

THE RELEVANCE OF ENVIRONMENTAL ACCOUNTING TO STAKEHOLDERS

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Summary

This research explores the challenges faced by global businesses in diverse industries due to internal, external, and natural environmental factors. It emphasizes the increasing importance of environmental accounting, particularly in the context of emerging sustainability standards. The research highlights that businesses dealing with environmental forces incur costs, making it crucial for stakeholders, especially shareholders, to be well-informed about these costs due to their impact on wealth maximization. The primary objective is to assess the relevance of environmental accounting for stakeholders. Employing various research methods, including literature review, synthesis, comparative analysis and content analysis. The three main themes of the research are the concept and evolution of environmental accounting, the issues surrounding it, and its practical implications for stakeholders. Key reasons for its relevance include its role in environmental management strategy, resource efficiency, organizational sustainability, and capital budgeting clarity. The research concludes that despite the absence of a universally accepted definition for environmental accounting, its commonality lies in how organizations impact the natural environment. Acknowledging the evolutionary stages of this phenomenon, the study underscores the centrality of environmental costs. It asserts that a business's survival is intricately linked to matters relating to the natural environment.

Keywords: accounting, environmental accounting, management accounting, stakeholders.

Introduction

Day in, and day out, businesses around the world, be it mining, agriculture, construction, energy, telecommunication, retailing, education, banking, etc. are confronted with all forms of inevitable challenges. This means that no industry is immune to any of these challenges. Most of these challenges emanate from both the internal and external environment of businesses. Apart from these internal and external factors that businesses are confronted with, they are also being faced with issues relating to the natural environment. That is, how to protect the natural environment to make it more sustainable through the businesses' direct or indirect impact on the environment. These environmental issues have emerged as a result of the importance of the environment to society. Overcoming these challenges comes with financial implications for businesses. To report these financial implications its stakeholders, for example, shareholders, management, employees, suppliers, customers, government agencies, and environmental activists have emerged the adoption of environmental and accounting techniques in the financial reporting of businesses. It is in this light that this research is being carried out to examine the issues, concepts, and practices of environmental accounting. This is particularly relevant now that sustainability standards are beginning to develop, and environmental accounting is taking on new meaning and importance for stakeholders.

Research aim is to find out the relevance of environmental accounting to stakeholders.

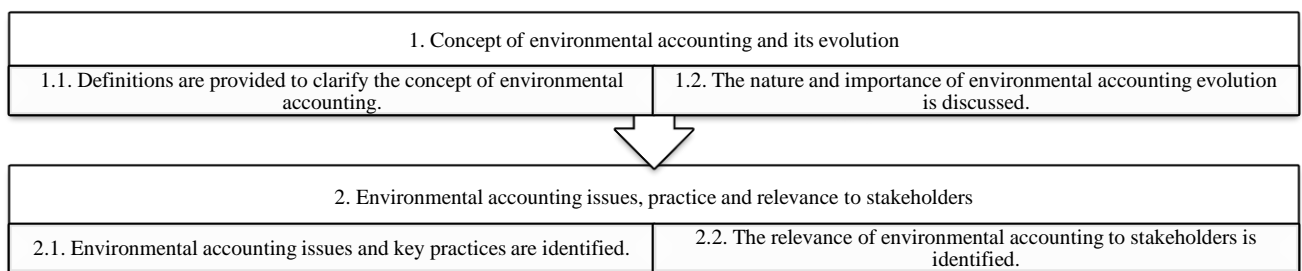
The following **objectives** have been set to achieve the aim:

1. To analyse the concept of environmental accounting and its evolution.
2. To identify evidence of environmental accounting issues and practices and their relevance to stakeholders.

Research object and methods

The **object of the present research** is the importance of environmental accounting for stakeholders. The following **research methods** have been used to achieve the aim and objectives set – review, synthesis, comparison of scientific literature and other sources of information, graphical presentation of data, and content analysis of corporate sustainability reports.

The logic of the present research is presented in Figure 1.



Source: prepared by author.

Šaltinis: sudaryta autoriaus.

Fig. 1. The logical scheme of the present research

1 pav. Tyrimo loginė schema

As shown in Figure 1, the present research is carried out in two stages. The first stage explores the concept of environmental accounting and its evolution. The second stage defends the issues and practices of environmental accounting and provides insights into the relevance of environmental accounting to stakeholders and the main conclusions drawn from the present research.

Concept of environmental accounting and its evolution

A review of existing scientific literature revealed that there is no one definition for environmental accounting. Environmental accounting is defined in different forms by different authors. The table below (see Table 1) depicts the summary of the definition of environmental accounting by various authors.

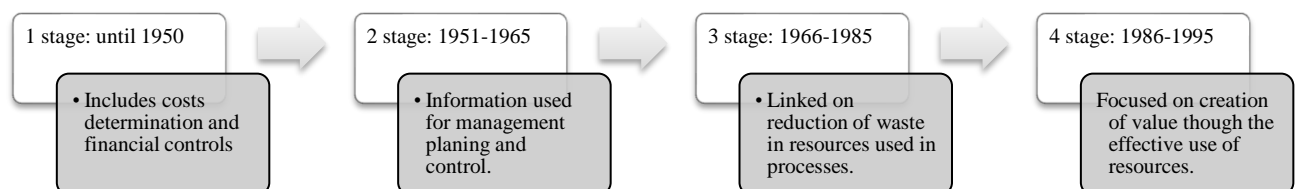
Table 1. Definitions of Environmental Accounting
1 lentelė. Aplinkosaugos apskaitos sąvokų apibrėžimai

Authors	Definition
París Paricio et al. (2023)	Environmental accounting includes the measure of the use of resources and the assessment of their impact on costs.
Néfissa & Jilani (2022)	Environmental accounting provides an opportunity to link the economy and the environment.
Weber (2018)	Means of expanding the scope of the accounting framework for assessing business performance to include aspects that are not captured in national or organizational accounting records.
Chivua (2015)	Area of applied accounting whose main aim is to find the relationship between accounting of organisations and their environment, that leads to changes between macro and micro accounts.
Todea et al. (2011)	An efficient information system needed to determine the destruction caused to the natural environment by the operations of organizations, and how to minimize the destruction and inform stakeholders
Gray et al. (1993)	That aspect of accounting that may be influenced by the way an organisation responds to concerns relating to the natural environment, including eco-accounting.

From Table 1, it can be seen that all authors came out with different definitions of the concept of environmental accounting. París Paricio et al. (2023) view environmental accounting as measuring resources used and assessing how these resources affect costs. Néfissa & Jilani (2022) see environmental accounting as an avenue that bridges the economy and the environment. Weber's (2018) definition focuses on the aspect of accounting for business performance that is not considered in books of accounts of both public and private business entities. As defined by Chivua (2015), the main aim of environmental accounting is finding the relationship of organisation's accounting and their environment. Todea et al. (2011) on the other hand, views environmental accounting as an efficient information system. Another perspective is also presented by Gray et al. (1993), who sees environmental accounting as the way organizations respond to concerns relating to the natural environment.

The analysis of scientific literature was performed to identify the concept of environmental accounting. In summary, Weber (2018), Chivua (2015), Todea et al. (2011) and Gray et al (1993) researchers posited that the relationship between accounting and the natural environment can lead to changes in the macro and micro accounts and how organisation responds to its natural environment can help minimize the destruction caused to the environment by its activities.

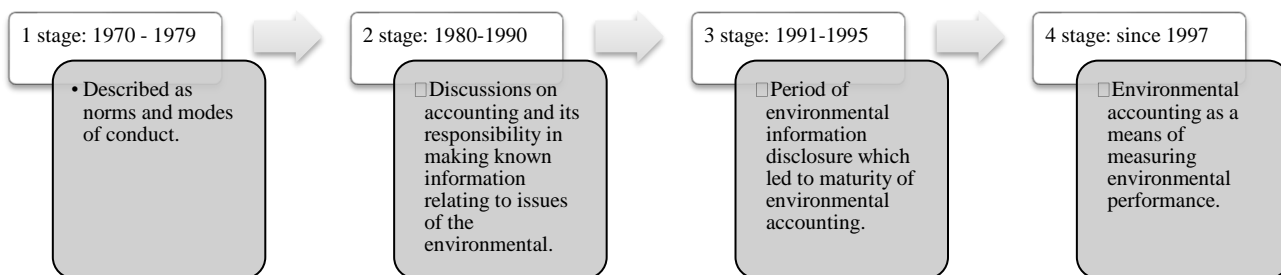
The concept of environmental accounting changed due to the evolution of accounting. The evolution of environmental accounting can be traced to the pre-classical economics era. The natural resources were viewed as an important component of a country's wealth in the pre-classical economic era. At the beginning of the 18th century, the accounting of natural resources was considered to be the first national accounting framework, a model based on "Government of Nature". Since this period, economists have been observing natural resources such as land rent, sub-soil, or soil resource management, and the cost to society due to environmental degradation (Pigou, 1920, cited Weber, 2018). This is the starting point for environmental accounting. However, the scope of environmental accounting has changed over time. The development of environmental accounting is linked to changes in traditional management accounting (see Figure 2).



Source: compiled by author according to IFAC (1998, cited Jasch, 2006)
Šaltinis: sudaryta autoriaus pagal IFAC (1998, cited Jasch, 2006)

Fig. 2. The evolution of management accounting
2 pav. Valdymo apskaitos evoliucija

The evolution of management accounting shows (see Figure 2) that environmental protection as a component of management accounting only became important from the third phase (1966-1985). At this stage, a new sub-type of management accounting begins to develop - environmental accounting. Matthews (1997 cited Yakhou & Dorweiler, 2004) exhibited four developmental stages of environmental accounting between the periods 1970 and 1997 (see Figure 3).



Source: compiled by author according to Matthews (1997, cited Yakhou & Dorweiler, 2004)
Šaltinis: sudaryta autoriaus pagal Matthews (1997, cited Yakhou & Dorweiler, 2004)

Fig. 3. The evolution of environmental accounting
3 pav. Aplinkosaugos apskaitos evoliucija

Environmental accounting has changed, and its evolutionary timeline shows (see Figure 3) that it has gone from creating standards, responsibility for environmental protection, disclosure of information to stakeholders, to a system for measuring environmental performance. The four stages are closely related to the Kyoto Protocol¹ signed with 172 countries in 1997 and since the Kyoto Protocol, environmental accounting has become a matter of concern. Series of international meetings to discuss matters relating to the environment, especially climate change, have also been held (Jones, 2010). Stern Report of 2006 has increased the concern for the issues regarding the environment at the global level: the general environment, and particularly, strategies in reducing carbon (Gray, 2009 cited Jones, 2010).

Organizations around the world especially, the developed world have come under pressure to enhance their attitude towards the natural environment. These pressures emerged in the 1970s (Gray 2001, cited Papaspyropoulos et al., 2012) and became more intense after the Earth Summit in Rio de Janeiro, Brazil in 1992 (Etzion, 2007 cited Papaspyropoulos et al., 2012). These pressures emanate from governments, society in general, and stakeholders who affect or are affected by the operations of these organisations (Gray, 2001 cited Papaspyropoulos et al., 2012).

As stakeholders' needs for different types of environmental information increased, sustainability standards (see Table 2) began to develop. These defined the information requirements to be collected through environmental accounting.

Table 2. Sustainability standards evolution
2 lentelė. Darnumo standartų evoliucija

Sustainability standards	Sustainability standards evolution	Source
Global Reporting Initiative (GRI) standard	1997 – GRI was founded in the USA. 2000 – the first version of GRI guidelines launched. 2002 – the second version of GRI guidelines launched. 2006 – the third version of GRI guidelines launched. 2013 – the fourth version of GRI guidelines launched. 2016 – GRI sustainability reporting standards launched. 2020 – waste standard launched. 2021 – the first GRI sector standard launched. 2022 – the second GRI sector standard launched.	GRI (2024)
Sustainability Accounting Standards Board (SASB)	2011 – SASB was founded to help disclose the financial impacts of sustainability for businesses and stakeholders. SASB Standards help companies disclose relevant sustainability information to their investors. SASB available for 77 industries. 2021 – establishment of the Value Reporting Foundation following the merger of the International Integrated Reporting Council and the Sustainability Accounting Standards Board (SASB). 2022 – the Value Reporting Foundation consolidated into the IFRS (International Financial Reporting Standards) Foundation.	The IFRS Foundation (2024)
IFRS Sustainability Standards	2021 – the Trustees of the IFRS Foundation announce the formation of the International Sustainability Standards Board (ISSB). 2023 – the first IFRS Sustainability Disclosure Standards launched (IFRS S1 General Requirements for Disclosure of Sustainability-related Financial Information; IFRS S2 Climate-related Disclosures).	IFRS Foundation. (2024)

It should be noted that the GRI standards (see Table 2) were developed at the same time as management accounting began to pay more attention to environmental accounting. The evolving sustainability standards show the need and specificity of environmental accounting for different sectors.

Issues and Practice of Environmental Accounting and its relevance to stakeholders

Environmental costs are the main factors to take into consideration in environmental accounting. That is those costs that have a traceable financial consequence on an organisation (internal costs), and costs to other stakeholders such

¹ Kyoto protocol is an agreement between 172 countries for the reduction of greenhouse gases in 2005 (Jones, 2010).

as individuals, society and the environment of which the organisation is not accountable (external costs) (Environmental Protection Agency, 1995, 1996, Quah and Boon, 2003 cited Smetschka et al., 2019). Through proper identification, assessment, and allocation of environmental costs, environmental accounting affords management avenues for cost savings (United Nations, 2001 cited Smetschka et al., 2019). As suggested by Smetschka (2019), environmental costs should be traceable to relevant cost drivers: the activity that causes the costs.

Various scientists discuss that one of the problems is hidden environmental costs that exist in various suggestions for environmental cost classification (see Table 3).

Table 3. Environmental cost classification
3 lentelė. Aplinkosaugos išlaidų klasifikavimas

Author	París Paricio et al. (2023)	Pirmana et al. (2021)	Banasik & Beruvides (2012, cited Barouch & Bey, 2018)
Costs classification	<p>Recurring environmental cost:</p> <ul style="list-style-type: none"> • cost derived from obtaining environmental information; • cost derived from an environmental management plan; • cost derived from environmental technological adaptation; • cost resulting from the management of waste, emissions and discharges; • cost derived from product management; • cost derived from administrative requirements; • cost derived from environmental audit. <p>Nonrecurring environmental costs:</p> <ul style="list-style-type: none"> • cost derived from environmental information and prevention systems; • cost derived from investments in facilities; • multiyear conservation and maintenance cost; • cost derived from the interruption in the process; • cost derived from accidents; • cost derived from the new demands of the environment; • cost derived from improving the company's environmental image; • cost of measurement and control systems; • non disburseable cost; • legal cost; • other cost of a specific nature. 	<p>Environmental degradation cost:</p> <ul style="list-style-type: none"> • degradation cost; • maintenance cost; • environmental protection cost. <p>Depletion / Depreciation of natural resources cost:</p> <ul style="list-style-type: none"> • renewable natural resources cost; • non-renewable natural resources cost. 	<ul style="list-style-type: none"> • Cost of activities concerning groundwater resource protection; • Cost of resource protection division; • Conservation costs; • Cost of water protection; • Cost of water conservation; • Costs are accounted for as Prevention costs and borne by the water utilities.

Table 3 above shows that different authors classify environmental costs differently. For example, Paris et al. (2023) classifies environmental costs under two main categories, namely, recurring and non-recurring environmental costs. Pirmana et al. (2021) view environmental degradation costs and costs associated with the depletion or depreciation of natural resources as the main environmental costs. Banasik & Beruvides (2012, cited Barouch & Bey, 2018) on the other hand relate environmental costs to costs incurred to protect or conserve the natural environment.

Stakeholder theory can be used to assess how much environmental costs are actually incurred by stakeholders. Stakeholder theory is an extension of agency theory, in that it recognises other stakeholders in addition to owners, such as suppliers, customers, employees, competitors, government and the host community (Oyewo et al., 2019).

Based on stakeholder theory, various stakeholder groups have some influence on management accounting practice – impact on competitors, customers, and sustainability (Oyewo et al., 2019). Therefore, the practice of environmental accounting as part of management accounting is changing to take into account stakeholder impacts. This indicates the need for a more detailed classification of costs (see Table 3) or the creation of new sustainability standards (see Table 2), which has been discussed.

It is in this context that this research examines the importance of environmental accounting to stakeholders. The following discussion explores some of these meanings.

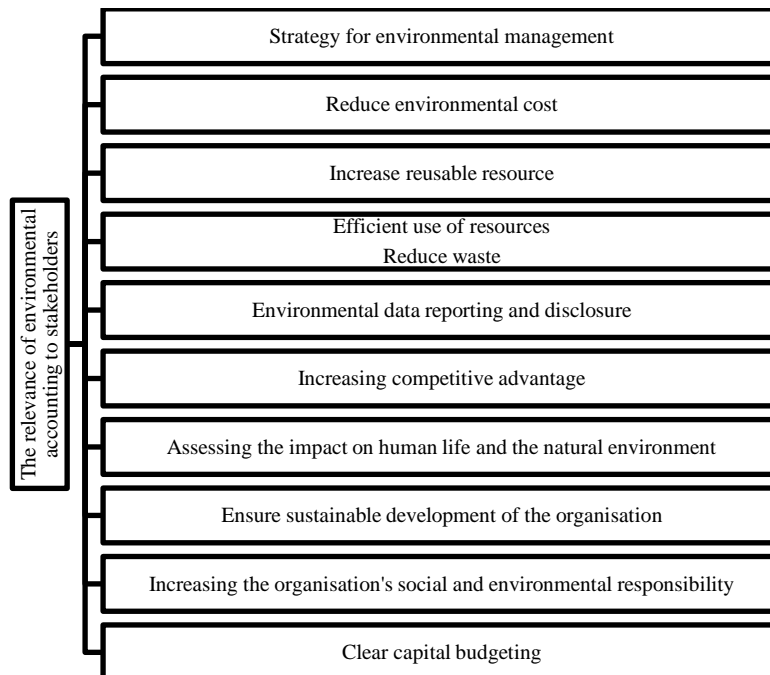
It helps organizations that adopted environmental accounting as part of their environmental management strategy to reduce costs. For example, General Motors reduced its disposal costs by \$12 million by establishing reusable container program with its suppliers, Common wealth Edison gained \$25 million in financial benefits through more effective resource utilization, and implementation of several programs that reduced waste and its source helped Andersen Corporation to exceed its Internal Rate of Return (IRR) by 50%. Also, Public Service Electric and Gas Company saved more than \$2 million in 1997 by streamlining its inventory process (Environmental Protection Agency, 2000 cited Smetschka et al., 2019). These cost-reduction examples are also supported by the work of Rejeki and Nurlatifah (2024). It asserts that, for example, if mining companies in Indonesia attempt to adopt practices that are in favour of making the environment more sustainable, such companies would not only be fulfilling their mandate in protecting the environment but can also result in an increase in their profitability (Rejeki & Nurlatifah, 2024).

Through environmental accounting reporting and disclosure, organizations that safeguard the environment as an important aspect of their business strategy can employ it in order to have a competitive advantage over its competitors (Esty and Winston, 2009 cited Arena et al., 2015).

It provides information to stakeholders on the extent to which an organization impacts the environment, whether negatively or positively and its consequence to human life and the natural environment (Endiana et al., 2020 cited Fabian et al., 2022).

Environmental accounting is viewed as a channel through which organizations contribute to sustainable development with programs, plans, and projects aimed at social and environmental responsibility. It is also the channel of communicating the organisation' environmental responsibilities to its stakeholders (Pratiwi, 2013). It additionally provides an organization's internal management with reports needed to make decisions in relation to pricing, controlling overhead costs, and capital budgeting (Brown & Fraser, 2006).

In summary, Figure 4 presents the identified key points of the relevance of environmental accounting to stakeholders.



Source: compiled by author
Šaltinis: sudaryta autoriaus

Fig. 4. The relevance of environmental accounting to stakeholders
4 pav. Aplinkosaugos apskaitos aktualumas suinteresuotoms šalims

Figure 4 highlights how crucial Environmental accounting is to an organisation's stakeholders as it facilitates the formulation and implementation of effective strategies for environmental management, fostering sustainable practices such as the reduction of environmental costs, increased utilization of reusable resources, and efficient resource utilization. Moreover, it plays a pivotal role in ensuring the organisation's commitment to social and environmental responsibility, contributing to a competitive advantage, while also enabling clear capital budgeting aligned with principles of sustainability and waste reduction.

Conclusions

This research sheds light on the widespread challenges faced by businesses in their quest to tackle issues emanating from internal, external, and environmental factors. It underscores the financial implications for businesses in dealing with environmental forces. To achieve its main objectives, the research based its exploration on three key themes: the concept and evolution, associated issues, and its practical implications for stakeholders.

The research depicted that different authors have defined environmental accounting in different ways. However, the common denominator underlying these definitions is the impact of organizations activities on the natural environment, its related cost, and the techniques needed to report or disclose them to stakeholders. It also showed that environmental accounting has gone through different evolutionary stages, and has progressed from establishing standards to measuring environmental performance.

Additionally, it became clear that environmental costs are an integral part of environmental accounting. Some of these costs we are told are either internal or external in nature. Internal costs are those costs that have traceable financial consequences on the organization, while external costs are related to stakeholders such as individuals, society, and the general environment of which the organization is not accountable. The application of stakeholders' theory helps in assessing how these costs impact various stakeholder groups.

The relevance of environmental accounting to stakeholders is made evident in the findings of the research: serving as a tool for organisations to reduce costs through strategic environmental management, fostering a competitive advantage

through reporting and disclosure, informing stakeholders about an organisation's environmental impact, acting as a channel to contribute to sustainable development, and providing internal management with vital reports for decision making.

Finally, this study significantly contributes to understanding the multifaceted role of environmental accounting, acknowledging its evolution, diverse definitions, and its integral place in contemporary business dynamics, particularly as sustainability standards continue to evolve.

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