Challenges of Environmental Management Accounting – Current Accounting Practices

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Abstract: *The goal of our paper is to reduce some of the international confusion generated on such an important topic by providing a general framework and set of definitions for Environmental Management Accounting (EMA).*

Environmental Management Accounting is a relatively new tool in environmental management defined as the identification, collection, estimation, analysis, internal reporting, and use of materials and energy flow information, environmental cost information, and other cost information for both conventional and environmental decision-making within an organization.

Due to their special role, accountants, since they are the ones with access to the important monetary data and information systems needed for management accounting activities, must to improve both their ability to verify the quality of such information and the skills to use that information for decision making.

Keywords: Environmental Management Accounting, information systems, management accounting activities, management accounting, financial accounting

INTRODUCTION

Taking care of the environment has become one of the most important concerns of the world. Consequently, accounting for the environment and related issues are beginning to take on increasing importance. Even accountants constitute the main audience for this document we believe it should be also of considerable interest to non-accountants. The document has as primarily target **the accountants within organizations**, who are very interested in the potential economic and other internal management benefits of Environmental Management Accounting

(EMA). Meantime **public accountants and auditors**, become more and more interested in tracking or verifying not only financial data but also environment-related information in financial and other reports.

Due to their special role, ***accountants***, since they are the ones with access to the important monetary data and information systems needed for management accounting activities, they must to improve both their ability to verify the quality of such information and the skills to use that information for decision making.

Their relevant activities explain the necessity to constitute a large number of accounting associations. These associations include the Association of Chartered Certified Accountants (ACCA), the Chartered Institute of Management Accountants (CIMA), the Society of Management Accountants of Canada (CMA Canada), the Australian Society of Certified Public Accountants (CPA Australia), the European Federation of Accountants (FEE), the Institute of Chartered Accountants of New Zealand (ICANZ); the Japanese Institute of CPAs (JICPA) and the Philippine Institute of Certified Public Accountants (PICPA). We must also mention the Chamber of Financial Auditors of Romania (CFAR).

1. The new concept about management accounting and its environment

In this context it makes sense that different countries and organizations would adapt general EMA concepts, language and practices to suit their own goals. A certain amount of experimentation and variation is also to be expected because EMA is still a relatively young and emerging field in comparison to conventional management accounting.

1.1. The environmental issues in the past

Not long ago, internal costs associated with environmental performance were relatively low. Just few environmental regulations or some other pressures forced organizations to a better manage in order to minimize their environmental impacts. Now every think is different. There are a lot of changes, and according to these, environment-related costs are increasing in many countries. This is in fact the response of various kinds of pressures, specific for every country. The environment-costs depend on how strong are the environmental regulatory regimes. It's time for a lot of *new regulations* who led to the internalization of a wide variety of additional environment-related costs.

In the past, many companies have simply not considered the full range of environment-related costs needed for sound investment decision making. Organizations need to consider all potentially significant environment-related costs that may influence the return on investment, such as materials flow costs, site recovery costs and any costs associated with certain or likely future regulations. Organizations also need to ensure that environmental managers, technical experts and accountants work together to provide the full picture of environmental issues and the related costs and benefits that are relevant for making an investment decision.

It is also important to distinguish between fixed and variable environment-related costs in investment decision making. Businesses with a majority of fixed costs may find it more difficult to reduce these in comparison to variable costs, some of which can be reduced more easily with no or short payback periods.

1.2. What's happened now?

From this moment, organizations see *costs of environmental compliance rise*, including costs for required pollution and control equipment, pollution monitoring and emission fees and regulatory paperwork and reporting. Pollution clean-up regulations have resulted in increasing liability costs for site remediation and liability-related insurance costs. Pressure from stakeholders, such as local communities, environmental activist groups and business partners, like customers, investors and finance providers, will add environment-related costs, because organizations need to initiate voluntary programs to respond to the interests of these groups.

Organizations, however, recognize the potential monetary rewards of improved environmental performance. They discovered that **enhancing efficiency in the use of energy, water and other raw materials brings environmental improvements** by reducing the use of these resources. The more strategic benefits of improved environmental performance was to take into consideration the ability to design environmentally sensitive products and services for increasingly "green" business and consumer markets. This is the ability to respond more quickly and cost-effectively to an ever-changing environmental regulatory framework, and better relationships with key stakeholders such as finance providers and local communities.

For any organization to manage in an effectively way the environment, taking into consideration costs and benefits mentioned above, is necessary various types of expertise, including environmental, technical, accounting and finance, marketing and public relations, and general management.

That why, from now, the role to play for **accountants** will be very special because of their access to an organization's monetary information, their ability to improve or verify the quality of such information and their skills in using that information to help business decisions in areas such as investment appraisal, budgeting and strategic planning.

1.3. Why do we need to care now about environmental issues?

The whole world changed so much in its every essential aspect, so as a consequence, was affected all the business of world. That why organizations and even accountants are concern about environmental issues. At the beginning, many internal and external stakeholders are showing their increasing interest in the environmental performance of organizations[1]. So we can mention, like an example, the employees affected by pollution in the work environment. Much more, external stakeholders include communities affected by local pollution, environmental activist groups, government regulators, shareholders, investors, customers, suppliers and others.

No doubt that the types and intensities of environmental pressures can vary widely from country to country, from a business sectors to another.

Consequently, it is safe to say now, that environmental pressure forced many organizations to look for new, creative and cost-efficient ways in order to manage and minimize environmental impacts.

[1] *Information for Better Markets, Sustainability: the Role of Accountants* (London: Institute of Chartered Accountants of England and Wales, 2004).

2. Management accounting and financial accounting – the new perspective about accounting systems

Around the world **accounting systems**, depend on the size of organization, the type, which must be different if it is a private company or a government institution, the host country, etc. Those are only some reason who can explain a large and various types of **accounting systems.** But there are some more factors of influence, like: specific laws, a widely variety of activities, with different types, goals and levels of accounting systems. Around the world this accounting systems can be difficult to be used in any other context except those for who they was created from the beginning.

For a better understanding of this topic we can give a brief description of *some common accounting concepts and language, both for accountants in countries that may have different accounting languages and practices*, as well as for *any non-accountant readers who may not be familiar with accounting terminology at all*.

In order to emphasize the difference, we must admit also that there are two broad categories of accounting which typically take place within an organization**management accounting** (MA) and **financial accounting** (FA). Generally speaking, **financial accounting** *tends to refer to accounting activities and the preparation of financial statements directed to external stakeholders*, ***while*** **management accounting** *focuses on supplying information to organization management for internal decision making*.

2.1. Financial Accounting

Focuses on several types of financial information, **Financial Accounting** is mainly designed to satisfy the information needs of external stakeholders , such as investors, tax authorities and creditors, all of whom have a strong interest in receiving accurate, standardized information about an organization's financial performance. There are national laws and international standards, which specify how different financial items should be treated. An organization's financial statements provide **information on annual revenues and expenditures in an Income Statement**. **The Balance Sheet** reports assets, liabilities and equity at a specified date. In addition, the financial statements include **a Cash Flow Statement**. Thus, *Financial Accounting activities* ***include***: *data collection, account balancing, auditing of the financial statements and external reporting*.

2.2. Management Accounting

Instead, **Management Accounting** *primarily focuses* on satisfying the information needs of internal management. Although there are accepted good practices for MA, these ones are generally not regulated by law. Each organization can determine which Management Accounting practices and information are best suited to its organizational goals and culture.

On its turn, **Management Accounting** ***focuses*** on both monetary and non-monetary information that inform management decisions and activities such as planning and budgeting, ensuring efficient use of resources, performance measurement and formulation of business policy and strategy. The collective goal of all this is to create, protect and increase value for an organization's stakeholders. Thus, *Management Accounting activities* ***include****: data collection as well as routine and more strategic analysis of the data via various techniques (such as capital investment evaluation) designed to address specific management needs*.

2.3. The point of view of IFAC about MA and FA

According to the **International Federation of Accountants (IFAC) analysis**, the leading-edge practice of MA has **shifted** beyond information provision **to focus on the reduction of waste** (*the reduction of resource loss*) **and the generation of value** (*the effective use of resources*). In other words, leading-edge MA centers on the use of resources, which are defined as "monetary and physical" resources, as well as information itself, along with the other resources an organization creates and uses, such as "*work processes and systems, trained personnel, innovative capacities, morale, flexible cultures, and even committed customers*."

In organizations where actual MA practices have kept pace with these trends, the role of management accountants has *evolved accordingly*: from information tracking to more strategic roles in policy and planning.

There are, of course, many links between an organization's FA and MA practices. For example, bookkeeping can be seen as a data collection process that generates information for both internal and external audiences. Total costs and earnings that may be calculated for MA purposes are related to the organization-wide revenues and expenditures collected for financial reporting purposes. Most companies, particularly small and medium-sized ones, do not have an independent MA system; they simply use data initially developed for FA purposes for internal decision mak - ing as well as for external reporting, perhaps with a few minor adjustments.

3. What is environmental management accounting?

Environmental Management Accounting has no single, universally accepted definition. According to IFAC's Statement *Management Accounting Concepts*, EMA is: "*the management of environmental and economic performance through the development and implementation of appropriate environment-related accounting systems and practices. While this may include reporting and auditing in some companies, environmental management accounting typically involves life-cycle costing, full-cost accounting, benefits assessment, and strategic planning for environmental management.*"

A complementary **definition** is given by the United Nations Expert Working Group on EMA, which more distinctively highlights both the physical and monetary sides of EMA. This definition was developed by international consensus of the group members, representing 30+ nations. **According to the UN group**:

EMA is broadly defined to be the identification, collection, analysis and use of two types of information for internal decision making:

- ***physical information*** *on the use, flows and destinies of energy, water and materials (including wastes)* and
- ***monetary information*** *on environment-related costs, earnings and savings*[1].

3.1. Management Accounting Concepts of IFAC

These two definitions highlight the broad types of information organizations typically consider under EMA, as well as some common EMA data analysis techniques and uses. In the real world, EMA ranges from simple adjustments to existing accounting systems to more integrated EMA practices that link conventional physical and monetary information systems. But, regardless of structure and format, it is clear that both MA and EMA share many common goals. And it is to be hoped that EMA approaches eventually will support the IFAC proposals in *Management Accounting Concepts* that, in

[1] United Nations Division for Sustainable Development, *Environmental Management Accounting, Procedures and Principles*, 2001.

leading-edge MA, "*in attention to environmental or social concerns are likely to be judged ineffective*," and that "*resource use is judged effective if it optimizes value generation over the long run, with due regards to the externalities associated with an organization's activities*."

3.1.1. Physical Information under EMA

To evaluate in a correct way its costs, an organization must collect not only monetary data but also nonmonetary data about: materials use, personnel hours and all other cost involved like materials-driven costs. The cost of materials and materials-driven costs are very important for many reasons, because:

a) use of energy, water and materials, as well as the generation of waste and emissions, are directly related to many of the impacts organizations have on their environments

and

b) materials purchase costs are a major cost driver in many organizations[1].

Energy, water and other materials are purchase by organizations to develop their activities. In a manufacturing setting, some of the purchased material is converted into a final product that is delivered further to customers.

But there are many other situations, when in the process of ***manufacturing operations*** result wastage (materials that were intended to go into final product but became instead waste because of product design issues, operating inefficiencies, quality issues, etc.) Even as a result of manufacturing operations are used energy, water and materials, which are never find again into the final product, these are indispensable to manufacture the product. Of course that many of these materials eventually become waste streams that must be managed.

There are also the ***non-manufacturing operations*** (for example, agriculture and live stock, resource extraction sector, service sector, transport, the public sector) which use also a large amount of energy, water and other materials to help run their operations. All of these, depending on how those materials are managed, can lead to a significant generation of waste and emissions. It's mean pollution.

Obviously these materials have a negative impact on the environment, which can really affect the health of both humans and natural ecosystems, including plants and animals. As an imminent effect: air, water or land can end up polluted or, even worse, contaminated.

But the "story" is not at all finished when the product is ready to be sold. **Now it's about the second broad area** of materials-related environmental impact. It means the potential impact of the physical products (including by-products and packaging) produced by a manufacturer. These final products have environmental impacts when they leave the company. A classical example is when a product ends up in a landfill at the end of its useful life. There is a possibility to reduce the potential environmental impacts of products by changes in product design, such as decreasing the volume of paper used in packaging or replacing a physical product with an equivalent service, etc.

Also, in many manufacturing plants, most of the materials used become part of a final product rather than part of waste or emissions, and as a result, the potential environmental impact of products is high, so the potential environmental benefit of product improvements.

Tracking and reducing the amount of energy, water and materials used by manufacturing, service and other companies can also have indirect environmental benefits upstream, because the extraction of almost all raw materials has environmental impacts.

[1] M. Strobel, *Flow Cost Accounting* (Augsburg, Germany: Institute for Management and Environment, 2001).

To effectively manage and reduce the potential environmental impacts of waste and emissions, as well as of any physical products, an organization must have accurate data on the amounts and destinies of all the energy, water and materials used to support its activities. It needs to know which and how much energy, water and materials are brought in, which become physical products and which become waste and emissions. This physical accounting information does not provide all of the data needed for effectively managing all potential environmental impacts, but is essential information that the accounting function can provide.

For some organizations that own or control large amounts of property (agricultural operations, timber companies, oil companies, mining operations, etc.) is very important to do physical accounting. Materials purchase costs are a major cost driver for many organizations. The physical accounting information collected under EMA is, therefore, key to the development of many environment-related costs. The physical accounting and monetary accounting sides of EMA are integrally linked in many ways.

3.1.2. Monetary Information under EMA

Depending on the intended uses of the cost information, an organization's view of what is "environmental" its economic and environmental goals and other reasons, organizations define environment-related costs differently, Two of the most widely used schemes for defining and categorizing organization-level environment-related costs for EMA purposes are those of the US Environmental Protection Agency[1] and the Japanese Ministry of Environment[2], but there are many other examples.

Cost taxonomies developed for the purposes of financial reporting[3] and national reporting[4] are also prominent, and have influenced the kind of environment-related cost information collected and reported to external stakeholders.

4. Uses and benefits of EMA

EMA is particularly valuable for internal management initiatives with a specific environmental focus, such as cleaner production, supply chain management, "green" product or service design, environmentally preferable purchasing and environmental management systems. As well, EMA-type information is increasingly being used for external reporting purposes. Thus, EMA is not merely one environmental management tool among many. Rather, EMA is a broad set of principles and approaches that provides the data essential to the success of many other environmental management activities. And, since the range of decisions affected by environmental issues is increasing, EMA is

1 *An Introduction to Environmental Accounting as a Business Management Tool: Key Concepts and Terms (Washington: United States Environmental Protection Agency, 1995).*

2 Japanese Ministry of the Environment, *Environmental Accounting Guidelines,* 2002.

3 United Nations Conference on Trade and Development, *Accounting and Financial Reporting for Environmental Costs and Liabilities*, 1999; European "Commission Recommendation of 30 May 2001 on the recognition, measurement and disclosure of environmental issues in the annual accounts and annual reports of companies."

4 Eurostat, *Definitions and guidelines for measurement and reporting of company environmental protection expenditure,* 2001; European "Commission Regulation (EC) No 1670/2003 of 1 September 2003); United Nations, *Handbook of National Accounting: Integrated Environmental and Economic Accounting,* 2003.

becoming more important, not only for environmental management decisions, but for all types of management activities.

5. Challenges of EMA's current accounting practices

Several limitations of conventional management accounting systems and practices can make it difficult to effectively collect and evaluate environment-related data. These limitations can lead to management decision making being based on missing, inaccurate or misinterpreted information. As a result, managers may well misunderstand the negative financial consequences of poor environmental performance and the potential costs and benefits of improved environmental performance. Some of the culprits are limitations of general management accounting as practiced in some organizations. Other limitations are more specific to environment-related information.

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