Environmental Management Accounting in Vietnamese Seafood Enterprises: A Qualitative Study

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Abstract:

The objective of the study is to assess the perception of Vietnamese seafood enterprises about the nature and role of environmental management accounting (EMA). The study was conducted qualitatively, in the form of in-depth interviews and focus group interviews with middle and above managers in Vietnamese seafood enterprises. The results show that Vietnamese seafood enterprises are aware of the nature of environmental management accounting but the wording is different. At the same time, Vietnamese seafood enterprises also highly appreciate the role of environmental management accounting in improving business performance. Finally, Vietnamese seafood enterprises evaluate business results mainly based on financial indicators – financial performance.

Keywords: Environmental Management Accounting, Fisheries, Vietnam

1. Introduction

One of the requirements of the modern business environment is that the development of enterprises must go hand in hand with environmental protection. Environmental protection and environmental accounting are topical and urgent issues, and at the same time very difficult and challenging in implementing at enterprises. Environmental accounting is a necessary tool not only to help businesses meet environmental protection requirements. Environmental accounting also improves business efficiency and competitiveness. The application and development of environmental accounting for Vietnam will contribute to cost management, increase profits towards sustainable development goals; at the same time, creating a solid step for Vietnamese enterprises in the process of economic integration. However, to apply environmental accounting, it is necessary to firmly grasp the role, meaning and benefits of this activity for enterprises.

From the perspective of the United Nations Commission on Sustainable Development (UNDSD), environmental accounting is the identification, collection, analysis and use of two types of information for internal decision-making, including: Mechanical

information (physical accounting) about the situation of use, circulation and disposal of energy, water and materials (including waste); Monetary information about expenses, income, and savings related to the environment (monetary accounting). The International Federation of Accountants (IFAC, 2005) defines: Environmental accounting is the management of economic and environmental activities through the implementation and implementation of appropriate accounting systems and practices related to environmental issues. Environmental accounting aims at sustainable development, maintains good relations with the community and pursues environmental protection activities in the course of production and business activities, determines benefits from activities, provides quantitative ways and supports information disclosure.

Environmental accounting is a part of accounting in enterprises (DN), related to information about environmental activities within enterprises in order to collect, process, analyze and provide environmental information for internal and external objects to use for decision-making. Unlike traditional accounting, environmental accounting clearly pays attention to the environmental impact caused by the operation of enterprises. Environmental accounting has two basic functions: for internal management and external reporting. Performing this function, environmental accounting has a significant influence on the decisions of users of accounting information outside enterprises such as customers, investors, authorities, local people... Moreover, environmental accounting aims to achieve sustainable development, maintain good relations with the community, and improve the efficiency of environmental protection activities. The methods of environmental accounting allow businesses to identify environmental costs, identify incomes and expenses and provide the most reasonable ways to measure indicators (monetary and in-kind/physical) and support environmental results reports. Therefore, environmental accounting is used as an environmental information system to serve objects inside and outside enterprises. Environmental accounting brings many benefits not only to the enterprise itself but also contributes to environmental protection for society, people, helping the economy develop sustainably.

The structure of the study consists of five parts including: Introduction, Literature review, Method research, Results, Conclusion to assess the perception of Vietnamese seafood enterprises about the nature, role and factors affecting environmental accounting implementation.

2. Literature review

The environment is a broad concept, studied by many scholars on both academic and practical sides. Given the importance of the environment, so far, many studies have been carried out to give definitions of environment, especially to suit the Vietnamese context.

According to UNCTAD (1997), the environment is defined as a natural environment consisting of air, water, soil, flora and fauna and non-renewable resources such as fossils and minerals. As mentioned by Le Huy Ba (2004), the environment is conceptualized as natural and man-made, physical, chemical, biological factors, coexisting around humans; it is closely related, interacts with each other and acts on organisms and people to survive and develop. According to Article 1 of the Law on Environmental Protection No. 52/2005/QH11, the environment is described as including both natural and man-made factors surrounding humans, which are closely related to each other and affect the existence and development of humans and nature. According to Article 3 of the Law on Environmental Protection No. 55/2014/QH13, the environment is defined as a system of natural and man-made material factors, affecting the existence of humans and organisms.

In short, although there are many definitions and concepts, the concept of the environment has things in common. So it can be understood that the environment consists of natural factors such as air, soil, water and man-made elements, surrounding people, which have a direct influence on the existence and development of both humans and nature.

Environmental accounting

Environmental accounting is an issue that has been studied extensively in the world, especially in the twenty-first century. This is a broad term, which relates to the provision of *environmentally* relevant information to stakeholders both inside and outside an organization.

According to the United States Environmental Protection Agency (USEPA, 1995), Environmental Accounting Environmental accounting is an umbrella term that has many meanings and usages, covering three distinct contexts: national income accounting, financial accounting, and internal enterprise management accounting. In particular, national income accounting is a macroeconomic measure. Green GDP is an example and is often used as a key measure of the economic well-being of society, taking into account the costs of environmental degradation and depletion (Uno &; Bartelmus, 1998). In this context, Environmental Accounting is referred to as "natural resource accounting". Next, financial accounting refers to the estimation and public reporting of environmental liabilities and financial costs that are important to the *environment* based on the "Generally Accepted Accounting Principles" – GAAP (a set of accounting standards adopted by the U.S. Securities and Exchange Commission). Finally, internal business management accounting is the process of identifying, collecting and analyzing *environmental* information primarily for internal purposes. Unlike financial accounting, which is regulated or regulated by GAAP, management accounting systems and practices can be tailored to meet the needs of the business they serve.

According to Gauthier et al. (1997), Environmental accounting is an aspect of accounting, inseparable from financial accounting and management accounting. It addresses environmental concerns more specifically, more specifically the aspect of information systems that enable data collection and analysis, performance monitoring, decision-making, and accountability for environmental cost and risk management.

According to Graff et al. (1998), Environmental accounting is a broad-meaning term that refers to the incorporation of environmental costs and information into a variety of accounting activities.

According to Schaltegger & Burritt (2000), Environmental Accounting is a branch of accounting, the study of which involves three aspects:

1. Activities, methods and systems;
2. Record, measure, and report;
3. The financial impact caused by the *environment* and the ecological impact of a defined economic system.

According to Gray & Bebbington (2001), Environmental Accounting consists of seven aspects outlined as below:

1. Accounting for debts and potential *environmental* risks;
2. Accounting for asset revaluation and capital forecasting related to *the environment*;
3. Cost analysis in key sectors such as energy, waste and *environmental* protection;
4. Investment appraisal takes into account *environmental* factors;
5. Develop new accounting and information systems to cover all areas of *environmental* activity;

6. Evaluate the costs and benefits of environmental improvement programs;
7. Develop accounting techniques that express assets, liabilities and expenses in ecological (non-financial) terms.

According to Deegan (2003), Environmental accounting is a broader term that deals with the provision of information regarding environmental performance to stakeholders both inside and outside the organization. Although Environmental Accounting can be "business-focused", it should also be appreciated that Environmental Accounting can also be practiced at a national or regional level.

According to Ministry of the Environment (2005) - Ministry of Environment of Japan, Environmental Accounting aims to achieve sustainable development, maintain favorable relations with communities and pursue effective and effective environmental conservation activities. These accounting procedures allow a company to determine the costs of environmental conservation in the ordinary course of business, determine the benefits derived from such activities, provide the best possible means of quantitative measurement (in monetary value or material units), and assist in communicating its results. Therefore, Environmental Accounting can be used as an environmental information system to support the internal and external functions of the company.

Defined by Chang (2007), Environmental Accounting is a field of general accounting, which encompasses all areas of accounting that may be affected when organizations need to face environment-related issues.

In summary, Environmental Accounting can be applied at the corporate, regional, or national level (Bennett & James, 2000; Deegan, 2003; USEPA, 1995). At the enterprise level, the scale and scope of application can also be narrowed down to a department, a facility, a product line, a system or an activity (Ministry of the Environment, 2005; Schaltegger &; Burritt, 2000). The definitions applicable to Environmental Accounting are also many and varied. While there are some differences, most definitions emphasize key topics such as the relationship between financial performance and *the environment*, quantitative measurement in monetary value and material units, internal and external cost accounting, broader stakeholder consideration, and the need for environmental accounting information systems. These topics are all considered during the development of Environmental Accounting.

3. Research methodology

With the goal of identifying enterprises' perceptions of EMA and discovering potential factors in the relationship between EMA and Business Performance, the author used the focus group interview method. Interviewing an effective qualitative method is often used to assess the subject's perception and thought structure and is the most useful method for understanding a subject (Punch, 2005). Interviews allow researchers to ask questions to the subjects to find out what they think and feel, allowing the researcher to avoid social pressures to explore complex issues and gather hidden information. Accordingly, group interviews are often conducted with different groups of subjects (usually 5 people/group) to debate a topic to help researchers gain different perspectives, promote exchange and stimulate critical thinking about a specific issue. In addition, the requirement to adjust the questionnaire requires parallel dialogue between researchers and subjects to avoid errors when conducting large-scale research (Phan Thi Thu Hien, 2019).

The focus of the group interview is middle to senior managers (head/deputy manager, head/deputy department, chief accountant, director, deputy director, etc.) of Vietnamese seafood enterprises. With the method of random sampling, the author has selected 15

seafood enterprises in enterprises belonging to members of the Vietnam Seafood Association. After that, the author contacted these enterprises by email and received acceptance to participate in interviews of 12 enterprises. Next, the author made a request for working positions, researched a list of 46 participants and booked an interview (directly for enterprises located in Hanoi, online via Zoom platform with other businesses). In addition, the study also conducted in-depth interviews with 5 experts with experience in research on Environmental Accounting and Fisheries Enterprises.

The interview process takes place in the following sequence: Stage 1, during the research phase at the table, the author incorporates collecting opinions of experts on the research topic (EMA) and the nature of EMA and Business Performance). Phase 2 is the process of the author conducting interviews with a group of managers and leaders representing 12 seafood enterprises. The output of this process is to determine the perception of enterprises about EMA, the role of EMA; factors affecting the application of EMA and how to measure business performance of enterprises. At the same time, the study conducted discussions on survey questions with the study subjects in order to find inappropriate words or confusing expressions for correction. In the next stage, the study conducted interviews with experts again to get opinions on the revised results.

Data collection and analysis

The author conducted 13 interviews with 42 managers (board of directors, chief accountant, head/deputy manager or department) of 12 Vietnamese seafood enterprises. Statistics describing interviewees are presented in Appendix 1. The interview period runs for two months from December 15, 2022 to February 20, 2023 in person and online via Zoom. In order to obtain in-depth discussions about EMAs and make the most of the information available, the study conducts a semi-structured interview method – interviews are conducted based on pre-prepared research questions. Along with the existing questionnaire, the content of the interview and exchange is still flexible to change depending on the context of the discussion. Therefore, the semi-structured interview method not only requires the researcher to understand the research topic well to prepare questions and discussion content in advance, but also to master the interview, grasp the discussion flow and flexibly navigate the exchange topic, Ask provocative questions to deepen the information obtained.

The interview consists of 4 parts. Part 1 introduces the topic and objectives of the study, proceeds to collect participant information, commits to anonymous analysis. Part 2 collects opinions on EMA in order to obtain an assessment of the concept, role and level of EMA implementation of the subjects. After that, the study proceeded to discuss the factors affecting the application of EMA in enterprises. Part 3 collects opinions on how to evaluate the business performance of enterprises. Part 4, discuss the content of the scale and the expected survey.

Interview data is kept in two forms of transcripts (researcher and 3 supporters) and audio recordings (using Nvivo software). After the interview information is extracted from the software, the author and 3 supporters compare with the notebook. After reaching a consensus of over 95%, 105 pages of A4 data from the interviews were collected. The study conducts information coding, classified by research topic (EMA concept, EMA role, EMA level, factors affecting the adoption of EMA, and Business Performance). From this classification, the study conducts an analysis of qualitative results.

4. Research results

Qualitative results on the essence of environmental management accounting

The interview results show that EMA is a relatively new concept at Vietnamese seafood

enterprises. The level of interest in EMA of enterprises is different. Mostly, managers from small and medium enterprises do not learn much and deeply about this concept. While managers and leaders of large enterprises grasp more information about EMA. EMA is defined according to different interpretations but the common point agreed in all answers is that EMA belongs to the internal management activities of the enterprise, serving the process of evaluating and developing environmental management plans. Notable phrases in the responses about the essence of EMA are "environmental *cost management*", "*selection of the optimal operating option*", "*satisfaction of economic and environmental standards*", "*towards sustainability goals*", etc.

"EMA is a content in management accounting and a management tool that helps managers grasp information about environmental costs. The objective of the EMA is to process and transmit information about internal calculations, which is secondary to the decision-making process." – Chief Accountant of a medium-sized seafood enterprise in Central Vietnam.

"*EMA is a process of processing information and calculating energy consumption, raw materials, material flow flows, the amount of material discharged during production and other monetary calculations* of costs *and income of activities that may affect the environment*." – Deputy Director of a large-scale enterprise in the North.

"*The essence of EMA is the environmental cost. EMA consists of the currency EMA and the material EMA. In Vietnam, most businesses are only interested in the material EMA aspect including energy and material flows used in the past, present and future that have impacts or have the potential to affect the ecosystem*." – Chief Accountant of a large-scale seafood enterprise in the South.

Most of the managers interviewed said that EMA plays an important role in the development of enterprises, especially seafood enterprises. The benefits that EMA brings are perceived and expressed by the audience including: "*identifying, calculating and allocating* costs *accurately, promptly and fully", "supporting product pricing and investment in technology equipment*", "improving the environment", "improving relationships with stakeholders*", "improvement of the accounting system", "improvement of financial position*", etc.

"In traditional cost accounting*, the aggregation and analysis of environmentally related costs that are often placed in* general production costs can *easily lead to them being hidden from managers. In fact, the board of directors of enterprises often underestimates* these expenses*. By defining, classifying and evaluating environmental costs, EMAs will help managers have a clearer view of their rise and fall. From there, identify cost-saving opportunities, calculate incentives for investments."* – Chief Accountant of a large enterprise in the South.

"*EMA is a method that represents a combination of financial* accounting and cost accounting to *balance the material flows of enterprises. From there, EMA helps enterprises increase the efficiency of using input materials, reduce risks related to the environment and reduce environmental protection* costs." – Sales Manager of a medium-sized enterprise in Vietnam Northern.

"*EMA supports the process of pricing products and calculating business results more accurately. Based on that, business leaders will make appropriate decisions on product strategies or reasonable investments in equipment and technology."* – Deputy director of a small enterprise in Central Vietnam.

"*EMA helps businesses improve business relationships with partners, especially with*

international customers. EMA helps the company meet international environmental standards, enhance its reputation by developing a 'green' image." – Head of Business Planning Department of a medium seafood enterprise in the South.

"*To implement EMA, enterprises need to organize a more scientific accounting information system, improve the accounting system by linking information flows of activities from all departments* in the enterprise." – Chief Accountant of a medium-sized seafood enterprise in Central Vietnam.

"*EMA helps businesses improve their competitive advantage. From the information obtained from EMA, management decisions can reduce* production costs, *improve machinery systems to produce in a more efficient, cleaner way to bring better quality products and more reasonable prices. From these advantages, businesses can improve profits, avoid legal problems*." – Director of a small business in the North.

"*EMA helps businesses improve environmental issues by controlling waste and discharge costs associated with the source."* – Deputy production director of a large-scale seafood enterprise in the North.

However, in addition to the opinions that EMA brings many irreplaceable benefits to enterprises, some individuals (representing 5/12 enterprises participating in the interview) said that the implementation of EMA will lead to some difficulties for seafood enterprises, especially small-scale enterprises, financial incompetence. Primarily, the reason given was that "the cost *of using the EMA was so great that the revenue from the meager business did not make up for it*". Others (representing 3/12 enterprises) said that "the *separation of environmental costs from* production and business costs is *not necessary because this is still the* cost *used to serve production, business and management activities of enterprises*". In addition, the application of EMA also needs a long process of testing and monitoring because "EMA *is relatively new in Vietnam, resources for EMA in terms of legal, personnel, processes and implementation methods are still very limited*".

In summary, the research results show that EMA has been perceived by seafood enterprises in terms of its nature and role. However, this awareness is uneven at seafood enterprises. Mostly, EMA is implemented and used by large-scale enterprises with abundant financial resources. Meanwhile, mainly small and medium-sized enterprises tend to favor short-term benefits or do not pay attention to *environmental* costs. The role of EMA has also been recognized by enterprises. In particular, comments show that the implementation of EMA has the ability to help businesses find opportunities to save costs and improve financial efficiency for companies. The interview results support the view that EMA has the potential to improve business performance in this study.

Qualitative results on factors affecting the application of environmental management accounting

First of all, of the 12 enterprises participating in the interview, only 5/12 enterprises have been implementing EMA. For these businesses, the application of EMA is based on the need to save costs, increase revenue and improve profitability. Others must implement EMAs to have better control and management methods of *environmental* related activities to meet the requirements of stakeholders such as governments, customers, communities, banks, shareholders, etc. Based on these motives, EMA is used to create an avenue for additional income, seek cost-saving opportunities for enterprises.

"*Our main concern when doing EMA is* cost. *In fact, the company made heavy losses in 2018 so we had to find ways to reduce* costs. *EMA's environmental friendliness and cost management* activities *help us find cost-saving*

opportunities." – Director of a large-scale enterprise in the South.

"*Pressured by losses and shareholder anxiety, the company's management had to find avenues to remain profitable in various ways such as laying off employees, building discount programs, cost-saving strategies, etc. However, during the Covid crisis, measures to increase revenue were unsuccessful. While implementing cost-saving activities, we recognize that many savings can be achieved in the areas of capacity and materials, waste and water. From there,* the costs of *these fields are separated from* normal costs *for more thorough control and analysis, finding cost-saving opportunities*." – Deputy Sales Director of a large-scale seafood enterprise in the North.

"The company's energy costs range from 30% to 35% of total operating expenses and increased *from 10% to 15% a few years ago. We have to constantly find solutions that save* energy costs. *And EMA is a useful tool that provides material information about the use and flow of energy, water and materials and monetary information about* costs, *income and savings related to the environment.* " – Chief Accountant of a medium-sized seafood enterprise in Central Vietnam.

"*The traditional accounting system hinders environmental initiatives and leads to environmentally harmful activities, which can lead to management making decisions based on inaccurate or misinterpreted information because environmental information is missing and unavailable. Therefore, businesses need to use EMA so that leaders can accurately, fully and promptly identify the negative financial consequences of poor* environmental performance as well as the potential costs *and benefits of improving environmental performance*." – Chief Accountant of a large enterprise in the North.

"*Stakeholder requests were the decisive reason why the company used EMA. In order to expand our customer base, especially our international partners, we have to find ways to control environmental activities. EMA is an effective method to find out issues that need to be improved to improve the image of environmental friendliness and increase trade advantages*." – Sales Manager of a large seafood enterprise in the South.

It can be seen that the motivation for applying EMA of enterprises that have been implementing EMA is the need to save costs, improve business results and regulations and *environmental* requirements of business partners. The remaining enterprises believe that the implementation of EMA is not an urgent and necessary issue for them. However, when discussing generally what might drive the adoption of EMAs, all respondents agreed that pressure from the government would compel them to take *environmental* measures. In fact, 2 out of 5 enterprises implement EMA to access *environmental* information for environmental reporting.

"Our accounting unit is working with other departments to identify and implement modifications in the cost system, *facilitating our access to environmental information and environmental reporting.* " – Deputy director of a small-scale seafood enterprise in the North.

"On the one hand, the parent company is required to submit annual environmental monitoring reports We leveraged our management accounting information system to include environmental data. " – Chief Accountant of a large seafood enterprise in the North.

"Regulations on impact reporting and environmental impact assessment will be a mandatory condition for enterprises to control environment-related activities such as energy issues, discharges, etc. They will be a prerequisite for businesses to apply EMA

implementation. " – Director of a small enterprise in Central Vietnam.

"The need for an understanding of environmental costs to report to management or regulators is the first reason to define clear environmental costs, but later, these changes also become useful for internal control and reporting purposes by displaying environmental costs to the entire company." – Production Manager of a medium-sized enterprise in the North.

"Currently, regulations and accounting regimes in enterprises do not mention the application of EMA. Current accounting documents still do not have instructions for enterprises in separating environmental costs from production and business costs, there are no accounts for separate accounting for environmental costs. That is a big barrier that makes it difficult for businesses to apply EMA." – Chief Accountant of an enterprise in Central Vietnam.

In addition, the role of managers in applying EMA to businesses was also discussed. According to the subjects, gaining commitment and support from senior managers is the first step of adopting EMA. The support of top management is a key element for implementing various practices and behaviors, such as environmental protection, green management, technology adoption, and *environmental* accounting. The support and commitment of senior leaders is a guarantee of the organization's understanding and commitment to environmental issues and the implementation of *environmental* strategies, including EMA. Especially in the face of legal regulations, the support of senior managers will help the company have enough resources to implement EMA and promote the support and engagement of employees in the enterprise.

"Under pressure from the authorities, businesses can implement EMAs but many companies may be reluctant to make the necessary investments and implement EMAs because they believe that the benefits they reap are small. Therefore, if business leaders are sufficiently aware of the role and importance of EMAs, such as cost savings, *mitigating environmental and social risks, improving environmental performance and enhancing competitive advantage, they will support EMA implementation and businesses will be more likely to adopt EMA.* " – Chief Accountant of a small business in the North.

"The implementation of EMA is a top-down process. To successfully implement changes in environmental management, leaders need to have an innovative mindset and advocate for the adoption of EMAs. My company's EMA implementation is rooted in environmental management policy and the direction of management. After that, the company will implement programs to encourage employees to create new environmental management initiatives, train personnel for EMA implementation, invest in information systems to reform existing accounting activities." – Chief Accountant of a large enterprise in Central Vietnam.

"Personnel in all departments are supportive of our environmental control measures. We have explained the importance of saving these costs *and the importance of these actions for the survival of the organization. It was the initial support to implement EMA.* " – Director of a medium enterprise in the South.

In summary, the interview results showed that, in addition to economic and market drivers (pressure from losses to improve business results through cost savings, improve reputation to meet environmental requirements from customers, etc.), environmental regulations such as *environmental* monitoring reports, etc. regulations or mechanisms for EMA will be mandatory for enterprises to implement EMA. In this study is called institutional pressure. In addition, the support from senior leaders is also a

reason for businesses to apply and implement EMA.

Results on how to evaluate the business performance of seafood enterprises in Vietnam

Business performance is evaluated by enterprises through different indicators. Most businesses mention two main indicators: growth rate and profitability. "Our business results *are evaluated through two aspects: growth rate such as asset growth, revenue growth rate and profitability such as ROA, ROE*." Director of a large enterprise in the North.

"Business results *are one of the indicators that must be evaluated quarterly and annually, serving the publication of reports. The performance assessment index of her party usually includes 2 main indicators: profitability such as profitability of equity; and growth rate such as assets and revenue. Market value is also an important indicator of the company because it is an indicator that directly affects the share price of the company."* – Chief Accountant of a large enterprise in the South.

Table 1: Interview results on assessment of business results of seafood enterprises

Criteria for measuring Business Performance	**Frequency**
Profitability	***44***
Asset Profitability (ROA)	15
Return on investment (ROI)	12
Return on equity (ROE)	8
Return on net sales (ROS)	5
Economic Value Added (EVA)	4
Growth	***36***
Asset growth	11
Growth in net sales	8
Growth of profit after tax	7
Growth of invested capital	6
Growth of equity	4
Market value	***1***

Source: Research synthesized from interview results

Based on the interview results, the two main aspects of Performance are profitability and growth used. In particular, profitability includes: Asset profitability (ROA); Return on equity (ROE); Profitability of invested capital (ROI); Return on net sales (ROS); Economic Value Added (EVA). Growth includes: Growth of assets; The growth rate of net sales; The growth of profit after tax; The growth of invested capital; The growth of equity.

5. Conclusion

From the results obtained through the process of qualitative research, this research paper

supports that applying EMA has a positive effect on the business performance of enterprises. This result is consistent with some previous studies (Godschalk, 2008; Schaltegger et al., 2002; Grey & Bebbington, 2001; Bennett & Jame, 2000; Chang, 2007; Schaltegger, 2008; Bennett & Jame, 2000, Mohammad et al., 2013). All socio-economic activities affect the environment in a certain aspect and extent, the increase of negative environmental problems has raised awareness of environmental protection, which creates a mandatory requirement for production and business enterprises. It is to be environmentally responsible. If traditional management accounting has not taken into account environmental factors as a factor that strongly affects the operation of enterprises, thereby ignoring the costs incurred related to the use of this factor. From there, it can lead to a discrepancy between the actual costs incurred and the costs accounted for. At the same time, the incomplete assessment of environmental impacts on business activities makes cost allocation and product pricing inaccurate. EMA helps to completely overcome these shortcomings of management accounting. Through the collection, analysis and evaluation of environmental information, EMA calculates and comes up with the necessary environmental costs. Senior managers will consider the correlation between the amount of environmental costs and the economic benefits of proactively hedging against environmental risks that may arise, with the estimated costs of addressing environmental consequences such as: waste disposal, recovery and disposal of post-use products, compensation, payment of fines, etc. From there, make more effective and low-risk investment decisions and business strategies. EMA also supports enterprises in implementing environmental accountability with relevant units and organizations. Through that, the image of enterprises is improved, improving prestige and relationship with the community. In terms of sustainable development, applying EMA is considered as a circular management model, helping to connect the production stages of enterprises, factors such as products, garment materials after being used can be recovered and recycled and become input materials for the next production process. Thus, enterprises have cut output processing costs as well as input material supply costs, reduced costs, leading to increased profits, reduced prices, and improved business results . In fact, the role of EMA in reducing costs, especially costs for environment-related activities of enterprises, has been mentioned in studies by Ann et al. (2006); Sulaiman &; Mokhtar (2010). And the relationship between better use of environmental information and cost reduction to productivity and production efficiency of enterprises is also demonstrated through research by Chiou et al. (2011).

EMA has been a key factor in corporate governance towards meeting the requirements of sustainable and environmentally friendly development. A trend that will continue to thrive in the future as environmental awareness is increasing. Improving the efficiency of EMA application is an important stepping stone to help improve the operating results of enterprises. Especially, applying EMA in the textile and garment industry is even more urgent. This spearhead industry of our country is facing strict requirements from consumers and major partners for environmentally friendly products, in order to maintain the industry development speed and towards exporting finished products, enterprises need to be aware of the importance of economic goals associated with environmental efficiency. Enhancing EMA is about enhancing competitiveness and position in the context of the economy having just recovered from the pandemic.

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REFERENCES

Aksom H., Zhylinska O., Gaidai T. (2020). Can institutional theory be refuted, replaced or modified? *International Journal of Organizational Analysis*, 28(1), 135-152.

Bansal, P., & Roth, K. (2000). Why companies go green: A model of ecological responsiveness. *Academy of Management journal*, 43(4), 717-736.

Bennett, M & James, P (1997). Environment-Related Management Accounting: Current Practice and Future Trends, *Greener Management International*, 17(1), 32-52.

Berrone, P., Fosfuri, A., Gelabert, L., & Gomez-Mejia, L. R. (2013). Necessity as the mother of 'green' inventions: Institutional pressures and environmental innovations. *Strategic Management Journal*, 34(1), 891-909.

Birkin, F (1996). Environmental Management Accounting, *Management Accounting*, 74(2),34-47.

Blass, V., Corbett, C. J., Delmas, M. A., & Muthulingam, S. (2014). Top management and the adoption of energy efficiency practices: Evidence from small and medium-sized manufacturing firms in the US. *Energy*, 65(1), 560-571.

Brammer, S., Hoejmose, S., & Marchant, K. (2012). Environmental management in SMEs in the UK: Practices, pressures and perceived benefits. *Business Strategy and the Environment*, 21(1), 423–434

Burritt, R. L., & Schaltegger, S. (2010). Sustainability accounting and reporting: fad or trend?. Accounting, *Auditing &; Accountability Journal*, 23(7), 829-846.

Burritt, R. L., Hahn, T., & Schaltegger, S. (2002). Towards a comprehensive framework for environmental management accounting—Links between business actors and environmental management accounting tools. *Australian Accounting Review*, 12(27), 39-50.

Chaudhry, N. I., & Amir, M. (2020). From institutional pressure to the sustainable development of firm: Role of environmental management accounting implementation and environmental proactivity. *Business Strategy and the Environment*, 29(8), 3542-3554

Colwell, S. R., & Joshi, A. W. (2013). Corporate ecological responsiveness: Antecedent effects of institutional pressure and top management commitment and their impact on organizational performance. *Business Strategy and the Environment*, 21(2), 73-91.

DiMaggio, P. J., &; Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review*, 22(2),147-160.

Elhossade, S. S., Abdo, H., & Mas' ud, A. (2021). Impact of institutional and contingent factors on adopting environmental management accounting systems: the case of manufacturing companies in Libya. *Journal of Financial Reporting and Accounting*, 19(4), 497-539.

Ferreira, A., Moulang, C., & Hendro, B. (2010). Environmental management accounting and innovation: an exploratory analysis. Accounting, *Auditing &; Accountability Journal*. 23(7), 920-948.

Greenwood R, Hinings CR. (1996). Understanding radical organizational change: bringing together the old and the new institutionalism. *Academy of Management Review*, 21(1), 1022–1054.

Gunarathne, A. N., Lee, K. H., & Hitigala Kaluarachchilage, P. K. (2021). Institutional pressures, environmental management strategy, and organizational

performance: The role of environmental management accounting. *Business Strategy and the Environment*, 30(2), 825-839.

Gunarathne, N., & Lee, K. H. (2019). Institutional pressures and corporate environmental management maturity. *Management of Environmental Quality: An International Journal*, 30(1), 157-175.

Hair Jr, J. F., Sarstedt, M., Ringle, C. M., & Gudergan, S. P. (2017). *Advanced issues in partial least squares structural equation modeling*. Sage publications

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the academy of marketing science*, 43(1), 115-135.

Henseler, J., Ringle, C. M., & Sinkovics, R. R. (2009). *The use of partial least squares path modeling in international marketing.* In New challenges to international marketing. Emerald Group Publishing Limited

Heugens, P. P., &; Lander, M. W. (2009). Structure! Agency! (and other quarrels): A meta-analysis of institutional theories of organization. *Academy of Management Journal*, 52(1), 61–85.

Horngren, CT, Datar, S.M. & Foster, G (2003). *Cost Accounting: A Managerial Emphasis*, 11th edn, Prentice Hall, New Jersey

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural equation modeling: a multidisciplinary journal*, 6(1), 1-55.

Iredele, O. O., Tankiso, M., & Adelowotan, M. O. (2020). The influence of institutional isomorphism and organisational factors on environmental management accounting practices of listed Nigerian and South African firms. *South African Journal of Accounting Research*, 34(3), 183-204.

Ismail, M. S., Ramli, A., & Darus, F. (2014). Environmental management accounting practices and Islamic corporate social responsibility compliance: evidence from ISO14001 companies. *Procedia-Social and Behavioral Sciences*, 145(1), 343-351.

Jalaludin, D., Sulaiman, M., Ahmad, N. N. N., & Nazli, N. (2010). Environmental management accounting: an empirical investigation of manufacturing companies in Malaysia. *Journal of Asia-Pacific Centre for Environmental Accountability*, 16(3), 31-45.

Jamil, C. Z. M., Mohamed, R., Muhammad, F., & Ali, A. (2015). Environmental management accounting practices in small medium manufacturing firms. *Procedia-Social and Behavioral Sciences*, 172(1), 619-626.

Jasch, C. (2003). The use of Environmental Management Accounting (EMA) for identifying environmental costs. *Journal of Cleaner production*, 11(6), 667-676.

Kong, Y., Javed, F., Sultan, J., Hanif, M. S., & Khan, N. (2022). EMA Implementation and Corporate Environmental Firm Performance: A Comparison of Institutional Pressures and Environmental Uncertainty. *Sustainability*, 14(9), 5662

Latan, H., Jabbour, C. J. C., de Sousa Jabbour, A. B. L., Wamba, S. F., & Shahbaz, M. (2018). Effects of environmental strategy, environmental uncertainty and top management's commitment on corporate environmental performance:

The role of environmental management accounting. *Journal of Cleaner Production*, 180(1), 297–306

Lee, S. Y., & Klassen, R. D. (2016). Firms' response to climate change: The interplay of business uncertainty and organizational capabilities. *Business Strategy and the Environment*, 25(1), 577–592.

Liang, H., Saraf, N., Hu, Q., & Xue, Y. (2007). Assimilation of enterprise systems: The effect of institutional pressures and the mediating role of top management. *MIS Quarterly*, 31(1), 59–87.

Mignerat M., Rivard S. (2012) The institutionalization of information system project management practices. *Information and Organization*, 22(2), 125-153.

Ning, S., Jie, X., Li, X. (2022). Institutional Pressures and Corporate Green Innovation; Empirical Evidence from Chinese Manufacturing Enterprises. *Polish Journal of Environmental Studies*, 31(1), 231-243.

Phan, T. N., & Baird, K. (2015). The comprehensiveness of environmental management systems: The influence of institutional pressures and the impact on environmental performance. *Journal of environmental management*, 160(1), 45-56

Phan, T. N., Baird, K., & Su, S. (2017). The use and effectiveness of environmental management accounting. *Australasian Journal of Environmental Management*, 24(4), 355-374.

Qian, W., & Burritt, R. L. (2009). Contingency perspectives on environmental accounting: an exploratory study of local government. Accounting, *Accountability & Performance*, 15(2), 39-70.

Rikhardsson, P, Bennett, M, Bouma, J.J. & Schaltegger, S. (2005). Environmental Management Accounting: *Innovation or Managerial Fad?' in P Rikhardsson*, M Bennett, JJ Bouma &; S Schaltegger (eds), Implementing Environmental Management Accounting: Status and Challenges, Springer, Dordrecht.

Rikhardsson, P., & Dull, R. (2016). An exploratory study of the adoption, application and impacts of continuous auditing technologies in small businesses. *International Journal of Accounting Information Systems*, 20(1), 26-37.

Roxas, B., & Coetzer, A. (2012). Institutional environment, managerial attitudes and environmental sustainability orientation of small firms. *Journal of Business Ethics*, 111, 461–476

Sarstedt, M., Hair Jr., J. F., Cheah, J. H., Becker, J. M., & Ringle, C. M. (2019). How to specify, estimate, and validate higher-order constructs in PLS-SEM. *Australasian marketing journal*, 27(3), 197-211.

Scott, W. R. (2005). Institutional theory: Contributing to a theoretical research program. *Great minds in management: The process of theory Development*, 37(2), 460–484

Simpson, D., & Samson, D. (2010). Environmental strategy and low waste operations: exploring complementarities. *Business Strategy and the environment*, 19(2), 104-118.

Sun H., Edziah B.K., Sun C., Kporsu A.K. (2019) Institutional quality, green innovation and energy efficiency. *Energy Policy*, 135, 111002-111 016.

Teo, H. H., Wei, K. K., & Benbasat, I. (2003). Predicting intention to adopt interorganizational linkages: An

institutional perspective. *MIS Quarterly*, 27, 19–49

Testa F., Boiral O., Iraldo F. (2018). Internalization of Environmental Practices and Institutional Complexity: Can Stakeholders Pressures Encourage Greenwashing? *Journal of Business Ethics*, 147(2), 287, 2018.

Wang, S., Li, J., & Zhao, D. (2018). Institutional pressures and environmental management practices: The moderating effects of environmental commitment and resource availability. *Business Strategy and the Environment*, 27, 52–69

Wang, S., Wang, H., & Wang, J. (2019). Exploring the effects of institutional pressures on the implementation of environmental management accounting: Do top management support and perceived benefit work?. *Business Strategy and the Environment*, 28(1), 233-243.

Wei, Q., Burritt, R., & Jin, C. (2015). The potential for environmental management accounting development in China. *Journal of Accounting and Organizational Change*, 11, 406–428.

Wu H., Liu S., Hu S. (2021) Visible Hand: Do Government Subsidies Promote Green Innovation Performance Moderating Effect of Ownership Concentration. *Polish Journal of Environmental Studies*, 30(1), 881-898

Zeng, S. X., Xu, X. D., Yin, H. T., & Tam, C. M. (2012), "Factors that drive Chinese listed companies in voluntary disclosure of environmental information", *Journal of Business Ethics*, 109(3), 309-321

Zhang, Y., Wei, Y., > Zhou, G. (2018). Promoting firms' energy-saving behavior: The role of institutional pressures, top management support and financial slack. *Energy Policy*, 115, 230–238.