Environmental accounting for the sustainable development of a plastics factory

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ABSTRACT

The research "Environmental Accounting for the Sustainable Development of a Plastics Factory" focused on the relevance of accounting around plastics factories. Unit I investigated the environmental impact of the plastics industry at a global and local level, addressing its evolution, types, economic influence and environmental effects. Unit II defined sustainable development, breaking down its concept, components and objectives to achieve economic, social and environmental balance. Unit III explored environmental accounting, addressing its concept, utility, costs, applications, reporting, and environmental performance indicators. In the legal framework, considering laws, decrees, resolutions and ordinances in the plastics industry and environmental management, including local regulations. The research took a quantitative approach, relying on data collection and analysis to assess quantifiable aspects of environmental accounting. Using a descriptive approach, conclusions were drawn that highlighted the essentiality of accounting to drive sustainable development in factories. A questionnaire with closed questions was proposed, which reflected an understanding of the importance of Environmental Accounting in the business environment and its impact on sustainable development. Respondents demonstrated a willingness toward accounting practices and environmental disclosures.

Keywords: Environmental accounting, Factory, Sustainable development.

1 INTRODUCTION

In a world in constant search of solutions to face environmental challenges and promote sustainable development, environmental accounting emerges as a valuable and relevant tool in various industrial sectors. The plastics industry, due to its preeminence in the global economy and its involvement in environmental issues, becomes a crucial field for implementing responsible practices and mitigating its impact on the natural environment.

The main objective of this final degree project is to analyse and understand the role of environmental accounting in the sustainable development of a plastics factory. To this end, an exhaustive analysis of the production processes and their relationship with environmental aspects was carried out, in order to describe in detail the impacts generated.

In addition, the relevance of environmental accounting in the context of current business practices and its contribution to the achievement of the Sustainable Development Goals (SDGs) established by the United Nations 2030 Agenda was considered. Environmental accounting is presented as a strategic tool to promote corporate social responsibility and compliance with environmental commitments.

At present, one of the main concerns at the district level is the deterioration of the environment. The pollution generated by a plastics factory, without the application of accounting methods to have accurate knowledge of how and how much to invest to cushion the environmental impact generated, so the following problem arises: What is the importance of applying environmental accounting for sustainable development in a plastics factory? From which the objective was generated: to describe the importance of environmental accounting for sustainable development in a plastics factory.

2 METHODOLOGY

2.1 RESEARCH FOCUS

The study method applied in this research is the quantitative approach, as it is based on the collection and analysis of data to evaluate the quantifiable and measurable aspects of environmental accounting in the plastics factory. This makes it possible to measure and compare the factory's environmental impacts, identify trends, and assess progress towards sustainable development goals.

According to Sampieri R. et al. (2014), quantitative methods are based on a methodical and logical approach whose purpose is to express research questions and hypotheses so that they can be tested later.

2.2 RESEARCH DESIGN

The level of research design that is applied is descriptive, as this design determines the existing environmental accounting practices in the plastics factory, identifies the environmental performance indicators used, analyzes the implemented policies, and evaluates the sustainable development initiatives underway. This allows you to get a clear and detailed overview of the situation at that time and establish a solid basis for future analyses.

According to Guevara et al. (2020), "The purpose of descriptive research is to understand prevailing situations, customs, and attitudes through accurate descriptions of activities, objects, processes, and people."

2.3 FIELD OF ACTION

The research is carried out in Ciudad de Este, Alto Paraná department, where surveys are analyzed that help in the research on environmental accounting for the sustainable development of a plastics factory.

2.4 POPULATION AND SAMPLE

Plastics factories located in Ciudad del Este.

Population 1. Five (5) plastics factory managers.

Population 2. Five (5) CPAs.

100% of the population is selected for the sample.

2.5 SAMPLING TECHNIQUE

Non-probabilistic sampling, also known as purposive sampling or trial sampling, is a sampling technique where the researcher selects items in the sample based on their judgment and the purpose of the study, rather than choosing them at random.

2.6 DATA COLLECTION TECHNIQUE

To achieve the objectives proposed in this research, we opted for the implementation of a questionnaire in digital format. This methodology is widely recognized and valued in the field of research, due to its ability to facilitate the collection and processing of data in an agile and efficient way.

The structured questionnaire includes a series of closed-ended questions, all with personalized multiple-choice answer options developed by the group. According to Tamayo (1994), there are various forms of observation that researchers carry out to gather information and data.

The research data collection tool is an online form. To be more specific, the survey is conducted using Google Form, an app that allows you to collect data online. According to Hernández Sampieri (1997), questionnaires are probably the most widely used method for data collection, as they consist of a set of questions about one or more variables to be investigated.

2.7 ANALYSIS OF COLLECTED DATA

The analysis of the collected data involved several steps and techniques, taking into account the objectives of the study and the nature of the questions included in the questionnaire. It began with data cleansing, which consisted of reviewing the responses collected to identify and correct errors or inconsistencies. Coding and visualizing data for the creation of graphs and visualizations was able to help interpret the results and communicate them effectively. Ending with the interpretation of results,

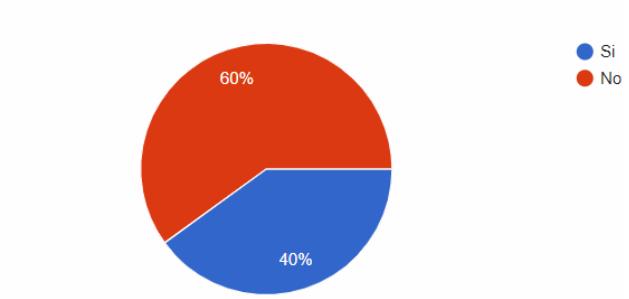
this step involved interpreting the statistical results in the context of the research question and the objective of the study. Finally, the results of the analysis were compiled into a report, where the methods of analysis were detailed, the main findings are presented with graphs, with a brief discussion and the implications of the results.

3 RESULTS

3.1 SURVEY OF PLASTICS FACTORIES IN CIUDAD DEL ESTE

3.1.1 Are you familiar with the concept of environmental accounting?

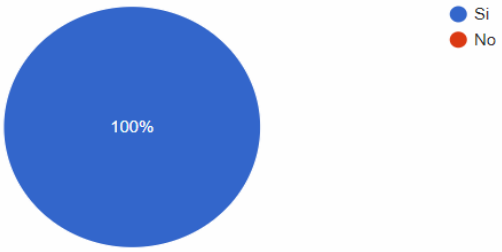
Graph N° 1



It is observed that most of the companies surveyed are not familiar with the concept of Environmental Accounting, while a significant percentage do have knowledge about Environmental Accounting.

3.1.2 Would you be willing to implement an environmental management system?

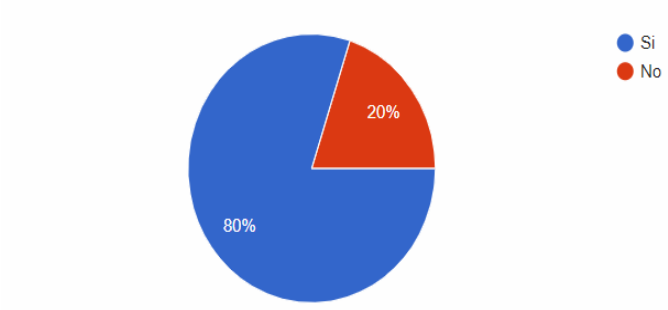
Graph N° 2



It is clear that all the companies in question would be willing to implement an environmental management system.

3.1.3 Do you think environmental accounting can help reduce your company's environmental impact?

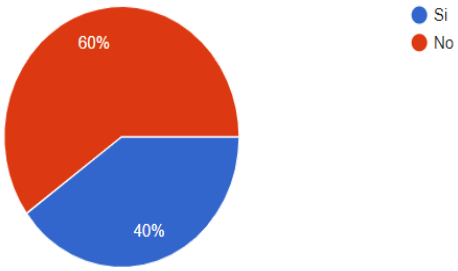
Graph N° 3



Most participating companies see the potential of environmental accounting to reduce environmental impact, although a minority group is less optimistic about it.

3.1.4 Do you know if there are any specific regulations or laws in Paraguay related to environmental accounting?

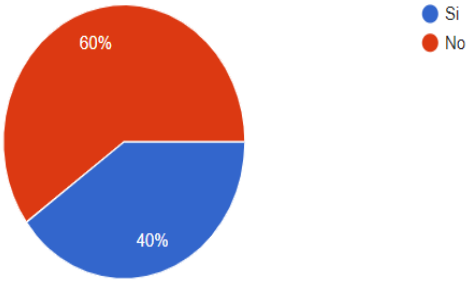
Graph N° 4



According to the results, it stands out that a majority of them are not familiar with environmental regulations in Paraguay, while a minority segment claims to be aware of them.

3.1.5 Has your company budgeted exclusively for environmental activities?

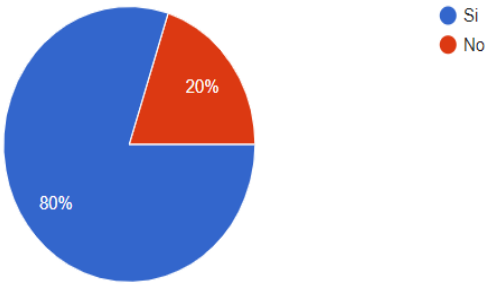
Graph N° 5



This graph shows that the majority of companies surveyed do not have a budget allocated to environmental activities, while a minority group does allocate resources for these initiatives.

3.1.6 Have you carried out an environmental impact assessment?

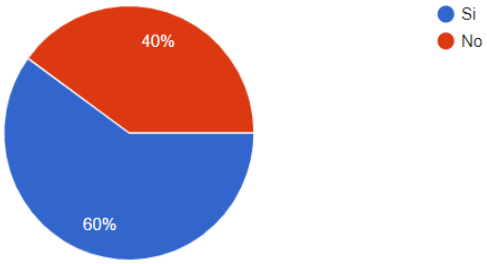
Graph N° 6



It should be noted that most of the companies have carried out the environmental impact study, while a smaller group has not yet complied with this obligation established by Law 294 on Environmental Impact Assessment.

3.1.7 Do you think companies should disclose information on their environmental performance?

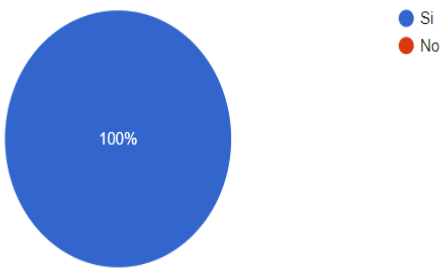
Graph N° 7



There is a tendency towards the idea of disclosing information on the environmental performance of companies, although there is also a contrary position in a segment of the group.

3.1.8 Do you think environmental accounting can contribute to sustainable development?

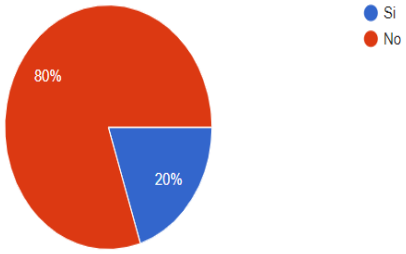
Graph N° 8



According to the graph, all the companies surveyed express belief that the implementation of Environmental Accounting can contribute to sustainable development.

3.1.9 Are you familiar with the environmental performance indicators used in environmental accounting?

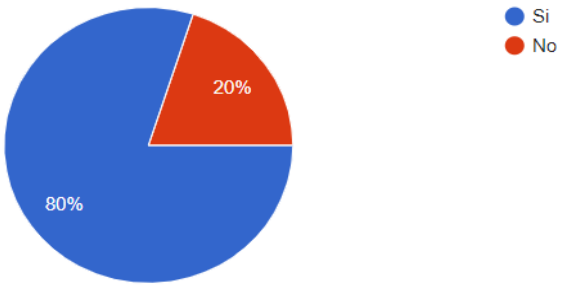
Graph N° 9



It can be seen that the minority is aware of the existence of environmental performance indicators that are used for environmental accounting.

3.1.10 Do you think the government should require the use of environmental accounting in companies?

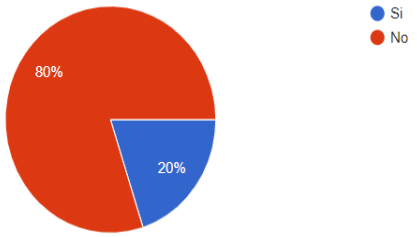
Graph N° 10



The majority of companies show support for the national government to promote the implementation of environmental accounting in companies, while a minority have a different opinion.

3.1.11 Do you know if there are institutions that provide support or advice on environmental accounting?

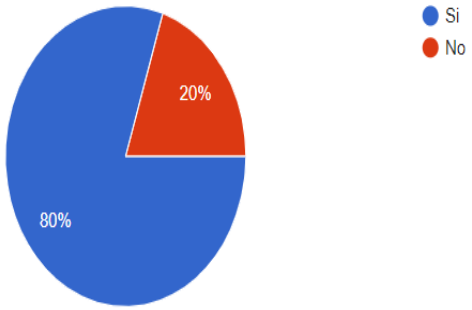
Graph N° 11



The majority lack knowledge about support institutions or advice on environmental accounting, although a minority are informed about this.

3.1.12 Would you be willing to invest in an Accounting-Environmental Management system?

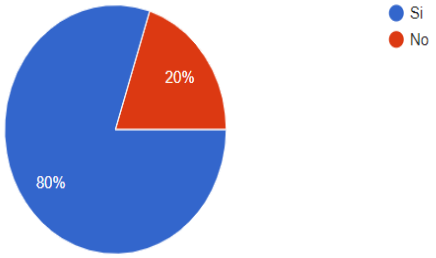
Graph N° 12



The graph shows that the majority show willingness to invest in an accounting-environmental management system, while the rest are not interested.

3.1.13 Do you think environmental accounting can help improve your company's image and reputation?

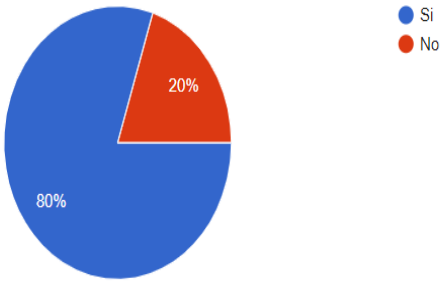
Graph N° 13



It should be noted that a large number of companies recognize that environmental accounting helps to improve the image and reputation of the company, although some differ in this opinion.

3.1.14 Do you think companies should allocate financial resources to implement environmental accounting?

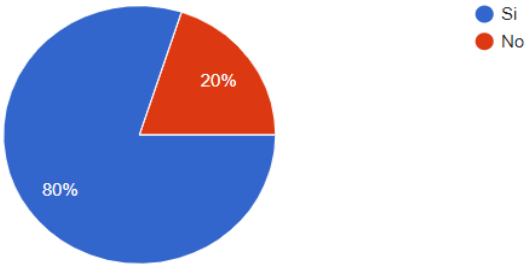
Graph N° 14



It is noted that most companies are willing to allocate financial resources to implement environmental accounting, although a smaller percentage do not share this perspective.

3.1.15 Do you think environmental accounting can foster innovation and efficiency in your company?

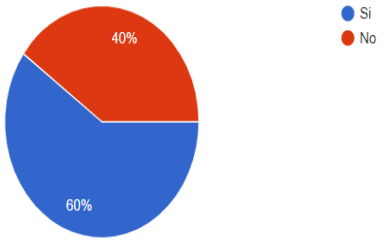
Graph N° 15



The majority of companies surveyed believe that environmental accounting can drive innovation and efficiency in their operations, while a smaller group has a different perspective.

3.1.16 Do you agree that companies should be transparent about their environmental impact?

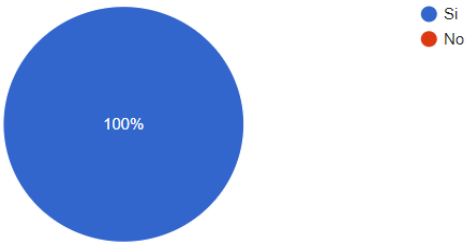
Graph N° 16



In this instance, the majority of companies are in favor of the idea that companies should be transparent about their actual environmental impact, although a smaller percentage have a contrary opinion.

3.1.17 Do you think that environmental accounting can contribute to more sustainable decision-making in companies?

Graph N° 17

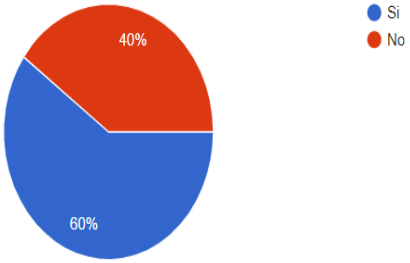


In this final graphical representation, it is clear that all respondents agree that environmental accounting could be instrumental in driving more sustainable decision-making in companies.

3.2 SURVEY OF CHARTERED ACCOUNTANTS

3.2.1 Are you familiar with the concept of environmental accounting?

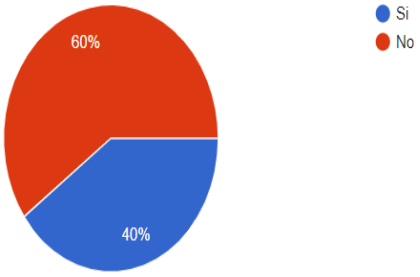
Graph N° 18



It can be seen that a majority is familiar with the concept of environmental accounting, while others are not.

3.2.2 Have you ever provided or could you provide advice for a company to implement environmental accounting?

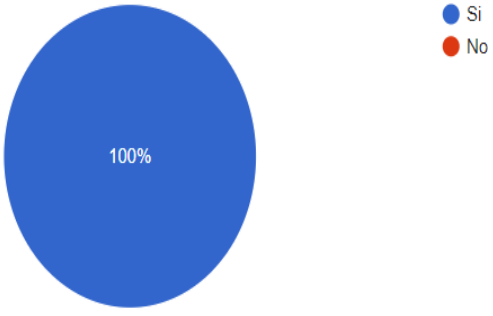
Graph N° 19



It is highlighted that the majority of accountants have never provided advice on environmental accounting, while a minority group claims to have performed this service.

3.2.3 Do you think that applying environmental accounting in a company can help reduce or remedy its environmental impact?

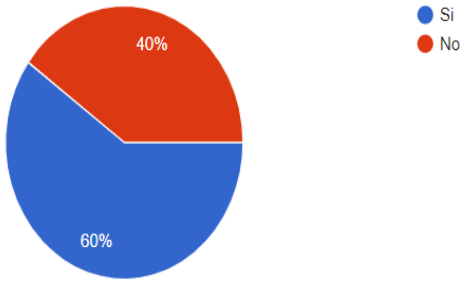
Graph N° 20



It is highlighted that all respondents believe that the implementation of environmental accounting in a company can contribute to the reduction or mitigation of its environmental impact.

3.2.4 Are you aware of the regulations or laws in force in Paraguay related to environmental impact?

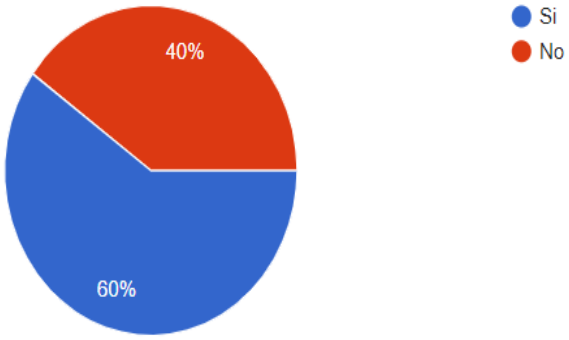
Graph N° 21



The majority of respondents are familiar with the regulations and laws related to environmental impact in our country, while others express ignorance in this regard.

3.2.5 Do you know environmental accounting accounts?

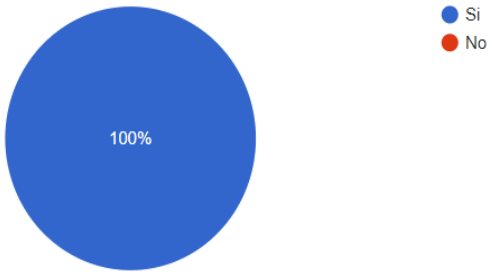
Graph N° 22



It is clear that some of the respondents have knowledge about environmental accounting accounts, while another group shows a lack of knowledge in this area.

3.2.6 Would you invest in a course or specialization in environmental accounting?

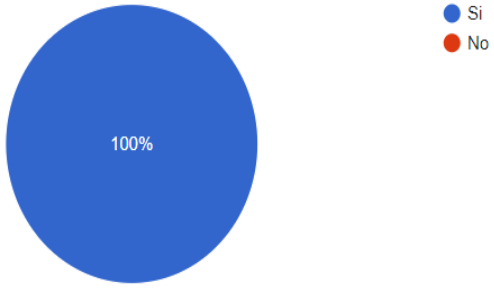
Graph N° 23



It is highlighted that all respondents are willing to invest in an environmental accounting course.

3.2.7 Do you think companies should disclose information on their environmental performance with an accounting approach?

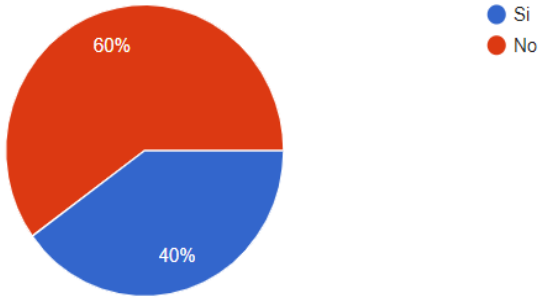
Graph N° 24



In this instance, all respondents agree that companies should share information about their environmental performance through an accounting approach.

3.2.8 Are you familiar with Environmental Reporting?

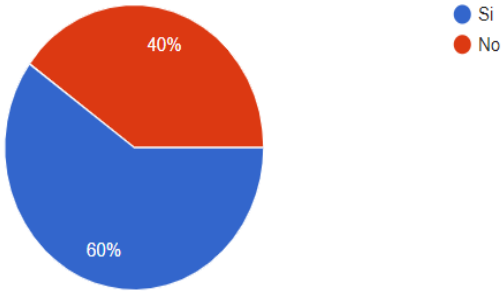
Graph N° 25



Most of the accounting professionals indicated a lack of knowledge of the concept of Environmental Reporting, while others are familiar with the term.

3.2.9 Are you aware of any environmental performance indicators used in environmental accounting?

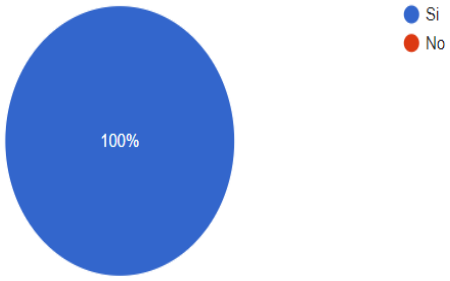
Graph N° 26



It can be noted that a portion of respondents are familiar with some environmental performance indicators that are used in environmental accounting, while others are not knowledgeable about them.

3.2.10 Do you think the government should require the implementation of environmental accounting?

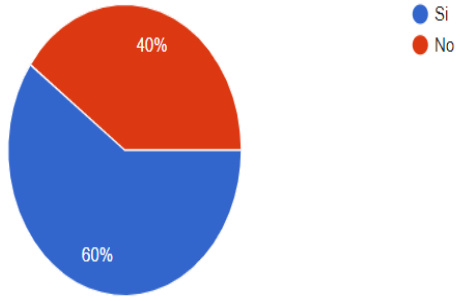
Graph N° 27



It can be seen that all of them find viable the possibility of the government requiring the implementation of environmental accounting.

3.2.11 Do you know if there are any institutions that provide support or advice on environmental accounting?

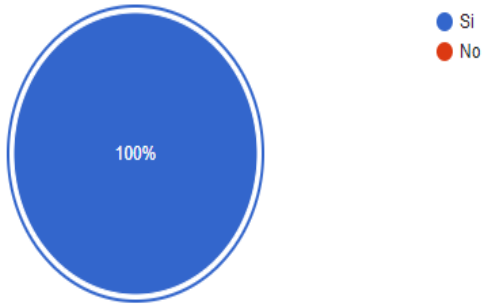
Graph N° 28



The majority of respondents claim to be aware of these institutions, while a smaller proportion say they are not aware of their existence.

3.2.12 Would you consider the implementation of an Accounting-Environmental Management system useful?

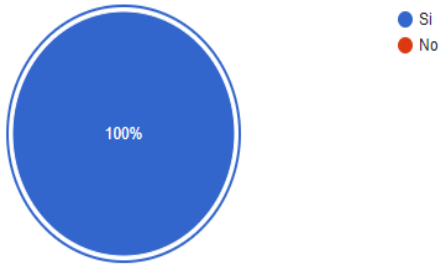
Graph N° 29



All respondents stated that they consider the implementation of an Accounting-Environmental Management system to be extremely useful.

3.2.13 Do you think that environmental accounting would be a good strategy to improve a company's image and reputation?

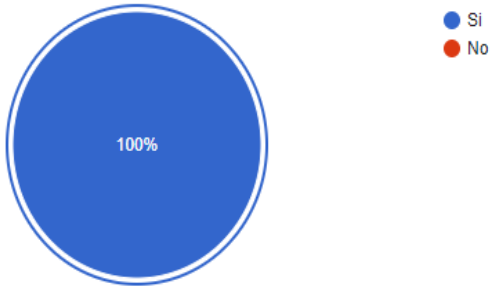
Graph N° 30



All respondents share the conviction that the implementation of environmental accounting would be an extremely beneficial measure to improve a company's image and reputation.

3.2.14 Do you think companies should allocate financial resources to implement environmental accounting?

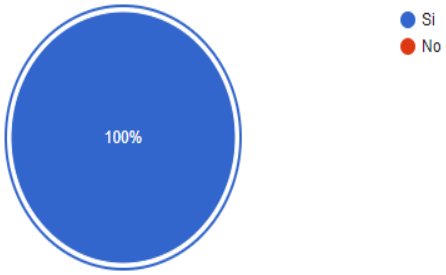
Graph N° 31



The opinion of the respondents is unanimous: all participants are convinced that companies should allocate financial resources to carry out the implementation of environmental accounting.

3.2.15 Do you think that environmental accounting can foster innovation and efficiency in companies?

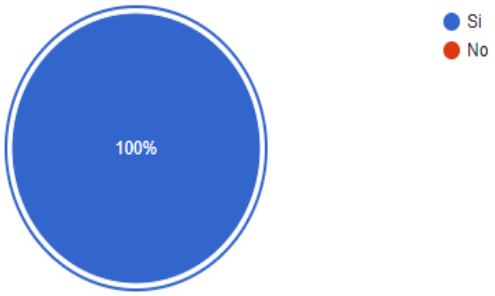
Graph N° 32



All respondents believe that environmental accounting can promote innovation and efficiency in companies.

3.2.16 Do you think that environmental accounting can contribute to more sustainable decision-making in companies?

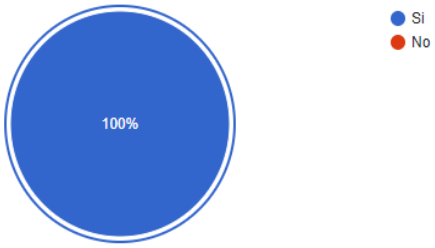
Graph N° 33



There is unanimity of thought among all participants: respondents considered that environmental accounting can indeed contribute to more sustainable business decision-making.

3.2.17 Do you think there is a lack of information and implementation regarding Environmental Accounting in our country?

Graph N° 34



All the participants share a solid conviction that in our country there is a clear lack of information and implementation with regard to environmental accounting.

4 CONCLUSION

Thus, this research on "Environmental Accounting for the Sustainable Development of a Plastics Factory" highlights the essential importance of integrating environmental accounting practices in plastics factories. The results emphasize that these practices not only reduce environmental impact, but also optimize operational efficiency and elevate the reputation of companies in this sector. The objectives set have been exhaustively met. How to apply environmental accounting in a plastics factory was defined and explored, highlighting its relevance.

In addition, it was determined how environmental accounting improves the operation of a plastics factory, providing a complete perspective. The identification of environmental accounting accounts highlights the relevance of categorizing and quantifying environmental aspects in the accounting framework, facilitating informed decisions and accountability. Finally, mentioning the

MADES standards establishes a crucial connection between accounting and the regulatory framework, underscoring the importance of alignment. This research demonstrates that environmental accounting not only quantifies and manages the environmental impact in a plastics factory, but also promotes sustainable development through conscious management of resources and environment in the industrial field.

The application of environmental accounting in a plastics factory is essential to harmonize economic goals with environmental responsibility. In doing so, the factory not only improves its efficiency and competitiveness, but also actively contributes to sustainable development, ensuring the long-term viability of its operations in a world increasingly aware of the importance of sustainability.

5 PROPOSALS

In the current context of growing environmental awareness and the need to promote sustainable practices in industries, this thesis proposes the implementation of environmental accounting for sustainable development in a plastics factory. The main objective of this proposal is to establish a strategic scheme to assess, control and remedy the environmental impacts of plastics production with an accounting approach, with a view to achieving a balance between industrial activity and environmental conservation.

This will include the assessment of natural resource utilization, pollutant emissions and waste generation. The goal is to have a detailed understanding of the company's current environmental footprint. The collection and analysis of accurate data will facilitate informed and well-informed decision-making, which will promote a culture of sustainability within the factory, involving employees and managers in the importance of environmental management. Training and education on responsible practices will be provided and active participation at all levels will be encouraged.

A transparent and periodic environmental reporting system will be established, documenting the progress and improvements made in environmental terms. Effective communication, both internally and externally, will be critical to showing the company's commitment to sustainability.

This proposal seeks to integrate environmental accounting as a strategic tool in a plastics factory, in order to promote its sustainable development. Through a comprehensive approach that encompasses diagnosis, measurement, implementation and education, the aim is to reduce the environmental footprint and establish a production model that is more responsible and harmonious with the natural environment.

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