

APPLICATION OF ENVIRONMENTAL ACCOUNTING METHODS IN BUSINESS

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Abstract

Environmental accounting methods can have a significant impact on businesses, both financial and environmental level. First, implementing environmental accounting methods can identify cost-saving opportunities by evaluating a company's environmental performance. Second, the application of environmental accounting methods can have a positive financial impact on the management system of enterprises, helping to make more informed decisions about investments and operations and by identifying and mitigating potential risks. In this context, the main objective of this article is to present the advantages of implementing environmental accounting by applying specific cost calculation methods. Research design is based on combining the two essential forms of any research – theoretical and empirical, taking the middle path using empirical rational reasoning.

Keywords *environmental accounting, costs, cost calculation methods.*

JEL Classification: M10, M41.

Introduction

Industry has become the indispensable engine of economic growth, but for the supply of its products, it uses natural resources along the entire value chain, thus having a significant impact on the environment. In this context, at a global level, in order to ensure sustainable development, without compromising the ability of future generations to meet their own needs, a reorganization is needed in order to improve the efficiency of resource consumption, minimize the amount of waste and reduce emissions with the effect of greenhouse (Ionescu et al, 2020).

Environmental accounting is considered an important tool for understanding environmental aspects and the impact of economic activity on the environment. The data and information provided by environmental accounts contribute to correlating the impact of economic development with aspects related to environmental protection. Environmental accounting has rapidly evolved as an information method both for the management of economic entities and for employees or stakeholders in general (Larrinaga et al., 2019). Environmental accounting involves the effective reflection of the impact on the environment, which is based on the correlation of information provided by management

accounting with non-financial ones, the calculation of costs and the reporting of environmental information to potential users (Stanescu et al., 2021).

The practice of environmental accounting has its beginnings in 1992, when the international meeting called the Earth Summit took place in Rio de Janeiro, through which the foundations were laid for the first commitments regarding the development of activities that will not be harmful to the environment. Recently, more and more companies are interested in environmental accounting, because they understood that environmental protection raises important problems and requires the adoption of measures both on a national and international scale in order to protect, prevent and reduce pollution, and environmental accounting is a tool fundamental to these decisions. Thus, currently, both businesses and other local and governmental organizations have implemented environmental accounting, especially due to the advantages it offers. Environmental accounting, also called green accounting, is the analysis and development of financial and non-financial information derived from the integration of economic, political and environmental policies of the organization in order to build sustainable companies (Machado, 2004). Environmental accounting is a tool for knowledge of responsibility for shareholders, creditors and investors, but the activity of a company is not limited only to them, there are also internal agents (employees) and an external environment (the community and the natural environment) that have a role important in carrying out the company's activity (Schaltegger & Burrit, 2017). Also, environmental accounting will generate quantitative statistical data that will help management or responsible persons to make assertive decisions, preserving environmental resources that are involved in industry processes, becoming a strategic necessity in the process of sustainable development of organizations. Environmental accounting plays an important role in ethical and social development (Gray et al., 1994), but also for the inclusion of social and environmental impacts in organizational decision-making (Deegan, 2017). Therefore, it is important to take into account environmental aspects, because they contribute to the profitability and profitability of the enterprise.

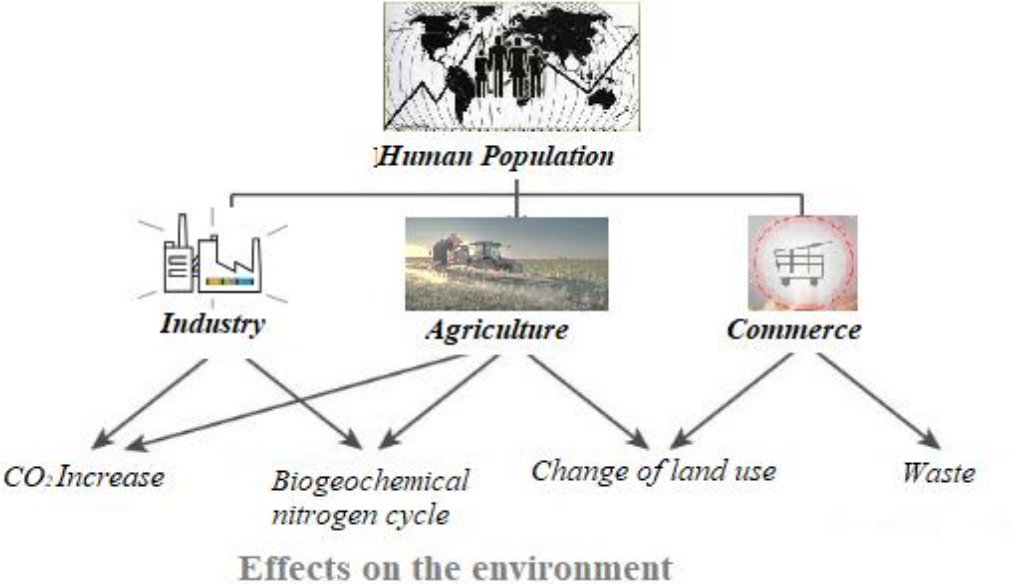
Environmental accounting has experienced a significant increase over time, as a result of the awareness among economic actors of the consequences of economic activity on the environment. Along with the evolution of environmental accounting, the tools and techniques of environmental accounting were also developed, which are considered the key to solving problems related to the analysis, evaluation, recording and reporting of environmental impact.

In the context of running an economic activity, it can be observed that the environment is the main and primary source of obtaining the necessary resources for industry, agriculture and consumption. However, it is necessary to be aware of the impact of these activities on the environment and to know the long-term effects (Figure 1).

The concept of environmental accounting was initially developed at the national level, in order to quantify stocks and natural resources used, pollutant flows, environmental costs, external costs, etc. (Caraianni et al., 2010). This

accounting appeared to complement traditional accounting which has financial accounting and managerial accounting subsystems (Caraman & Guglea, 2018). The development of environmental accounting requires processes, actions in order to collect, record, communicate information to different actors, either businesses, the agricultural sector, or even local communities. Thus it can be stated that environmental accounting is a way of collecting, recording, analyzing and generalizing information, regarding protection costs and the place of green accounting within the accounting system (Catev, 2020).

Figure 1. Impact of economic activities on the environment



1. Environmental cost – environmental accounting tool

The acknowledgment of environmental costs is one of the key elements of environmental accounting. The definition of environmental costs serves as the starting point for this. According to this viewpoint, the major issue with environmental accounting is the lack of a consensus on what constitutes an environmental cost. Depending on the varied interests, these can include internal expenses that occur within the firm, such as those related to investments and training, as well as external costs related to external events. Reducing environmental costs, stepping up recovery efforts, and enhancing environmental performance can all be accomplished by first understanding the existing, potential, and future environmental costs. The managerial process includes information on environmental costs that are used to support sound judgments on production cost modeling. Segn De vega & Rajovitzky (2014) claim that the goal of environmental accounting is to inform readers about how organizational development affects the environment in which it takes place. From a macroeconomic perspective, environmental accounting is seen as a crucial tool that seeks to understand the role that environmental resources play in an economic context.

The analysis of the "environmental cost" concept was the subject of numerous debates by international organizations, which were later taken up at the national level as well.

The Environmental Protection Agency defines environmental costs as those costs with a direct financial impact on an entity (internal costs), as well as costs with an impact on society and the environment (external costs) (EPA, 1995). Environmental costs are defined by the United Nations intergovernmental working group of experts on International Standards of Accounting and Reporting (ISAR) (1998) as the expenses incurred when an enterprise accepts its social responsibility to repair the environmental harms caused by its production, whether actively or passively, as well as other related expenses for achieving environmental goals (UNCTD, 1998). The term "environmental costs" refers to the financial outlays and investments necessary to implement policies and measures that reduce negative effects on the environment and promote sustainability. On the other hand, environmental costs describe the damage that human activity causes to the environment, such as pollution, deforestation and greenhouse gas emissions.

The cost of environmental pollution refers to the loss of costs caused by the reduction of the value of the environment due to unreasonable human activities. In general, the cost of environmental pollution can be divided into the cost of environmental recession and the cost of spending on environmental prevention and control (Xu, 2022). Environmental costs can therefore be classified in: prevention costs of pollution; costs of environmental conservation; costs of recycling of resources; costs administration; costs for research, development and innovation; social responsibility costs and environmental remediation costs (Ionescu, 2017). Environmental costs represent the flow of funds that are allocated by an entrepreneur for actions aimed at preventing, mitigating or countering damage to the environment. Costs associated with activities carried out to protect the environment and which are divided into costs recognized as current and capital costs (regarding capital investments). Environmental cost accounting is necessary as an environmental control tool to obtain information about the enterprise's interdependence between costs, revenues, consumption of raw materials and energy, as well as environmental protection measures. In addition, consideration of environmental costs can serve as a source for companies to identify the potential for reducing the cost of production products (Taygashinova & Akhmetova, 2019).

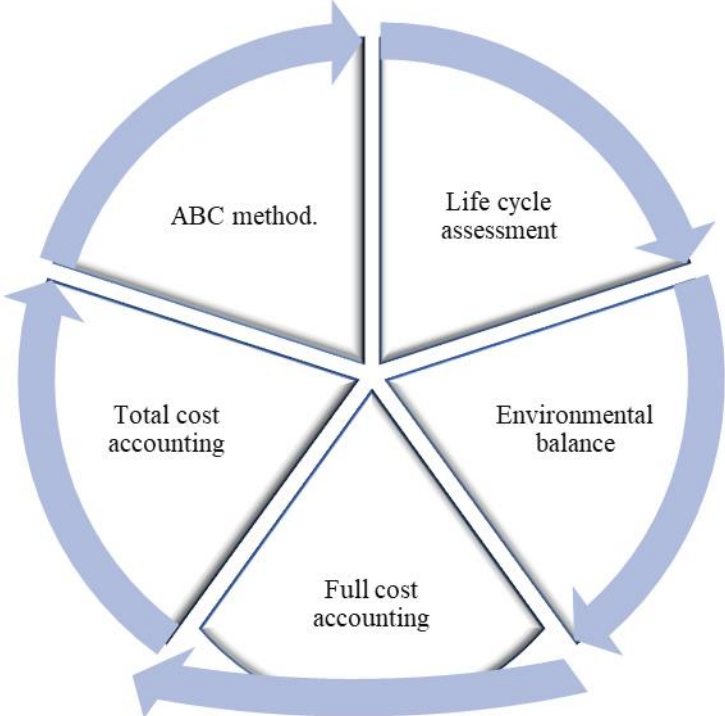
2. Evaluation methods of environmental cost

When it comes to evaluating or establishing environmental costs, there are several methods that can be used. These methods can help to quantify the potential or actual environmental impacts of human activities, and in turn, determine the economic and social costs of those impacts. In order to considerably reduce their detrimental effects on the environment, a particular approach and development strategies are required, as the environmental concerns have grown more serious on a national and company level. By changing the structurally important level at the tangible (material) level of the economic system, entities and their products contribute significantly to this process of sustainable development by lowering environmental stressors. Because it is impossible to assign a monetary value to every external influence, the degree of complexity in allocating contributing factors to environmental degradation to overall costs is very high (Caraianni et al., 2010).

The most used methods for evaluating environmental costs are as follows, according to researchers Ronnou & Henri (2010): total cost accounting, activity-based cost accounting, life cycle assessment, environmental balance, and total cost accounting. However, it is important to remember that these methods are not all-inclusive; depending on the industry, economic entities may employ their own, unique methods (Figure 2).

The challenge of implementing a sustainable development system does not lie in the method of cost evaluation, but rather in identifying all costs resulting from adhering to environmental regulations.

Figure 2. The methods used by entities in estimating environmental costs



Numerous previous studies have shown that the Activity Based Costing method is the most applicable approach for determining environmental costs. This methodology entails establishing a correlation between technological process activities and their particular cost factors. The first step in this method is to identify the activities to determine the formation costs. The methodology aims to correlate production costs with the execution of an activity. The traditional accountability system consists of all direct and indirect costs. The ABC method for calculating indirect costs requires identifying direct costs as well as indirect costs that are hidden in indirect costs (Gale & Stokoe, 2001). In order to accurately allocate environmental costs, a cost factor that takes into account the nature of business activities and their impact on the environment must be chosen. Caraiiani et al. highlight the fact that the strength of the ABC method is that it allows a better understanding of the processes involved in each product (Caraiiana et al., 2010). Tsai et al stated that the integration of activity-based costing (ABC) systems and environmental cost accounting (EMA) information provides companies with more accurate information to make both well-informed and effective decisions (Tsai et al., 2010). Thus, the ABC

method can enable businesses to allocate the costs of medium activities using conventional methods or the following methods: indicators of environmental costs that rank the costs of the products or the activities in the environment that lead to the costs first (Ronnou & Henri, 2010).

When comparing these methods of evaluating environmental costs, a significant difference can be seen in that not all methods of characterizing environmental costs take into account all types of costs. For instance, the environmental balance method only takes into account the use of natural resources while ignoring other costs. Another distinction is that not all of these methods are able to provide numerical values for environmental costs, such as life cycle assessment, environmental balance, and total costs. The life cycle assessment method did not take into account intangible costs, such as predetermined relationships with interested parties or unanticipated costs, as they could not be related to a particular stage of the product's life cycle.

Conclusions

The primary factor influencing the assessment (estimation) of the environment's impact is the rate of economic development at the global level. The economic activities of the biosphere have led to the identification of some feasible financial reporting solutions from both a social and environmental perspective, as well as methods for evaluating environmental costs. Thus, environmental competency has emerged as one of the most important factors in the long-term development of general economics and as a valuable tool for aiding in the management of environmental and operational risks at the corporate and national levels.

The current economic climate must support the development of environmental sustainability by disseminating significant information about the effects of business on the environment and society. In these circumstances, one of the most noteworthy tasks is developing methods for measuring and determining environmental costs that provide an alternative to pollution control, choosing materials that help reduce environmental costs and protect the environment.

An efficient method for estimating environmental costs should encompass the majority of environmental cost types, be able to express these costs in monetary terms (to give management a "tangible" view of these costs and allow comparison of environmental costs for various products or processes) and allow identification of the costs associated with the activities that generated them (to assess the profitability of these activities from an environmental perspective).

Insufficient cost containment, considering the inadequacy of environmental factors and environmental politics, can lead to an understanding of the inadequacy of the real sustainable potential of society, as well as of its prosperity and income.

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