horngren, *Cost accounting: a managerial emphasis. Pearson Education Inc.,,* Upper Saddle River, 2009.

3   J. K. &. G. V. Shank, Strategic cost management: the new tool for, 1993.

4   C. M. Drury, Management and cost accounting. Springer., 2013.

5   A.A.S.Mirdan, The Evolution of Budgetary Practice as Financial Communication Tool, 2021.

6   J. D. &. M. E. Mclellan, An exploratory analysis of management accounting, 2013.

7   M. &. L. R. Abdel-Kader, Management accounting practices in the British food, 2006.

8   DIK.R., Arab Management Accounting Systems under the Influence of their, Faculty of Business, Economics and Social Sciences at Dortmund University of ttps://eldorado.tu, 2011.

9   P. L. Joshi, The international diffusion of new management accounting practices:, Journal of International Accounting, Auditing and Taxation, 10(1), 85-109. , 2021.

10 R. Tata, Modèle d'optimisation des coûts : comment créer un modèle, https://fastercapital.com/fr/contenu/Modele-d-optimisation-des-couts---comment, 2025.

11 R. S. &. C. R. Kaplan, Cost & effect: using integrated cost systems to drive, . Harvard Business Press. , 1998.

12 P. Weetman, Management accounting, . Second Edition, Pearson Education Limited, 2010.

13 S. H., , Enrichir le travail humain: l'evaluation economique, Economica,, Paris , 1987.

14 E. Green, Stratégies économiques en matière de durabilité : évitement des, : , 2024.

15 I. Sancelot, - Réduction des coûts : les différentes techniques à mettre en place,, 2024.

16 STRIPE, Stratégies de réduction des coûts : guide à l'intention des entreprises,, 2025.

17 L. D. T. Bensimhon, Bensimhon, L., Dubreuil, T., ttps://shs.cairn.info/article/DUNOD_CAPPE_2013_01_0629?lang=fr , 2020.

18 P. L. (. Joshi, The international diffusion of new management accounting practices:, vol. 10(1), Journal of International Accounting, Auditing and Taxation, 2001, pp. , 85-109. .

19 J. N. Sosu, Performance management in Ghana's local government: a case study of, Commonwealth Journal of Local Governance, ID-7376. , 2020.

20 C. e. Iacob, Contabilitatea de gestiune – instrument fundamental al activității, Editura Universitaria, Craiova, pp 312 , 2016.

21 A. S. C. Burlaud, Comptabilité de gestion, Vuibert, 2003 et publié par HAL 2011, , 2020.

22 E. Schmalenbach, Selbstkostenrechnung und Preispalilik, Ed. a V a Leipzing, 1998.

23 L. &. N. V. Gordon, Management accounting systems, perceived, environmental uncertainty and organizational structure: an empirical investigation, , 1984.

24 C. I. I. G. D. Iacob, Contabilitatea de gestiune conformă cu practica, Craiova, România , 2007.

25 C. M. Drury, Management and cost accounting., Springer., 2013.