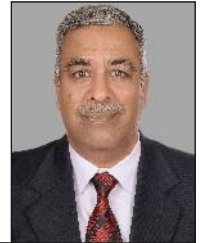


PERSPECTIVES ON ENVIRONMENTAL MANAGEMENT ACCOUNTING



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The Perspective

In today's globalized economy, there is a growing concern about the effect and impact on environment that these companies are exerting to earn higher revenues and increasing their bottom line. Environmental issues are increasingly receiving serious attention around the world, as there are more and more serious environmental threats to the future of humanity. Thus, government, non-governmental organizations as well as the general public are increasingly putting pressure on the companies to become responsible towards the environment and invest substantial amount of money and effort to protect the environment. Therefore, the issue of safeguarding the environment has gained prominence throughout the world in the past few decades, which has in turn made it important for companies to re-think their accounting structure and emphasise on accounting for environmental and other such related issues in the annual reports and management decisions. Thus, the need of the hour for companies is not just analysing financial data but also to take into account various environment related information in the strategic and operational decisions.

What is Environmental Management Accounting

Most business activities have environmental impacts. Almost all environmental impacts also have business costs, such as consuming raw materials, using utilities such as water and energy, and generating waste. Many environmental costs are hidden in overhead accounts. Environmental Management Accounting (EMA) aims at identifying and managing an organisation's total environmental costs by measuring: physical quantities of resources used and waste generated, costs related to resource use and waste, and all other environmentally related costs.

EMA is the generation and analysis of both financial and non-financial information in order to support internal environmental management processes. It is complementary to the conventional financial management accounting approach, with the aim to develop appropriate mechanisms that assist in the identification and allocation of environment-related costs. Environmental accounting is all about monitoring and managing your environmental data, like material consumption or air emissions, so that you can use it to make better business decisions. It's keeping careful track of your environmental resources and impacts the same way you would track your revenue and costs.

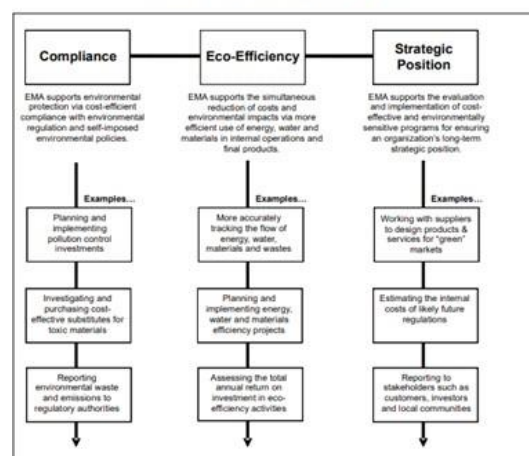
Benefits of EMA

EMA supports managers to make better decisions by informing them about environmental impacts of an organization beyond its boundaries and about environmental issues that influence the organization. This includes economic drivers and consequences of environmental issues. EMA can help identifying environmental problems caused, environmental improvements made and how they relate to the economic performance of the organization. EMA addresses the management information needs of managers for corporate activities that affect the environment, as well as environment-related impacts on the corporation. Depending on the type of organisation,

environmental impacts could include production effluent, recycling, water and power consumption, and carbon footprint. Management information could include:

- Identifying and estimating the costs of environment-related activities
- Identifying and monitoring the use and cost of resources such as water, electricity and fuel, so costs can be reduced
- Making sure environmental considerations form part of capital investment decisions
- Assessing the likelihood and impact of environmental risks
- Including environment-related indicators as part of routine performance monitoring
- Bench marking activities against environmental best practice.

FIGURE 1 – USES AND BENEFITS OF EMA



Adapted from the Guide to Corporate Environmental Cost Management (Berlin: German Environment Ministry, 2003).

Environmental costs can be categorised as follows:

- Prevention costs: costs associated with preventing adverse environmental impacts.
- Appraisal costs: costs of assessing compliance with environmental policies.
- Internal failure costs: costs of eliminating environmental impacts that have been created by the organisation.
- External failure costs: costs incurred after environmental damage has been caused outside the organisation.

Table 2: Environmental Cost Categories

1	2	3	4	5
WASTE AND EMISSION TREATMENT	PREVENTION AND ENVIRONMENTAL MANAGEMENT	MATERIAL PURCHASE VALUE OF NON-PRODUCT OUTPUT	PROCESSING COST OF NON-PRODUCT OUTPUT	ENVIRONMENTAL REVENUES

Source: (Introducing Environmental Management Accounting at Enterprise Level, 2001)

EMA is not merely one environmental management tool among many – rather, EMA is a broad set of principles and approaches that provides the materials/energy flow and cost data critical to the success of many environmental management activities. Terms or tools such as full cost accounting, total cost assessment, cost accounting, materials accounting, life cycle assessment, life cycle costing, and activity based costing are associated with EMA.

Application fields for the use of EMA data are:

- Assessment of annual environmental costs/expenditure
- Definition of quantified targets for improved environmental performance
- Product pricing
- Budgeting and corporate controlling
- Investment appraisal, calculating investment options
- Calculating costs, savings and benefits of environmental projects and projects to increase material and energy efficiency
- Design and implementation of environmental management systems
- Environmental performance evaluation, indicators and benchmarking
- Cleaner production, pollution prevention, supply chain management and design for environment projects
- External disclosure of environmental expenditures, investments and liabilities
- External environmental or sustainability reporting
- Other reporting of environmental data to statistical agencies and local authorities

Tools for EMA

Environmental management accounting (EMA) is the identification, collection, analysis and use of two types of information for internal decision making. The first is physical information on the use, flows and rates of energy, water and materials (including wastes). The second is monetary information on environment-related costs, earnings and savings.

EMA places particular emphasis on accounting for environmental costs. EMA encompasses not only environmental and other cost information, but also explicit information on physical flows and fates of materials and energy. EMA information can be used for most types of management activity or decision making within an organization, but is particularly useful for environmental decision making. Thus EMA incorporates and integrates two of the three building blocks of sustainable development – environment and economics – as they relate to an organization's internal decision-making.

Businesses have become increasingly aware of the environmental implications of their operations, products and services. Environmental risks cannot be ignored, they are now as much a part of running a successful business as product design, marketing, and sound financial management. Poor environmental behaviour may have a real adverse impact on the business and its finances. Punishment includes fines, increased liability to environmental taxes, loss in value of land, destruction of brand values, loss of sales, consumer boycotts, inability to secure finance, loss of insurance cover, contingent liabilities, law suits, and damage to corporate image. Many existing conventional accounting systems are unable to deal adequately with environmental costs and as a result simply attribute them to general overhead accounts. Consequently, managers are unaware of these costs, have no information with which to manage them and have no incentive to reduce them.

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Following are the various tools that can be gainfully utilized for EMA.

Environmental activity-based accounting : Activity-based costing (ABC) represents a method of managerial cost accounting that allocates all internal costs to the cost centres and cost drivers on the basis of the activities that caused the costs. ABC applied to environmental costs distinguishes between environment-related costs and environment-driven costs

Life-cycle Costing: Within the context of environmental accounting, life-cycle costing is a technique which requires the full environmental consequences, and, therefore, costs, arising from production of a product to be taken account across its whole lifecycle, literally 'from cradle to grave'. It summarises all the costs associated with the lifecycle of a product regardless of who bears those costs. This method connects the conventional approach to life-cycle costing to also including environmental and social costs.

Input/output analysis: The input/output analysis is a technique that can provide useful environmental information, sometimes referred to as mass balance. This technique records material flows with the idea that 'what comes in must go out - or be stored'. The purchased input is regarded as 100% and is balanced against the outputs – which are the produced, sold and stored goods and the residual (regarded as waste). Materials are measured in physical units and include energy and water. At the end of the process, the material flows can be expressed in monetary units. Process flow charts can help to trace inputs and outputs, in particular waste. They demonstrate the details of the processes so that the relevant information can be allocated to main activities.

Total quality management : The pursuit of environmental quality management via the development of an Environmental Management System (EMS) can only be achieved if 'environmental audit' is a concomitant feature of such a system. In this respect the organisation becomes self-regulating and the undertaking of environmental audits on a regular basis provides the platform for organisations to adopt a self-critical and analytical posture as part of their routine organisational management processes.

Flow Cost Accounting : Flow cost accounting refers to material and energy flow analysis. Material flow analysis is basically "intended to define the material and energy flows moving through a value creating system (such as business) over a certain period". Incorporating EMA perspective, the flow cost accounting includes "evaluation of cleaner production potential at the plant level, preliminary estimate of waste generation costs, in-depth analysis of selected assessment focuses (quantification of the volume and composition of various waste and energy streams and emissions as well as a detailed understanding of the causes of these waste and energy streams and emissions)

Environmental Balance Scorecard (EBS): EBS or Sustainability Balance Scorecard (SBSC) Environmental perspectives can be incorporated in balance scorecard. Environmental balanced scorecard (EBS) can act as a comprehensive performance management tool in an organisation.

Implementation of EMA

EMA should build its attention-directing function to make environmental risks apparent to clients of accountancy

firms and managers of organizations where accountants are employed.

EMA should be integrated in the planning and control processes of organizations as a key set of tools, such as operational and capital environmental budgeting, environmental investment appraisal and environmental benchmarking based on science-based targets. EMA practice should be strongly linked with identifying opportunities that emerge from the continuously changing global and local stakeholder pressures to reduce environmental risks in line with international conventions, regional and national agreements.

Conclusions

- Increasing awareness of environmental issues by stakeholder implies that organisations can no longer ignore environmental impacts of their activities. Environmental management accounting, as part of environmental accounting, may assist managements to address this issue, particularly by providing related environmental information for decision making purpose. Environmental management accounting is not totally different from conventional management accounting. It is a better management accounting which focuses on incorporating environmental aspects of firm activities, both physical and monetary portions.
- The most significant problem of EMA lies in the absence of a clear definition of environmental costs. This means it is likely that organisations are not monitoring and reporting such costs. The increase in environmental costs is likely to continue, which will result in the increased information needs of managers and provide the stimulus for the agreement of a clear definition. If a generally applicable meaning of environmental costs is established, the use of EMA will probably increase with positive effects for both organisations and the environment in which they operate. In the future it will not only be large companies which can afford to implement EMA but also small and medium-sized enterprises which have fewer available financial resources. An improvement of the current accounting system by adopting an EMA has been suggested as this will bring about environmental benefits and ensure environmental reporting according to legislative requirements by focusing on both physical and monetary environmental

cost information. Reduction of material and energy loss values is necessary to improve environmental and economic performance. Increased transparency of environmental costs and greater accuracy in calculating these costs are needed.

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