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### Applying Environmental Management Accounting in Textile Enterprises in Hanoi

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#### Abstract

In recent years, the issue of sustainable development, balancing economic growth with social progress and environmental protection has become a common trend and goal of most countries in the world. To realize the above goal, governments of countries have set increasingly strict environmental protection requirements, forcing businesses to change the way they view environmental issues when conducting investment activities, or production and business. In that context, environmental accounting was born to support businesses in fulfilling their environmental obligations in the production and business process. Textile

enterprises are one of the manufacturing enterprises with a large risk of causing environmental pollution. To overcome this limitation, and at the same time help textile enterprises achieve sustainable development goals, using environmental management accounting tools is an effective solution. The article uses secondary data to study the current status of environmental accounting at garment enterprises in Hanoi. From the research results, the article proposes solutions to enhance the application of responsibility accounting in textile enterprises in Hanoi.

**Keywords:** Environmental Management Accounting, Environmental Cost, Textile Enterprises

#### 1. Introduction

Vietnam's development strategy from now to 2020 is focused on rapid, sustainable economic growth, environmental protection, and the harmonious resolution of economic, environmental, and social challenges. The state pays attention and promulgates more and more legal laws to curb over-exploitation of natural resources for economic and social development, while also limiting it to the greatest degree possible. Infractions, environmental degradation, and social pollution. Before executing projects, many legal restrictions require firms and investors to complete environmental impact assessments and propose or implement environmental treatment options. To implement those legislative restrictions, many different forms of costs relating to the environment, environmental protection, dealing with impacts on environmental factors, and strengthening environmental protection would undoubtedly occur on an increasingly vast scale. Environmental quality in business contracts of enterprises and in the implementation of investment projects. Requirements emerge that need managers having more information about environmental-related costs originating in firm contracts. In that scenario, the emergence of environmental management accounting is unavoidable in order to meet the requirements for environmental information in unit operations from both a theoretical and practical standpoint. As a result, the essay investigates the existing state of environmental accounting at Hanoi textile firms before proposing ways to improve the application of environmental management accounting.

#### 2. Theoretical Background

##### *Environmental management accounting (EMA)*

The International Federation of Accountants (IFAC, 2005) defines EMA as "the management of economic and environmental activities through the implementation and implementation of accounting systems and appropriate practical activities related to environmental issues."

Environmental management accounting provides a more complete and accurate grasp of management accounting. Environmental management accounting information is generally used for internal organizational calculations and decision making. The environmental management accounting information processing method for decision making involves material

calculations such as raw materials, energy consumption, material flow, and the amount of material removed or disposed. Emissions, as well as monetary financial calculations of costs (both increased and saved), revenues, and income linked with actions that have the ability to alter and effect the environment.

As a result, environmental management accounting serves as a tool for thoroughly identifying and quantifying the environmental costs of the manufacturing process as well as the economic benefits of waste reduction and production. cleaner, and then factor in those costs and advantages when making decisions (UNSD EMA Initiative, 2002).

### ***Environmental management accounting's role***

#### ***EMA improves economic efficiency***

Some researchers have affirmed the benefits of implementing EMA to help businesses innovate, reduce costs, produce cleaner, better price products and increase shareholder value. The use of a material cost flow analysis tool allows the determination of waste disposal costs and losses from processes on bulk raw materials. Cost analysis has benefited businesses by saving costs as well as relevant physical and monetary environmental information. Some businesses have used EMA to improve environmental management. Implementation of EMA has supported efficient use of energy and resources in product development.

The US Environmental Protection Agency applauds the implementation of EMA in terms of green supply chain innovation. Some businesses have collaborated with suppliers to save money on environmental costs. Green and lean supply chain innovations help organizations and supply chain partners save considerable money by utilizing EMA.

EMA also serves as a conduit between environmental concerns and shareholder value. To evaluate financial indicators of clean product investment, these companies used total cost assessment, cost accounting, and other methods of thorough, long-term financial study of clean manufacturing. EMA assists businesses in lowering operating expenses, improving product pricing, and conserving natural resources, allowing enterprises to detect environmental costs that are frequently concealed in overhead and neglected by managers.

#### ***The EMA is in favor of limiting environmental effect.***

A number of enterprises have developed development strategies based on EMA's support to achieve environmental goals, aiming to reduce environmental impacts such as direct impacts on water, air, and solid waste, as well as excessive energy usage.

Initial research has shown that, in order to achieve sustainable development in the textile industry in particular and the manufacturing industry in general, businesses must control energy and water consumption, because these two items represent significant cost savings potential and can be easily accomplished within a business's current operating procedures. After assessing operating costs using EMA, significant hidden energy expenditures can be identified, allowing organizations to solve energy consumption and energy optimization challenges. At the same time, by using EMA, firms can cut water and energy usage through process and product innovation.

EMA assists organizations in the solid waste management process, from categorization and management to treatment,

recycling, and reuse, in addition to reducing energy usage and improving wastewater problems. In conformity with norms and standards, use and reduce solid waste.

Analyzing the role of EMA in the sustainable development of the textile industry has motivated businesses in the industry to implement more appropriate environmental policies. Initially, the urgent need for businesses to develop EMA was due to external pressure. Then, when the cost-saving benefits of EMA were confirmed, businesses proactively promoted EMA implementation. Environmental management strategies of textile and garment enterprises need to be implemented consistently and be evaluated, analyzed, and supported by the EMA system, combined with EMA implementation, such as calculating raw materials, energy, and energy. Energy, environmental impact assessment, life cycle design. Therefore, the practice of EMA can facilitate other green activities of textile enterprises because it can accurately calculate energy, water and other materials used in the production and business process of textile enterprises. However, applying EMA in textile and garment enterprises requires the support of many different stakeholders to regularly participate in green supply chain activities, from the awareness and actions of businesses themselves, to government levels, industry associations and consumers.

### ***Techniques of environmental management accounting***

Cost analysis, investment decision support, and performance management are the three broad categories of EMA approaches. Cost analysis methodologies in particular include product life cycle assessment tools, activity-based costing, and circular flow cost accounting. The EMA technique, which is simply an analysis based on capital investment projections, is then used to support investment decisions through overall cost evaluation. Finally, the balanced scorecard assists firms in measuring the big picture, such as environmental problems, management or performance evaluations.

#### ***(1) Techniques for cost analysis***

Product life cycle analysis: Production activities, according to experts, can have an impact on natural resource supply and environmental quality (USEPA, 1995b). Adverse environmental effects can arise at any time during the product's life cycle. Life cycle analysis is a method for analyzing the environmental implications of a product or activity throughout its entire life cycle, from raw materials to disposal.

Life cycle assessment is understood as a systematic process for assessing the life cycle costs of a product or service by determining its environmental consequences and assigning measures of monetary value to those benefits. Consequences (Bennet and James, 1997). Life cycle assessment is a method of quantitatively assessing the impact of a product on the environment during each stage of its useful life, from raw material to manufacturing and distribution. Used by consumers until decomposition (Testa *et al.*, 2011). Therefore, when considering the costs and revenues of a product, it is necessary to consider its entire life cycle, not just one accounting period.

Activity-based costing: Because traditional cost accounting methods have flaws, several firms have used activity-based cost allocation systems to gather more accurate and usable cost information. Activity-based costing methods are based

on direct and indirect costs, allowing firms to assign all costs (including environmental costs). Market for cost center and cost driver activities (Wahyuni, 2009). Volume of emissions or waste, toxicity of emissions and waste treated, incremental environmental impact (volume x input per unit volume), volume of emissions treated, and relative costs of treating different types of emissions are the five main allocations considered in an activity-based costing system (Schaltegger and Muller, 1997).

The allocation of environmental costs is based on the level of participation of each activity in the product production process to allocate environmental costs to the product price according to appropriate criteria. Criteria for allocating environmental costs are built based on the amount of waste treated or can be determined based on the level of potential impact on the environment. Additionally, activity-based costing systems can detect the majority of environment-related costs such as energy, water, waste disposal, and environmental staff salaries that are often considered general expenses. These costs are more likely to be hidden from managers' judgment, especially with respect to cost reduction strategies.

Accounting for circulation costs: Flow cost accounting refers to the analysis of material and energy flows (Staniskis and Stasiskiene, 2006). Material flow analysis essentially "aims at identifying the flows of materials and energy moving through a value-creating system (such as a business) over a given period of time" (Gibson and Martin, 2004). For physical flows, inputs as well as costs for non-productive physical outputs (waste and emissions) are considered cost aspects (Jasch and Stasiskiene, 2005).

Circular cost accounting, in conjunction with the EMA perspective, "assesses the potential for cleaner production at the factory level, preliminary estimates the costs of waste generation, and in-depth analysis of selected assessment focuses (quantification of the mass and composition of different waste and energy streams and emissions, as well as a detailed understanding of the causes of these waste and energy streams and emissions)" (Staniskis and Stasiskiene, 2006). Track detailed waste expenses and treatment costs before allowing garbage to be discharged based on both physical and value measures to reduce environmental impacts, boost company efficiency, and serve decision making. Decisions about business (Kokubu and Tachikawa, 2013).

### (2) Techniques for valuing investments

Total cost assessment techniques, like life cycle assessment tools, help firms prevent pollution (Medley, 1997). In traditional cost analysis, the total cost assessment technique analyzes economic expenses and areas of cost savings from pollution prevention. Because overall cost assessment is important in evaluating a project, managers will utilize this method to select investment projects that have high economic efficiency and minimum environmental effect. Make an investment and do a budget analysis.

The total cost assessment tool is a comprehensive, long-term financial analysis technique of the entire costs and savings of an investment by the organization making the investment (USEPA, 1995a). The total cost assessment tool supports the decision-making process in investment analysis and appraisal by ensuring that complete data is collected that includes direct and indirect environmental costs as well as environmental risks.

### (3) Techniques for performance management

The balanced scorecard can incorporate environmental perspectives (Scavone, 2006). The balanced environmental scorecard is used in the selection and creation of environmental performance indicators and can serve as a comprehensive performance management tool inside a business (Scott, 1998).

The Balanced Environmental Scorecard is "a set of measurements that provides managers with a comprehensive overview of the business, including the impact of operational and environmental measures from a variety of perspectives. Different aspects of the company such as: Customer satisfaction, internal improvement, training and financial research and other perspectives related to business strategy (Scavone, 2006). The environmental balanced scorecard integrates specific environmental indicators into each aspect of the balanced scorecard, so the environmental balanced scorecard or sustainable balanced scorecard can be used to measure performance. Environmental performance of businesses (Alewine and Stone, 2013).

The sustainable balanced scorecard builds on the traditional balanced scorecard and provides a broader scope by integrating all three dimensions of sustainability. Integrating the environmental management aspect into the balanced scorecard as a single corporate management tool (Figge *et al.*, 2002). The sustainable balanced scorecard can align all of a business's activities, including those that may impact or impact the environment, to deliver on its strategies.

### 3. The current state of environmental management accounting in Hanoi textile enterprises

The Environmental Law was originally enacted in Vietnam in 1993, and the Environmental Protection Law was revised in 2005. On that basis, on August 8, 2011, the Government adopted Decree No. 67/2011/ND-CP. Taxable subjects, tax bases, tax disclosure, tax computation, tax payment, and environmental protection tax refund are governed by legislation enacted in August 2011. Circular No. 152/2011/TT-BTC, published November 11, 2011, directing the execution of Decree No. 67/2011/ND-CP; Circular No. 159/2012/TT-BTC, dated September 28, 2012, modifying and augmenting Circular No. 152/2011/TT-BTC.

Research and implementation of environmental management accounting in Vietnam is still quite new. The number of research projects on environmental management accounting is not much. According to survey results, most textile and garment enterprises in Hanoi do not pay much attention to environmental management accounting and have not arranged specialized accounting staff to calculate costs and environmental benefits. and still maintain the traditional accounting system, not integrating environmental management accounting information into the general accounting system. Most businesses believe that it is not necessary to separate environmental costs from production and business costs, because those costs are to serve the production and management activities of the business. Therefore, actual environmental costs incurred are often classified into one of the cost items such as general production costs, business management costs.

Textile companies in Hanoi generate a significant amount of garbage. According to the findings of the interviews, textile and apparel firms in Hanoi generate three major waste streams during the production process:

1. Domestic solid waste includes officials' and employees'

- household and food waste, with an average of 0.3-0.5 kg/person/day.
- Production solid waste includes low-quality raw materials generated during the inspection of raw materials when they are imported to the factory. The amount of this waste is difficult to calculate because it depends on the enterprise's manufacturing scale. Excess threads, labels, packing, discarded adhesive tape, and so on from industry and received orders. Machinery or equipment pieces that break during the maintenance and replacement of equipment.
  - Dangerous garbage (used motor oil barrels, damaged light bulbs, batteries, batteries, and so on). According to the results of the interviews, the average volume of hazardous solid waste generated is 500-2000 kg/ton of product.

Textile enterprises in Hanoi have implemented solid emission norms.

**Table 1:** Solid waste emission norms generated by textile enterprises in Hanoi

Name of materials	Unit	Waste regulations
The primary fabric	m <sup>2</sup>	3%
Lining	m <sup>2</sup>	3%
Threads for sewing of all kinds	m	3%
Packing carton box	pcs	0.5%
Various types of locks	pcs	0.5%
Clothing admiration	pcs	2%
Details of broken machinery and equipment	piece	3%
The product's quality cannot be guaranteed.	yield	2%

Source: Vitas

Despite the fact that certain textile and garment firms in Hanoi are interested in environmental management accounting issues, they are having difficulty implementing them due to restrictions in application methods, a lack of people resources, and technology. One of the constraints of firms using environmental management accounting today is that no index method for evaluating environmental performance has been developed.

#### 4. Conclusion

In practice, the issue of environmental pollution is a pressing issue in both urban and rural areas, with a high number of environmental law violations and fines. To prevent environmental pollution, businesses must invest in waste treatment technologies, wastewater cleaning pipeline systems, dust filtration systems, noise reduction, and costs for workers to operate equipment. So, when environmental-related costs and income arise, businesses need to fully reflect and record them. However, the current state of research shows that textile and garment enterprises in Hanoi have not actually recorded these costs separately. Therefore, the article proposes some solutions to enhance the application of environmental management accounting in manufacturing enterprises in general and textile enterprises in Hanoi in particular.

##### (1) For state management agencies:

- The state must widely disseminate the benefits of environmental protection, consequently encouraging corporate environmental protection efforts. Businesses that care about the environment will have a positive

reputation among the general public and consumers of their products and services.

- Maintain and expand the popularity of environmental-related business awards such as the "green business award," "green technology award," "gold cup for environmental cause," and "Vietnam environmental award."
- The state's legal structure for environmental protection and punishment must be improved.
- On the basis of environmental accounting from the United Kingdom, Australia, and Japan, the Ministry of Finance should establish a general environmental accounting regime and documentation directing environmental management accounting for Vietnamese firms. as well as the specific economic situations in Vietnam.

##### (2) For businesses

- Businesses need to raise awareness of the importance of environmental management accounting, focus on researching and applying environmental management accounting, and consider environmental management accounting as a part of the accounting system. Business math.
- Promoting the power of the Industrial Revolution 4.0, applying modern advanced science and technology to the application of environmental management accounting to achieve high efficiency in environmental management accounting.
- Complete the construction of the environmental performance assessment index system. The environmental management reporting system will provide information about environmental costs to business managers. However, to serve the process of analyzing environmental cost information, managers must rely on a system of environmental performance assessment indicators. Therefore, businesses and policy researchers need to complete the construction of an index system to evaluate environmental performance.

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