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## Improvement of the costing system in the capture processes in fishing enterprises

### Perfeccionamiento del sistema de costos en los procesos de captura en empresas pesqueras

### Aprimoramento do sistema de custos no processo de captura em empresas de pesca

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## ABSTRACT

Cost systems are basic instruments to support managerial decision-making processes, in the search for enterprise efficiency and the definition of strategies that support the differentiation and general competitiveness of the economic organizations that make up a society. The objective of the research associated with the present study refers to the redesign of the main work procedures of the cost system of the Unidad Empresarial de Base Extractiva "La Coloma", belonging to the Industrial Fishing Enterprise of La Coloma, starting from adjusting its production flows to the main instruments associated with the calculation and accumulation of the costs of fishing activities. For this purpose, general methods of the theoretical and empirical levels were used with the objective of characterizing and deepening the essential particularities of the research object, contributing as main result to the redesign of the operation vouchers, calculation and distribution of indirect costs and redesign of the



cost sheets of the capture activities, laying the foundations for the application of more specific financial instruments that would contribute to build relevant information for the operative management of the costs and expenses derived from the Extractive Base Enterprise Units as basic units of the fishing industry.

**Keywords:** cost systems; accounting procedures; standard cost; process costs; fishing industry.

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## RESUMEN

Los sistemas de costo son instrumentos básicos en el apoyo a los procesos de toma de decisión gerenciales, en la búsqueda de la eficiencia empresarial y la definición de las estrategias que soporten la diferenciación y la competitividad general de las organizaciones económicas que integran una sociedad. El objetivo de la investigación asociada al presente estudio se refiere al rediseño de los principales procedimientos de trabajo del sistema de costo de la Unidad Empresarial de Base Extractiva "La Coloma", perteneciente a la Empresa Pesquera Industrial de La Coloma, a partir de atemperar sus flujos de producción a los principales instrumentos asociados al cálculo y acumulación de los costos de las actividades pesqueras. Para ello se utilizaron métodos generales del nivel teórico y empírico con el objetivo de caracterizar y profundizar en las particularidades esenciales del objeto de investigación, contribuyendo como principal resultado al rediseño de los comprobantes de operación, cálculo y distribución de los costos indirectos y rediseño de las fichas de costo de las actividades de captura, sentando las bases para la aplicación de instrumentos financieros más específicos que contribuirían a construir información relevante para la gestión operativa de los costos y gastos derivados de Unidades Empresariales de Base Extractivas como unidades básicas de la industria pesquera.

**Palabras clave:** sistemas de costo; procedimientos contables; costo estándar; costos por proceso; industria pesquera.

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## RESUMO

Os sistemas de custos são instrumentos básicos no apoio aos processos de tomada de decisão gerencial, na busca da eficiência empresarial e na definição de estratégias que apoiem a diferenciação e a competitividade geral das organizações econômicas que compõem uma sociedade. O objetivo da

pesquisa associada ao presente estudo refere-se ao redesenho dos principais procedimentos de trabalho do sistema de custos da Unidade de Negócio Extrativista "La Coloma", pertencente à Empresa de Pesca Industrial de La Coloma, ajustando seus fluxos de produção aos principais instrumentos associados ao cálculo e à acumulação dos custos da atividade pesqueira. Para tanto, foram utilizados métodos gerais de nível teórico e empírico com o objetivo de caracterizar e aprofundar as particularidades essenciais do objeto de pesquisa, contribuindo como principal resultado para o redesenho das receitas operacionais, cálculo e distribuição dos custos indiretos e redesenho das planilhas de custos das atividades de captura, lançando as bases para a aplicação de instrumentos financeiros mais específicos que contribuíssem para construir informações relevantes para a gestão operacional dos custos e despesas derivados das Unidades de Negócio de Base Extrativa como unidades básicas da indústria pesqueira.

**Palavras-chave:** sistemas de custos; procedimentos contábeis; custo padrão; custos de processo; indústria pesqueira.

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## INTRODUCTION

Globalization permeates all aspects of daily life in our activity as social beings and in the political, economic and commercial spheres (de León Lázaro, 2018) which, together with the interdependence of international markets causes the continuous need for the redesign of the competitiveness of agents to efficiently manage the productive processes of national economic units, as well as the exploitation of opportunities and the management of threats associated with their strategic objectives. This problematic demands from the business sector the renewal and updating of information systems according to the needs of production and services, as well as support for their decision-making processes (Castaño de Armas, 2018).

Nowadays, any enterprise that intends to reach an adequate competitive level must make its production processes more flexible, reject rigidity, adapt its products, improve the distribution of the goods and services generated, as well as streamline its communication mechanisms. It must be efficient in productivity, reduce production costs, produce with high quality, combined with competitive prices (López Rodríguez & Palenzuela Rama, 2005).

This requires management reports that allow knowing the results of the different activities developed by economic organizations defined as structured groups oriented to productive purposes (Martínez López et al., 2022) and to optimize decision-making processes (Luna Altamirano et al., 2018). Management Accounting is an activity that involves decision making (Hernández Madrigal, 2020) and has been one of the most used instruments as an information system for management, since it allows knowing the results of an enterprise and of each of its areas (Maura Santiago & Suárez Jiménez, 2019), contributing decisively to the control process through the preparation of the budget, the calculation and analysis of deviations, which allows quantitatively evaluating whether the established objectives have been met from a fundamental economic criterion supported by economic efficiency.

The determination of this management criterion can only be calculated on the basis of a comparison between the costs necessary to carry out an activity and those actually achieved. Only the systematic analysis of cost behavior and the decision and implementation of measures to rectify deficiencies allow this objective to be achieved.

In the particular case of the Unidad Empresarial de Base Extractiva "La Coloma", belonging to the La Coloma Industrial Fishing Enterprise, located in the south of Pinar del Rio and located in the La Coloma Popular Council, south of the city of Pinar del Rio, its mission is the capture of species from the platform such as lobster, tuna, scales, among others, and their subsequent transfer to the industry for processing, being considered the largest fishing capture unit in the country by number of vessels and tons of lobster that are mainly destined for export.

An exploratory analysis of the cost system of this Base Enterprise Unit (UEB in Spanish) identified the existence of limitations in the planning process of indirect expenses of the different cost centers or service areas. Several cost centers are incorrectly charged to the General Administration Expenses account (822), the sale of commercial fishing is incorrectly charged to account 810 Cost of Goods Sold when it should be charged to 814 Cost of Goods Sold and the cost centers that are under maintenance should not be closed on account 702 Extractive Production.

These weaknesses allow identifying the existence of a general contradiction between the current state and the desired state of the cost system of the UEB Extractiva "La Coloma". Its essence lies in the limitations of the information system, since it does not allow the fulfillment of the requirements of the stages of accumulation, processing, analysis and management decision making. This fact led

to consider as a research problem: how to improve the Cost System of the UEB Extractiva of the Industrial Fishing Enterprise of La Coloma?

The researched problem is considered of great actuality in the Cuban context since it constitutes a proposal oriented to the improvement of the accounting system of an industrial sector that has a direct effect on exports, import substitution, with a participation in the internal market in foreign currency and that marks a relevance within the social structure of the area where it is located. In response to the identified problem, the objective is to redesign the main working procedures of the cost system of the UEB Extractiva "La Coloma", by adjusting its production flows to the main instruments associated with the calculation and accumulation of the costs of its fishing activities.

## **MATERIALS AND METHODS**

For the development of the research, theoretical and empirical methods were used. The theoretical methods that characterized the development of the research were the historical-logical, oriented to the study of the historical trends of management accounting, as well as the analysis of the evolution of the cost systems linked to the object of study, modeling, which made it possible to make the necessary abstractions conducive to improving the system for accumulating the costs of capture activities in fishing activities, and the systemic-structural approach, used to conceive the structural components in the functional design of the cost systems, taking as references the characteristics of the production processes and fundamental cost elements associated with the capture processes.

The logical procedures used were analysis-synthesis, abstraction-induction and deduction. The empirical methods applied were the documentary review that includes the manual of instructions and procedures of the system to be improved, the Resolution No. 235 and 294 of the Ministry of Finance and Prices and the Norm No. 12 Management Cost. Participatory observation was incorporated, which allowed to verify through direct and systematic perception the current state of the cost system to be modified, as well as surveys and structured and unstructured interviews to the accounting professionals and technicians of the functional direction of economy of the Enterprise and the UEB Extractiva in particular, as well as to the board of directors of the UEB, which were developed with the objective of characterizing the current state of the object of study and identifying the main insufficiencies and components to be improved within its cost system.

## RESULTS AND DISCUSSION

Cost accounting is an accounting system that provides the information to measure the costs of a product, the performance and control of operations (Polimeni et al., 1994), assuming as its main purposes the determination of the costs of inventories of manufactured products, both on a unit and total basis, the cost of products sold, in order to calculate the profit or loss in a financial period and prepare the income statement, providing management with a useful tool for planning and systematic control of production costs and serving as a source of cost information for economic studies and special decisions related to capital investments, manufacture of new products and sales pricing.

The main methods used for the classification of costs within the study were: according to the function in which they are incurred (manufacturing costs, distribution and sales costs, administrative costs and financial costs); according to the form in which the costs are expressed (historical and predetermined costs); by their identification with the product (direct and indirect); according to cost method (actual, normal and standard cost) and according to the nature of the operations (by production order and by process).

The theoretical-conceptual elements incorporated in the methodology assumed in the research allowed developing an approach to the evolution of cost systems, establishing the main transformations that this discipline has undergone from the demand for accounting systems capable of providing information that allow adopting management strategies in increasingly competitive and global environments (Infante Miguel et al., 2016).

The study developed is based on the characterization of the current situation of the cost system in the UEB Extractiva belonging to the Industrial Fishing Enterprise of La Coloma. An analysis of the primary and secondary sources of information necessary for the identification of the existing limitations in the process under study was used and the main factors that characterize the cost system of the UEB Extractiva "La Coloma" were defined, based on the application of the methodology developed by Vallejos Díaz (2008), which consists of four fundamental stages.

This methodology is divided into two sections; the first is oriented to the characterization of the cost systems and the second section establishes a sequence of actions that contribute to the improvement of these systems.

The first section is composed of four stages:

Stage 1. Determination of information needs

Stage 2. Definition of information sources

Stage 3. Design of the formats for data collection

Stage 4. Data collection, analysis and processing of information

The main results derived from the development of the first section in the analysis of the cost system of the UEB Extractiva "La Coloma" are presented below.

### **Stage 1. Determination of information needs**

The information analyzed made it possible to know regularities related to the cost system of the Unidad Empresarial de base Extractiva belonging to the Industrial Fishing Enterprise of La Coloma in Pinar del Río. For this purpose, a set of information needs was identified, defined from the assessment of specialists and managers, approaching the basic components of its cost system, being the main areas identified in the cost system:

- *Cost planning*

It analyzes the behavior of the cost standards, the historical series incurred in previous periods, the use of capacities and the quantification of the reduction measures that can be applied. From the economic point of view, cost planning must be preceded by a detailed technical analysis of the capacities used and expenses incurred in the base period and the influence that may have been exerted by the different technical-economic factors that affect them.

- *Recording of Expenses*

The recording process comprises the collection, classification and accounting of the operations carried out in a given period. Through this process, the entity records the economic events occurring in the development of its productive activity.

- *Cost Calculation*

For the calculation of the entity's costs, the projections and accounting policies for the development of the business sector as of December 2020 and the certified documentation of the technological standards, production organization and technological flows associated with the organizational requirements to carry out the productive process of improvement of the cost system are mainly used; also the salary systems defined by the entity's Human Resources Functional Management, the results defined by the different groups of Expense elements associated with Production and the levels of capture obtained in recent periods.

## **Stage 2. Definition of information sources**

For the characterization of the UEB's cost system, secondary and primary sources of information were used. The main secondary sources of information used in the study were the following:

- *Regulatory legal framework*

Policies, standards and regularities for the development and implementation of cost systems, Accounting Standard No. 12, Management Accounting, Cost Accounting Manual (Resolution No. 54/2005), agreement No. 8301 of January 26, 2018, of the Council of Ministers, Resolution No. 235 of September 30, 2005, Resolution 1038 /2018 of the Ministry of Finance and Prices (MFP) and Resolution No. 397/2018.

Complementation of the information generated from secondary sources, with the regularities identified from the use of primary sources, applying interviews and surveys. The interviews are carried out with the objective of knowing the characteristics and limitations that exist for the accounting policy management process and its practical application in the development of the cost system of the fishing catch activities of the UEB Extractiva "La Coloma".

## **Stage 3. Design of the formats for data collection**

For the elaboration and application of the surveys and structured and unstructured interviews, the following tasks were carried out:



1. Determining the objectives of the surveys and interviews
2. Elaboration of the questionnaire
3. Establishment of criteria for selection of the sample to be applied
4. Survey and interview application
5. Evaluation of the information collected

#### **Stage 4. Data collection, analysis and processing of information**

For the application of the surveys and interviews, it was considered necessary for the respondents and interviewees to meet a series of criteria: at least 4 years of experience in management, decision-making capacity on behalf of their entity, as well as communication and participative leadership skills. These were applied within the Board of Directors of UEB Extractiva "La Coloma", its Accounting Department and the functional management of fishing operations, economy, human resources, investments and quality of the enterprise.

- *Analysis of the results of the secondary information sources*

The studies carried out on the Specific Accounting Standard No. 12 Management Accounting allow establishing that the cost calculation is made using the groupings of expenses conceptualized within the cost items required by the entity and making feasible the determination of the unit costs and the fundamental cost indicators, at the level of each activity or area of responsibility according to the corresponding costing system. The aggregation of the different types of expenses is made using the following elements: raw materials and materials, fuels and lubricants, energy, personnel expenses, depreciation and amortization, other monetary expenses, maintenance and transfers.

- *Cost planning*

The fundamental objective of cost planning in the entity consists of determining the indispensable expenses to obtain a given volume of production or services rendered, with a given quality, using the preparation of the annual economic plans of the entities, expressing the efficiency of their economic-productive activity for the valuation of the economic efficiency obtained in each of the areas or activities of the entity and for the formation of prices and tariffs.

The most commonly used methods for planning are the operational expense budgets (purchases, captures and expenses by elements), as well as within the financial budgets: the effective capital

budget, projected performance and status statement, the establishment of the actual unit cost of production or services. The calculation of the unit cost is developed for each of the assortments produced or services rendered, establishing aggregate levels and calculating systematically in the assortments of greater relative importance.

- *Cost analysis*

The cost analysis is based fundamentally on the evaluation of the behavior of expenses and their deviations, taking into account the place where they occur and their concept, so that the investigation of the causes that motivate them will allow taking measures to eradicate or reduce the negative effects on the results. The cost system used in the UEB Extractiva is mainly associated with process costs, while the use of work order costs is associated mainly with maintenance and capitalizable repairs of vessels.

- *Cost Accounting Manual*

The UEB's cost manual presents in its different chapters the national and local regulations in force in this area used by the entity and, in accordance with the organization of its production or service rendering process, lists the cost centers, activities, cost generators, areas of responsibility or other existing structures for planning purposes. It also establishes the methods of valuation of inventories of products in process, intermediate and finished products, defines the elements and items of expenses and costs, establishes the distribution and application of indirect expenses, specifying the distributive bases to be used, as well as the design of the specific models and documents for the planning, determination and analysis of the entity's cost, including their corresponding methodologies and providing for the adequate filing and conservation thereof, in accordance with the regulations that, in matters of prescription, are legislated to that effect.

- *Analysis of the results of the primary information sources*

The survey associated with the research was applied to a total of 25 people, including two officials from the Provincial Directorate of Finance and Prices, as well as technicians, specialists and managers from the UEB Extractiva and the Functional Directorates of Fishing Operations, Economics, Human Resources, Quality and Industry of the Head Office. For the selection of the respondents, the following criteria were taken into account: experience of at least 4 years in management, decision-making capacity on behalf of their entity, communication skills and participative leadership.

On this basis, the reliability analysis of the results was developed with the use of Minitab 17 software, the Cronbach's coefficient was obtained, which interprets the degree of consistency that exists in the response of the respondents, depending on the questions and the measurement scale, projecting the Cronbach's Alpha as reliability statistic a result, a 0.678, slightly below the minimum acceptable which is 0.7, thus estimating the reliability of the 25 questions asked.

Among the main regularities identified in the application of the surveys, it was possible to establish that 100% of those surveyed highlighted the importance of the cost system for the control of material and financial resources in the decision-making processes, 84% of those surveyed responded that the cost information generated is reliable, 16% consider that there are important inadequacies in the operation of the current cost system and 96% consider the need for a cost improvement process, 24% of those surveyed state the need for training courses on costing, investments with own means and the treatment of fixed assets.

Regarding the budget planning process, some questions were addressed such as analysis of the behavior of consumption standards, evaluated as fair or poor by 36% of the respondents. The analysis of historical cost series, the use of installed capacities and the quantification of cost reduction measures were evaluated as deficient by 40%, 28% and 52%, respectively.

In general, the information gathered in the surveys and interviews shows that the enterprise's costing system presented a group of deficiencies associated with specific information needs for different decision-making processes, which laid the groundwork for a process of improvement.

- *Summary of the diagnosis*

Based on the triangulation of primary and secondary sources of information, the following regularities in terms of existing limitations were found:

1. There is no master budget in the UEB.
2. Several of the cost sheets used in the entity are outdated.
3. The cost centers associated with the Production Expenses account (731) do not correspond to the production areas and cost centers.
4. Repair and maintenance services rendered to third parties and presented in the invoice receivable have no cost reflected in the balance sheet.

5. At the end of the accounting cycle, the Extractive Production account (702) closes the cost centers under maintenance.
6. The Production of Fishing Gear is erroneously accounted for in account 718 Auxiliary Production in Process (718), being an own production for the input.
7. Fishing gear is considered as an expense for the period and not as a tool that is periodically incorporated into the cost of the catch.

These inadequacies and weaknesses are the references for the development of the second section of the applied methodology.

### **Proposal to improve the cost system of the Extractive Business Unit "La Coloma"**

The second section of the methodology applied in the study is divided into 4 stages that allow an organized, deep and coherent work, presenting the main results of the redesign of the cost system of UEB Extractiva "La Coloma" of Industrial Fishing Enterprise of La Coloma, taking into consideration that the main strength of the assumed work scheme is associated with the definition of an orderly framework for the development of its system of activities. The stages are as follows:

1. Study and evaluation of current regulations
2. Study of the technical-organizational and productive characteristics of the entity.
3. Analysis of planning, recording, calculation and cost analysis
4. Redesign of subsystems

#### **Stage 1. Study and evaluation of current regulations**

In the process of improving the cost system, a study was conducted to address the main theoretical manifestations and bases that support the cost systems, these documents being defined in the diagnostic section of the methodology used.

#### **Stage 2. Study of the technical-organizational and productive characteristics**

Industrial Fishing Enterprise of La Coloma was created by Resolution 507 of the Ministry of Economy and Planning, dated October 9, 2001, subordinated to the PESACUBA Business Group of the former Ministry of the Fishing Industry and approved as an enterprise in Business Improvement by agreement 4603 of the Executive Committee of the Council of Ministers dated November 20, 2002,

granting it Business Category I on February 12, 2002. In 2011, the Food Industry Business Group, which is currently part of the Fishing Group, was created to serve the agency's business system.

The structure of the enterprise has been conceived as a network of Base Business Units that interact with each other, contributing to the object and mission of the enterprise, being formed by seven UEB, 6 dedicated to the capture of lobster, tuna and fish and one to industrial production. The UEB Extractiva "La Coloma", is structured by three fishing fleets, made up of several vessels for the capture of species of high demand in the international and domestic market, which are deposited indistinctly in six collection centers, located in different fishing areas, which are then transferred to industrial production in those sent, depending on the collection center. The production flow begins with the capture of the different species and ends with the unloading of the catches at the UEB Industria facilities so that they can be subjected to specific production processes.

### **Stage 3. Analysis of the particularities of planning, recording, calculation and cost analysis**

- *Cost planning process at UEB Extractive*

Planning and budgets are of great importance within the productive process of the entity as a step towards effective cost management; they combine people, processes and technologies and constitute an instrument of control and evaluation of the economic management of the organization. The same must be analyzed periodically; for its formulation, the so-called standard costs are used, representing a starting point to establish the efficiency and effectiveness of its productive operations and to predetermine the indispensable expenses to obtain a given volume of production, as well as the unit and total cost of each product according to the assortment and the given volume of production and sale, besides allowing the analysis of the behavior of the expenses and predetermined costs in relation to its real execution.

The definition of the main regularities of the cost system of the UEB Extractiva "La Coloma" is determined from the system of activities used in the first stages of this section of the methodology, which allow establishing the guidelines and regularities that guided the subsequent redesign of its cost system.

#### **Stage 4. Elaboration of the design of each subsystem**

The main elements improved within the cost accumulation and analysis system of UEB Extractiva "La Coloma" were as follows:

1. Restructuring of production cost centers.
2. Determination of the main elements that make up the direct materials, direct labor and indirect costs of your productions.
3. Definition in the procedure manual of the primary documents used in the calculation and accrual of UEB production costs.
4. Allocation of the main expense elements to the items associated with the cost accrual process.
5. Definition of the main operating vouchers associated with the cost system, broken down by elements, sub-elements and analysis by accounts within the cost procedures manual.
6. Definition of bases for the distribution of indirect costs, updating the rates associated with standard costing.
7. Definition of the models associated with equivalent production, using the weighted average method.

The following is a description of how the refinement of the cost elements that make up the proposal was developed:

- *Accumulation process and definition of cost centers*

For the determination of the cost centers, the objectives to be achieved with the information that they provide a basis for decision making and for the adequate analysis of variations were taken into account, so that, whenever possible, they should correspond to a clearly delimited area of responsibility. The cost centers of the Main Extractive Production in Process are divided into three groups: Cost Centers 28, associated with the Lobster Fleet; Cost Centers 10, associated with the Flake Fleet and Cost Centers 5, associated with tuna.

- *Determination of the main elements of the cost of production of the UEB Extractiva "La Coloma"*

To determine the total and unit cost of the products, the main direct materials that affect the cost of the UEB's production were defined, which are fuel, fishing gear, ice, bait, etc. Direct labor is

essentially affected by the salary, vacations and incentives of the personnel working on the vessels, as well as the scales defined by catch levels from the payment rates established as a normative coefficient of work and the associated indirect expenses of the extractive activity, incorporating as fundamental elements raw materials and fundamental and auxiliary materials, energy, fuel and lubricants, indirect salaries, other salary expenses, depreciation and amortization, other monetary expenses, clothing and footwear, and maintenance expenses. Expenses incurred in cost centers not directly related to the extractive activity (collection center, support vessels, maintenance, among others) are distributed, as well as those that can be directly associated to the cost centers, which are distributed to the productive cost centers with the use of different bases.

- *Primary documents used in the accumulation of costs*

Among the main primary documents used in the accumulation of the costs of the UEB Extractiva productions, were included in the UEB cost procedures manual by basic elements:

#### 1. Direct and indirect materials

The recording of direct and indirect materials is supported by the documents authorized in the inventory subsystem, which are basically the request for delivery of materials (Model SC 2-07), the delivery or return voucher (Model SC 2-08) and in the case of direct fuel, the expense for the chips consumed in the month analyzed is recognized, which must reflect the production cycle and the species in which it was consumed, as well as the cost center.

#### 2. Direct labor

The recording of direct labor is determined by the Human Resources Department and is based on the following documents, classified by cost centers: payroll submajor, pre-payroll and vacation. Both documents must reflect the data required by the 4-06 Payroll and 4-07 Vacation submajor. This expense must be supported and reconciled with the daily reports issued by those responsible for the productive cost centers, reflecting the productive cycle and species in which the station employee worked, as well as the associated catch levels per vessel, which constitutes a base element for the distribution of indirect expenses.

### 3. Costs associated with production

For the recording of accumulated depreciation of fixed assets, it is ensured that they are recorded in the submajors established in accordance with Resolution 10/2007 of the MFP. In the tangible fixed assets subsystem, the productive means are assigned to the corresponding areas of responsibility and cost centers, finding the depreciation rates within the allowable limit indicated by Resolution 701/2015 of the MFP.

An adjustment was developed in the accounting treatment of part of the long-lasting fishing gear from the technical point of view, which ensures a greater association between expenses and income, accumulating these productions initially in the tools and implements account, which transfers their amount when they are assigned to users of the environment, recognizing their wear and tear and transfer to productions from their estimated useful life and from the use of a specific depreciation rate.

For the accounting treatment of electricity and water expenses, the amounts appearing in the invoices of the respective suppliers are used to back them up, assigning them to the expense or to the cost centers and production cycles that affect them from their secondary distribution.

For the accounting treatment of the item, other monetary expenses are recorded directly, all expenses for subsistence, travel, repairs and maintenance, postage, telephones and others authorized to be included in the cost of production that can be assigned to a specific cost center.

- *Main operating vouchers associated with the cost accounting system of UEB Extractiva "La Coloma"*

The cost accounts are responsible for accumulating the elements that make up the cost of the product, direct material, labor and indirect costs. The main practical contribution of the study is considered to be the exposition, in a specific section of the cost procedures manual, of the operating vouchers that affect the different accounts used within the cost system, and take into account the specific characteristics of the productive flow and the system of activities of the UEB. These accounts are:



- 702. Extractive Platform Production in Process
- 710. Other Production and/or Services in Process
- 716. Repair and/or Maintenance of Vessels in Process
- 725. Own Production for Input
- 726. Capital Repairs with Own Means
- 731. Indirect Production Expenses
- 810. Cost of Production Sold
- 812. Variance between Actual and Predetermined Cost
- 855. Other Taxes, Fees and Contributions
- 865. Other Expenses

The following are some of the main operating vouchers included in the entity's Cost Instructions and Procedures Manual, which were classified by account.

Extractive Production of Platform in Process, in charge of the actual production of the period. CO: Operating Vouchers

Accumulation of actual production for the period, CO 2. Receipt of catches in inventory at standard price, CO 3. Transfer of Indirect Expenses to extractive production, CO 4. Transfer of the UEB Industry of the received catch, CO 5.

Repair and/or maintenance of boats

Accumulation of repair and maintenance costs. CO 2. Transfer of indirect workshop costs to vessel repairs and maintenance, CO 3. Transfer of vessel repairs and maintenance costs to extractive production and capital repairs where applicable.

Production and/or services in process

Accrual of expenses for repairs and maintenance of vessels and/or services to third parties, CO 2. Transfer of indirect expenses of repairs and maintenance of vessels and/or services to third parties CO 3.

### Auxiliary production in process

CO 1. Accumulation of auxiliary production in process (agro-industrial productions and animal consumption) CO 2. Transfer of indirect expenses of auxiliary production in process, CO 3. Receipt of finished production in inventory at standard price of auxiliary production in process, CO 4.

### Own productions for input

It is proposed that ice production used for consumption by vessels and fishing areas during the capture process be accumulated in the Own Production for Input account.

CO 1. Accumulation of own production for input (Ice) CO 2. Receipt of finished production in inventory at standard price of own production for input (Ice), CO 4. Calculation of Variations with favorable and unfavorable balances.

CO 1. Accumulation of own production for input (fishing gear) CO 2. Transfer of indirect expenses to own production for input (fishing gear) CO 3. Transfer of fishing gear repair and maintenance expenses to extractive production CO 4. Receipt of fishing gear built in inventory at actual price of own production for input (fishing gear) CO 5. CO 6. When expenditure is fixed to production.

- *Proposed accrual and calculation of production-related cost carryforwards*

It is proposed that the Production-Related Expenses account be made up of the cost centers that comprise the three fishing fleets, the collection centers, the six shipments, the two areas of responsibility for the production processes and the three cost centers that already belonged to this account. The cost centers that will transfer the distribution bases and the cost centers that will receive them are as follows

**Table 1.** Basis for allocation of indirect production costs

<b>Transferring cost center</b>	<b>Distribution base</b>	<b>Receiving cost center</b>
Mechanics workshop	Number of work orders for vessels.	Fishing areas
Dry dock workshop	Number of work orders for vessels.	Fishing areas
Plastic Boat Workshop	Number of work orders for vessels.	Fishing areas
Communications Workshop	Number of services rendered.	Fishing areas
Shipped vessel	Tons Transported.	Fishing areas
Fishing areas	Direct salary.	Shipments

Source: Prepared by the authors

Another relevant account in the management of costs and expenses of the UEB Extractiva is the Cost of Productions Sold account, which accumulates the cost for the sale of fish sold to fishermen as a quota. Also the account Variation in Cost, which records the variation between the real cost and the predetermined cost of the productions that are transferred for the UEB Industry, accumulation that will be developed by vessel, transferring by species and taking as a basis its distribution by elements and from its relation with changes generated in efficiency, price or volume; these elements would be the basis for the definition of the updating processes of the cost sheets, as well as for the management of contingent actions and the development and continuous follow-up of the work strategies associated with the fishing activities and support processes of the UEB.

These are other expense accounts regularly used in UEB, Other Taxes, Fees and Contributions, where social security taxes, labor force, as well as short-term social security, boat tax and land transportation tax that the enterprise pays annually and monthly are recorded, and Other Expenses, where the dining rooms and cafeteria expenses that UEB has are recorded and at the end of the month the cost per weight of the cafeteria is determined, taking the difference between income and expense to the account Loss in Cafeteria and Dining Room.

The study assumes, therefore, that the processing of any transaction involves activities of collection, classification, synthesis and analysis, as well as that management accounting measures, analyzes and reports financial and non-financial information to support decision-making processes. There are guidelines that help management accountants to generate maximum value to an entity in making

strategic and operational decisions, using a cost-benefit approach, giving full recognition to behavioral and technical considerations, as well as the use of different costs for different purposes.

The study developed was aimed at improving a group of processes associated with the accounting treatment of the costs of the UEB Extractiva "La Coloma", especially in its calculation, accumulation and distribution phases, redesigning a group of accounting procedures associated with the accumulation of raw materials and fundamental materials of the enterprise's own production for input, associated with fishing gear and ice, the treatment of investments, repairs and maintenance of vessels, as well as the determination and updating of the predetermined rates used in the standard cost systems of the UEB Extractiva "La Coloma".

The cost sheets associated with lobster, tuna and flake production were also redesigned, the indirect production cost centers that would contribute to the analysis of variations in direct material, direct labor and indirect production costs were restructured and the bases were defined that would strengthen the adequate distribution of the different indirect production costs that cannot be assigned directly to the production cost centers.

The carried-out study is based on the theoretical premise that cost management has a broad scope and, ultimately, is aimed at increasing customer satisfaction and product quality, with the objective of improving revenues and profits from the search for efficiency in processes, activities and operations. The study is aimed at improving the cost accumulation process of UEB Extractiva "La Coloma", with the objective of generating reliable and consistent financial data for the development of its financial analysis as a basis for its decision-making processes.

As main results are presented the incorporation, in the manual of standards and instructions, of the accounting procedures that would allow perfecting the process of recording the different elements of cost and expense of the UEB Extractiva "La Coloma" in the accounts assigned from the different theoretical considerations and resolutions for their classification. This allows strengthening the adequate association of costs and revenues, an element reinforced from the updating and redesign of the work system for the correct distribution of indirect costs to the productions and for the updating of the cost sheets as a critical and highly conditioning element in the effective construction of the entity's budgets, in the development of the analysis of variations in efficiency, prices and volumes, the design of specific accounting procedures for secondary distribution, the calculation of equivalent production and the transfer of costs, influencing the construction of relevant information for the

operational and strategic decision-making processes, the allocation of prices and the adequate distribution of resources.

The following are recommended as the main alternatives for the improvement of the entity's cost system in the future: the design of financial and non-financial reports on products, departments and internal strategies, the analysis of the value chain and the supply chain, the cost-volume-profit ratio analysis of the different productions, the definition of the main fixed, variable and semi-variable costs of the UEB and the design of operational and financial budgets as tools for short and long term planning and control, which facilitates coordination and communication within the organization and provides a standard of comparison for the different performance evaluations.

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### **Conflict of interest**

Authors declare that they have no conflicts of interest.

### **Authors' contribution**

*Zainub Hernández Pérez and Eduardo Rubén Espinosa Rodríguez* participated in the study design, data collection, statistical analysis, interpretation of the results and preparation of the manuscript.

*Reinaldo Castaño de Armas* participated in the design of the study, interpretation of results and preparation of the manuscript.

*Yordanka Díaz Pita and Zoraimy Poo Sobrino* participated in the design of the study, data collection and interpretation of results.

All the authors reviewed the writing of the manuscript and approved the version finally submitted.



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