



CIMA Global Academic Research Programme

An exploration of the implementation and usefulness of environmental management accounting

A comparative study between
Australia and Sri Lanka



Key conclusions

- ▶ Environmental management accounting (EMA) is an emerging field. Together with traditional accounting, the use of EMA practices as applied to environmental factors such as carbon and energy is increasingly becoming a mainstream practice in companies.
- ▶ Many aspects of EMA practices are not strategically integrated into the corporate decision-making process, with little alignment between EMA and mainstream accounting within finance functions.
- ▶ There is significant potential for EMA to play a greater role in management accounting. Yet, its transition from a traditional accounting function to a more holistic accounting function (which deals with both physical and monetary environmental information) is the most challenging task for companies. A more holistic approach which extends the range of EMA tools and techniques would help to build a comprehensive accounting and control system for long-term corporate sustainability.
- ▶ Formal training and education in EMA practices would support the development of the actual implementation of EMA in practice. There is potential for professional accounting bodies to incorporate EMA in education programs to meet the needs in corporate practice.

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Abstract

This paper reports the findings of an exploratory study on the usefulness and implementation of environmental management accounting (EMA) practices in Australia and Sri Lanka. To improve corporate sustainability management practices, EMA has been increasingly adopted by corporations throughout the world, but prior studies focus mostly on developed countries (e.g., Europe, Australia and the U.S.).

Considering that several multinational companies operate in developing countries, particularly in Asia, research focusing only on the implementation of EMA practices in developed countries does not provide a comprehensive picture of the global status of EMA.

In addition, the challenges of environmental sustainability such as global warming and water scarcity are found worldwide, thus they require actions from both developed and developing nations.

By investigating the similarities and differences between actual EMA practices and their implementation in Australia (a developed country) and Sri Lanka (a developing country), this study finds insightful outcomes relating to EMA implementation and its drivers and barriers within companies in both countries. Using a survey, we solicited views from 50 corporate managers in Australia and 81 corporate managers in Sri Lanka.

This was followed up by interviews with 18 managers in Australia and 31 managers in Sri Lanka. Our findings show that EMA practices are increasingly adopted in both countries, but Australian companies focus more on the aspect of external reporting to satisfy their local audiences, while Sri Lankan companies see EMA as an opportunity to transform and enhance internal processes.

Also, many aspects of EMA practices are not strategically integrated into corporate decision-making processes, with little alignment between EMA and mainstream accounting or finance functions. The study found that Sri Lankan companies have better knowledge and professional expertise in EMA, mainly due to better formal training offered through institutions such as CIMA, but companies in both countries claim that more effort is needed to integrate and align EMA with traditional accounting systems.

Introduction

Corporate sustainability is today's watchword. The leaders of different countries and corporations throughout the world would do well to bear this in mind when implementing their day-to-day business decisions and operations. As corporate leaders and executives become more aware of the array of challenges to sustainability, their companies have sought a range of accounting and assurance practices to identify and manage sustainability related risks and opportunities (Bebbington et al., 2014; Schaltegger and Burritt, 2010; Lee and Vachon, 2016). Over the past decade, environmental and sustainability management accounting (EMA) has evolved, so that today's corporate managers should be able to understand how management accounting tools and systems can contribute to supporting sustainable management (Burritt and Schaltegger, 2010; Unerman and Chapman, 2014).

The implementation of corporate environmental and sustainability management practices not only involves setting related sustainability goals, but also entails measurements and evaluations regarding progress towards the achievement of those goals (Gunarathne and Lee, 2015). In order to implement and ensure the success of these sustainability strategies, there should be proper monitoring, measurement and evaluation of the progress towards the achievement of those goals (Maas et al., 2016). As Schaltegger et al. (2017) point out, measurement and management accounting is important for corporate sustainability because it provides vital information for a firm's corporate decision makers and multi-stakeholders.

The use of traditional management accounting systems has been questioned for its lack of relevance and limited usefulness (Schaltegger and Burritt, 2010). Environmental and sustainability management accounting (EMA) takes a management information approach, using a set of tools which supports corporate managers in considering sustainability when making decisions (see next page). This perspective highlights the role of management accounting in improving corporate sustainability performance (Burritt and Schaltegger, 2010). However, many studies have been done in the context of 'rich' or developed countries, without consideration for developing countries. At the firm level, corporate sustainability being contextual and dynamic, the actual implementation and usefulness of EMA in developing countries may differ from that in developed countries (Lee and Schaltegger, 2018).

It is important to clearly understand the similarities and differences between developed and developing countries in terms of EMA implementation and levels of usefulness in practice. Thus, there is a need for research into the role of EMA in both developed and developing countries. To conduct our empirical research for this study, we selected Australia (a developed country) and Sri Lanka (a developing country). As Schaltegger et al. (2014) show, Australia and developed nations demonstrate high levels of EMA awareness. Australia has a traditionally strong focus on mining and agricultural industries while its secondary sector consists of vibrant banking and tourism industries. Despite the high levels of accounting practice in the Australian corporate sector, little is known about the actual implementations of EMA tools and approaches in corporate management accounting practice. Being a developing country, Sri Lanka is currently facing a variety of environmental problems as it strives for economic growth. Developing countries such as Sri Lanka face greater difficulties than developed countries in dealing with environmental problems due to inadequate environmental legislation and law enforcement, weak governance systems, and lack of institutional capacity and social infrastructure (Gunarathne and Lee, 2019). However, interestingly, Sri Lanka has the highest number of CIMA professional management accountants outside the UK (Gunarathne and Senarathne, 2018) whose role (mainly as CIMA professionals) in Sri Lanka is of great significance. Since this study requires a comparative sample from developed and developing countries, Australia and Sri Lanka offer the ideal context for our research. With our sample comprising Australian and Sri Lankan corporate managers and professional management accountants in Australia and Sri Lanka, this research focuses on actual corporate EMA implementation within the broad discourse of corporate sustainability management and environmental management accounting.

Environmental Management Accounting (EMA)

EMA can be regarded as the identification, collection, analysis and use of two types of information mainly for internal decision-making: physical information (on the use, flows and destinies of energy, water and materials) and monetary information (on environment related costs, earnings and savings) (Burritt et al., 2002). Thus EMA can be considered to be the interface between inwardly focused, management accounting and environmental management strategies (Bennett et al., 2002). In essence, it is a decision support tool which facilitates the environmental management strategies of an organisation. In this context, "decision-making" refers to the purposes for which tools for sustainability accounting are used and they include; motivating continuous improvement, managerial decision-making, external reporting and monitoring internal compliance (Pasetti et al., 2014). Some EMA tools and techniques include;

- ▶ Energy accounting
- ▶ Water management accounting
- ▶ Material and waste accounting (including Material Flow Cost Accounting) — Life cycle accounting
- ▶ Sustainable Balanced Scorecard (SBSC)
- ▶ Carbon management accounting
- ▶ Eco-control

Some of these EMA tools and techniques can deal with a specific focus area such as energy in energy accounting and CO2 emissions in carbon management accounting, while other tools such as SBSC and life cycle accounting are integrative tools to deal with several environmental focus areas.

Objectives

- ▶ To investigate the actual implementation of corporate EMA tools and techniques in developed (Australia) and developing (Sri Lanka) countries.
- ▶ To investigate why and how managers use EMA tools and techniques to enhance corporate environmental sustainability.¹
- ▶ To investigate the importance and usefulness of EMA and its impact on management accounting practice in corporate sustainability management.

Research methodology

To achieve the research objectives, we use a sequential mixed method approach involving a survey and follow-up semi-structured interviews. In particular, we use a comparative analysis for survey data and thematic analysis for qualitative data. A sequential mixed methods approach gives more insight through the combination of quantitative and qualitative approaches, and thus provides a more comprehensive understanding of the research problems (Creswell, 2013). Our targeted samples were leading companies in Australia and in Sri Lanka, thus we focused on the top 200 companies listed on the Australian Stock Exchange (ASX200) and the top 150 companies listed on the Colombo Stock Exchange (CSE) (see Table 1).

Table 1: Project summary

Objective	Status of implementation and usefulness of environmental and sustainability management accounting
Countries	Australia and Sri Lanka
Method	Online survey and semi-structured interviews
Participants	Survey: 50 managers in Australia and 81 managers in Sri Lanka Interviews: 20 managers in Australia and 31 managers in Sri Lanka
Scope	Australian Stock Exchange: ASX 200 companies Colombo Stock Exchange: CSE 150 companies

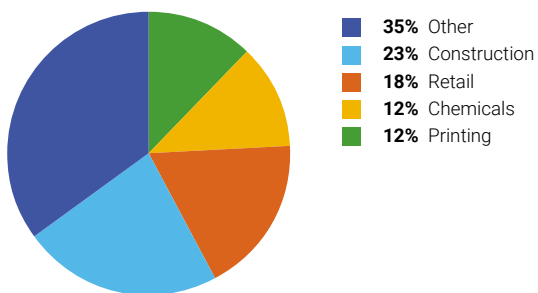
¹ In EMA, researchers have pointed out that there is a difference between data suppliers and users. Schaltegger and Zvezdov (2015) identify that accountants are partially involved in sustainability accounting practice but mainly exert a gate-keeping role between sustainability managers and higher management. However, in this study we have not analysed this distinction of data suppliers and users in detail, but rather we label both categories as sustainability managers.

Our sequential mixed methods approach involved a first phase of quantitative data collection, where we asked corporate managers in both countries to participate in an online survey. With several follow up actions, a total of 50 participants in Australia (25% response rate) and a total of 81 participants in Sri Lanka (54% response rate) responded, providing an overview of the actual implementation of EMA practices in both countries. In Australia, respondents are mainly from companies in the construction, retail, chemicals and transportation industries (see Figure 1).

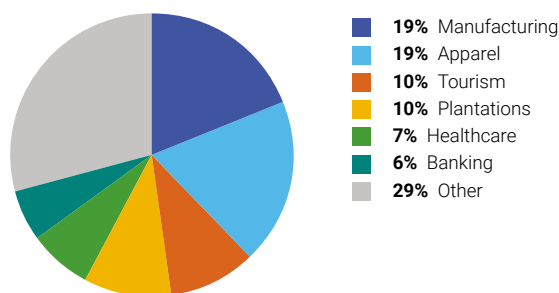
Respondents from Sri Lankan companies are plantation managers, and managers from companies in the manufacturing, tourism, banking and construction industries.

Figure 1: Survey respondents

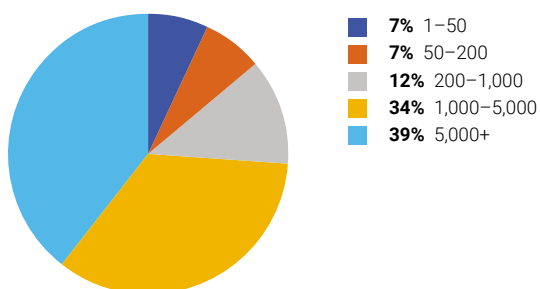
Industry Sector – Australia



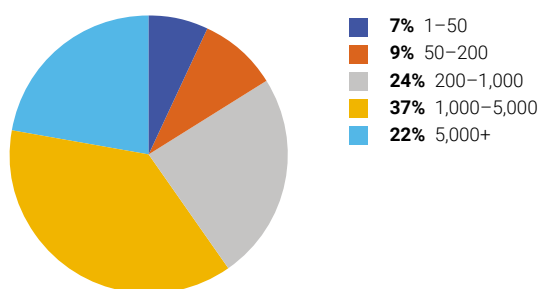
Industry Sector – Sri Lanka



Company size – Australia



Company size – Sri Lanka



In the second phase of the study we applied a qualitative design to complement the data from the survey in order to produce more complete knowledge to inform theory and practice. In particular, we conducted semi-structured interviews with corporate managers from the ASX and CSE listed companies to understand why, how and to what extent EMA practices are implemented.

In total, 18 corporate managers in Australia and 31 corporate managers in Sri Lanka took part in the interviews (see Tables 2 and 3). The survey instrument had an option to indicate the respondent's willingness to participate in the interviews. In addition to the companies who had indicated their willingness, several other companies were also approached particularly in Sri Lanka by contacting responsible persons who are in charge of sustainability management and accounting related matters.

Hence the interview participants were selected based on their willingness and accessibility. During the semi-structured interviews, key questions were asked to identify the drivers of, and barriers to, EMA; the roles and the impact of EMA in corporate sustainability management; and the role of the accounting or finance departments in the monitoring, measuring and reporting of environmental sustainability performance.

The interviews were digitally recorded and fully transcribed. The targeted interviewees were those responsible for the collection of firms' accounting information for sustainability (i.e., management accountants, financial accountants, sustainability managers, environment, health and safety (EHS) managers, operation and production managers or similar) and those responsible for the management of the collected accounting information (i.e., strategic planning managers, business controllers, general managers, PR and marketing managers or similar).

The investigation further benefited from the analysis of documents and information publicly available from the participating companies in order to triangulate primary findings with secondary data.

Table 2: Interview participants – Australia

Organisation	Industry sector	Interviewee
1	Banking	Manager, Corporate Sustainability Reporting
2	Marketing	CSR and Sustainability Manager
3	Construction	Group Environmental Advisor
4	Printing	Sustainability Manager
5	Healthcare	Environmental Sustainability Manager
6	Mining	Environmental Advisor
7	Chemicals	Corporate Sustainability Manager
8	Transportation	Strategy, Productivity and Sustainability Manager
9	Pharmaceuticals	Vendor Auditing Manager
10	Construction	Group Environmental Manager
11	Food and beverage	Environment, Sustainability and Safety Manager
12	Printing	Sustainability Strategy and Communications Manager
13	Construction	General Manager
14	Retail	Group Sustainability Manager
15	Diversified	Environmental Services Manager
16	Construction	CSR and Sustainability Manager
17	Retail	Head of Sustainability
18	Retail	Environment and Sustainability Manager

Table 3: Interview participants – Sri Lanka

Organisation	Industry sector	Interviewee
1	Tourism	Assistant General Manager – Sustainability Operations
2	Manufacturing	Environment, Health and Safety Engineer
3	Tourism	Group Engineer
4	Manufacturing	Finance Manager, Assistant Accountant
5	Manufacturing	Finance Manager
6	Manufacturing	Director/General Manager, Accountant, Assistant Accountant
7	Apparel	Manager – Environmental Sustainability
8	Healthcare	Maintenance Engineer
9	Apparel	Executive – Finance and Sustainability, Manager – Finance and Sustainability
10	Apparel	Head - Fabric Sourcing, Testing and Research
11	Plantations	Sustainability Manager
12	Manufacturing	Systems Compliance Manager
13	Personal care	Director/General Manager, Accountant, ISO Officer
14	Banking	Officer – CSR and Sustainability
15	Food and beverage	Assistant Manager – Operational Excellence
16	Apparel	Marketing Manager
17	Printing	General Manager
18	Engineering	Finance Director

Organisation	Industry sector	Interviewee
19	Diversified	Assistant Manager – Group Sustainability
20	Apparel	Manager – Environmental Engineering, Environment and Energy Management
21	Tourism	Engineering Manager
22	Apparel	Sustainability Manager
23	Plantations	Finance Executive
24	Manufacturing	Utility Manager
25	Banking	Head of Corporate Social Responsibility
26	Plantations	Senior Manager of HR and Corporate Sustainability
27	Construction	Head of Sustainability, Risk Management and Sourcing
28	Construction	Manager of Group Sustainability and Special projects
29	Healthcare	Finance Manager
30	Insurance	Finance Executive
31	Retail	Customer Relationships Manager

Main findings and their implications for practice

The key findings of this study are summarised in Table 4. We elaborate on the findings in detail below.

Table 4: Key findings

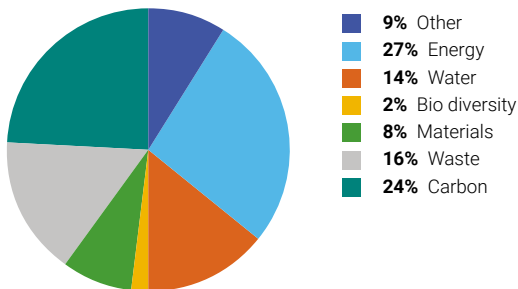
		Australia	Sri Lanka
Internal drivers for EMA	Differences	Cost reduction	Tool to reduce waste
	Similarities	Managing risks	
External drivers for EMA	Differences	Sustainability reports	Identifying new markets
	Similarities	Attracting investors and regulatory compliance	
Barriers to EMA	Differences	Lack of EMA expertise	Too costly
	Similarities	Lack of systems flexibility and top-level involvement	
Impact of EMA	Differences	Improved quality of reporting	Efficiency / new technologies
	Similarities	Improved carbon footprint controlling	
Applied EMA practice	Differences	Carbon accounting established	Carbon accounting emerging
	Similarities	Energy and biodiversity	

Energy and carbon accounting is the most common EMA practice

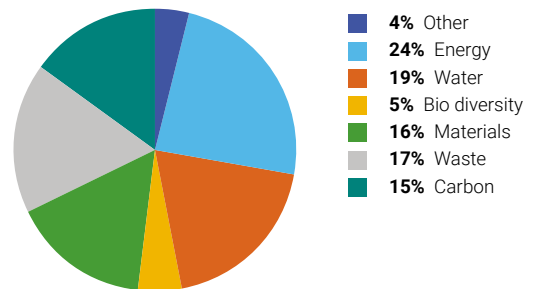
Survey results indicate energy is the most dominant environmental focus in both countries while water, carbon and waste are other important environmental focus areas in EMA (Figure 2).

Figure 2: Environmental focus areas for EMA

Australia



Sri Lanka



The high concern for carbon in the Australian context can be attributable to the increased focus on carbon management and reporting at the national and corporate level. For instance, as per the National Greenhouse and Energy Reporting Scheme (NGERS) introduced in 2007, Australian corporations with certain thresholds of greenhouse gas emissions, energy consumption and energy production must report their information on an annual basis.

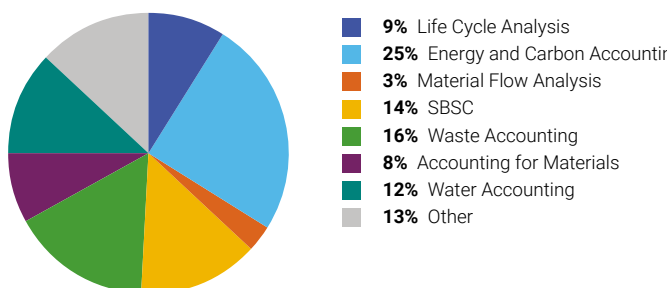
However, the same focus on carbon management is not displayed by the Sri Lankan firms due to the underdeveloped institutional environment that does not necessitate the companies to report on their emissions. However, as described in the next paragraph this situation has now begun to change in Sri Lanka.

Energy and carbon accounting emerged as the most applied EMA practices in Australia and in Sri Lanka (Figure 3). Both countries seem to follow the Greenhouse Gas (GHG) Protocol of World Resource Institute (WRI)/ World Business Council on Sustainable Development (WBCSD) when calculating the carbon footprint.

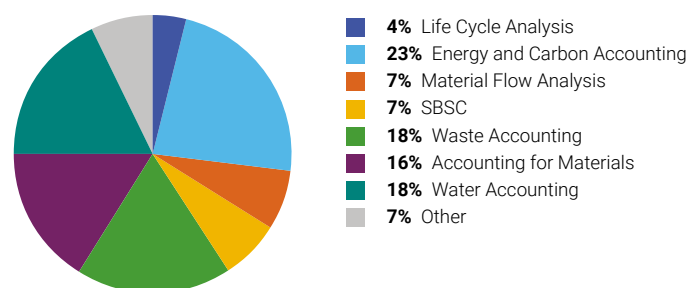
In most of the companies, carbon footprint calculation is outsourced, and a specialist in the field carries out the analysis and measurement for a given year.

Figure 3: EMA tools and techniques used by companies

Australia



Sri Lanka



Our survey revealed that half of the Australian companies have been engaged in carbon accounting for more than five years compared to only 20% of Sri Lankan companies. However, almost 50% of Sri Lankan companies have begun to implement carbon accounting in the last five years, which can be attributed to the high energy costs that make up a large portion of the cost structure in Sri Lanka. A focus on energy efficiency is increasingly regarded as an opportunity for cost savings. A sustainability manager in a manufacturing company in Sri Lanka stated:

"Energy costs alone account for more than 30% of our cost structure, so we constantly focus on avenues where we can save energy costs, mainly as a means of improving our bottom-line."

Interviewee, Sri Lanka

"In our hotels we have installed solar systems, energy efficient lightings and air conditioning and used bio-mass plant for steam production. Separate metering and other close monitoring and reporting mechanisms we have in place enable us to exercise better control on the energy cost."

Interviewee, Sri Lanka

The focus on energy cost saving has been part and parcel of traditional cost control for a considerable period even before the environment became a concern. Although the traditional book keeping recorded the energy suppliers, amounts used and cost, the recent environmental sustainability orientation has invigorated the energy saving practices with the use of responsibility accounting.

"We have separate metering for all machinery to monitor energy consumption. We compare energy usage on a daily, weekly and monthly basis with our (key performance indicators) KPIs and historical records to ensure everything is on track. We immediately take corrective actions if any deviations are identified and reported."

Interviewee, Sri Lanka

"We compare the energy consumption per guest night in all our [four] hotels. If a hotel is having a higher consumption, the engineers are encouraged to suggest their actions plans."

Interviewee, Sri Lanka

This highlights that the management is able to identify energy consumption to cost centres such as machinery or factories (hotels) to facilitate control actions for cost reductions or savings. It has also been facilitated by the practice of responsibility accounting where managers are held personally responsible for energy consumption.

We also found that internal and external stakeholders, for example, global investors and/or a company's board which oversees climate risk, use carbon and associated climate data not just for risk management but also as a way of finding new opportunities and improve business processes on an operational level:

"...the [EMA] information is already used internally for business improvement and [...] is recorded in board reports [...]. We found that it definitely improved."

Interviewee, Australia

In addition, a company's decision as to whether carbon or energy management is integrated into its business strategy seems to be a determining factor in gaining investor recommendations and funding. In affirmation of this view, a manager of an Australian company stated:

"If we're in a market where you're always looking to raise capital, obviously, it can become a competitive advantage to get funding. A lot of businesses will fund other businesses that are sustainable, so it's an attraction to investors."

Interviewee, Australia

From our findings, it is clear that carbon and energy accounting are not only seen as cost saving opportunities, but as part of a fundamental financial analysis in the holistic investment process.

As a consequence, we conclude that carbon and energy accounting is on its way to becoming a mainstream component in decision-making, together with traditional financial data. In this context, investors seem to play an important role in the adoption of EMA. We highlight this aspect in the next section.

Key drivers in the adoption and implementation of EMA practices

Participants in Australia and Sri Lanka identified three main drivers for the adoption of EMA: reputation, cost savings and process innovation. Companies in both countries see EMA practices as an essential requirement for gaining business legitimacy. However Australian companies focus more on the reporting side to enhance their reputation, Sri Lankan companies see EMA as an opportunity to find new markets, and as a revenue generating opportunity in the production of sustainable products in the future. Hence for them EMA is a driver for cost saving and process innovation.

"Our reputation is paramount. If we don't have a good reputation, governments won't want to work with us."

Interviewee, Australia

"Our shareholders [investors] continuously look at the sustainability of the business. So we have to ensure we continuously take actions in this direction."

Interviewee, Sri Lanka

"Sustainability accounting (or EMA) enables us to decide whether our process improvements are worthwhile. For instance, we made some process improvement in our printing plant. So, we used a lot of measures (i.e., EMA measures) in evaluating different options before initiating the changes and also after making the process redesign to ensure it yields the expected results."

Interviewee, Sri Lanka

Companies in both countries see the attraction of investors as a main reason for their EMA efforts. The participants in our interviews confirmed that investors seem to value companies which consider long-term sustainability, and that they increasingly integrate EMA information in their reports to investors to aid in decision-making processes. For instance, some investors are vigilant about watching the sustainability rating indices. In turn, companies implement EMA practices to satisfy investor needs.

"The investor rating is the most important issue for us."

Interviewee, Australia

"As a leading corporate entity in the country, we have to always ensure we maintain the corporate image."

Interviewee, Sri Lanka

In some of the investor indices, sustainability is increasingly considered. For instance, investor pressure is mostly visible in Australian companies when they engage in initiatives such as the Carbon Disclosure Project (CDP). The CDP has a great influence on investor rating indices; hence if companies do not participate or have a low score in these indices, investors will fund other businesses which are more sustainable.

"... a super fund would ring up the corporation and say you've only scored a B+ in this particular investor rating index. And so therefore we can no longer recommend you to our clients to invest in. Can you contact this particular investor ratings company and get your rating higher up?"

Interviewee, Australia

Our findings further suggest that EMA is becoming more and more integrated, not only into business strategy, but also in the daily processes which produce results for investor rating indices. Despite the usability of EMA, we also found that companies encounter many obstacles when implementing EMA practices.

Top level management involvement exists, but without accountability

Most companies in Australia and Sri Lanka use or apply EMA practices on a need or case-by-case basis in response to various internal and external pressures. Although most companies acknowledge the value of collecting environmental sustainability information, EMA has not yet become a part of their traditional accounting information systems. The survey and the interviews draw a mixed picture of how companies approach EMA strategically. The participants revealed that top management support plays a crucial role, but the importance of EMA varies from company to company. Some companies in Australia claim that EMA is seen more as a risk minimising strategy than a proactive tool to enhance the organisational performance, thus top management support is low.

"At our top level, the company level, there is no involvement [in EMA]."

Interviewee, Australia

"I do not really see a drive from the top [management]. We have taken many initiatives on our own but it is very difficult to get them through without the top management support."

Interviewee, Sri Lanka

Overall, it seems that although the collection and processing of environmental data has been acknowledged as an important issue at top management levels, participants in the interviews admitted that direct accountability for sustainability at the level of top management is often not given.

"At the moment, it's certainly not the case that our business leaders have a KPI in their job description or in their balanced score card to reduce carbon emissions. We have it as a company as a whole and I report on how we're going against the targets. If we're not going to meet our targets, then the business leaders will be interested in what they can do to help, but really, it's not solved yet for their level."

Interviewee, Australia

On the other hand, we notice the way in which sustainability integration becomes mainstream practice when top level management sets out clear directives for corporate sustainability. This was particularly evident in many Sri Lankan companies.

"Our sustainability division has clearly laid down the sustainability policies and performance areas. Even they have provided us the reporting templates. It has become a part of our job to provide the necessary information for the group's sustainability division."

Interviewee, Sri Lanka

"For us (environmental) sustainability is our business. We do not see it as a separate thing. If you want to do business responsibly you have to seriously consider these aspects (i.e., sustainability) on a routine basis."

Interviewee, Sri Lanka

EMA systems are not aligned with traditional accounting systems

Most companies in Australia and Sri Lanka use separate sustainability or environmental accounting systems to capture data for their sustainability reports.

"EMA is not a feature of our accounting system at this point in time."

Interviewee, Australia

"We have separate formats to collect data to compile the sustainability reports. They are in spreadsheets and our department [i.e., sustainability department] has developed them on our own."

Interviewee, Sri Lanka

As such, these sustainability management systems are somewhat isolated platforms outside of the companies' core functions instead of being an integral part of the organisations' eco-systems and their financial reporting sides. Although the sustainability departments or managers use some data from the companies' accounting systems, we found no company that has fully integrated EMA in its accounting information system except for energy-related information.

"The standard financial data that we would get from finance are things like the cost of waste, the cost of electricity, the cost of gas, all those fundamental inputs and also outputs in terms of waste."

Interviewee, Australia

"From the finance department we get all the cost details of the energy, materials, etc. ... and we [sustainability department] then do our own analysis for decision-making [i.e., to facilitate sustainability-related decisions]."

Interviewee, Sri Lanka

While this is prevalent in both countries, in a handful of companies in Sri Lanka, we witnessed a higher level of integration of sustainability information.

"The cost of material, waste and energy is all integrated into our ERP [Enterprise Resource Planning] system because you can't simply make decisions without such information."

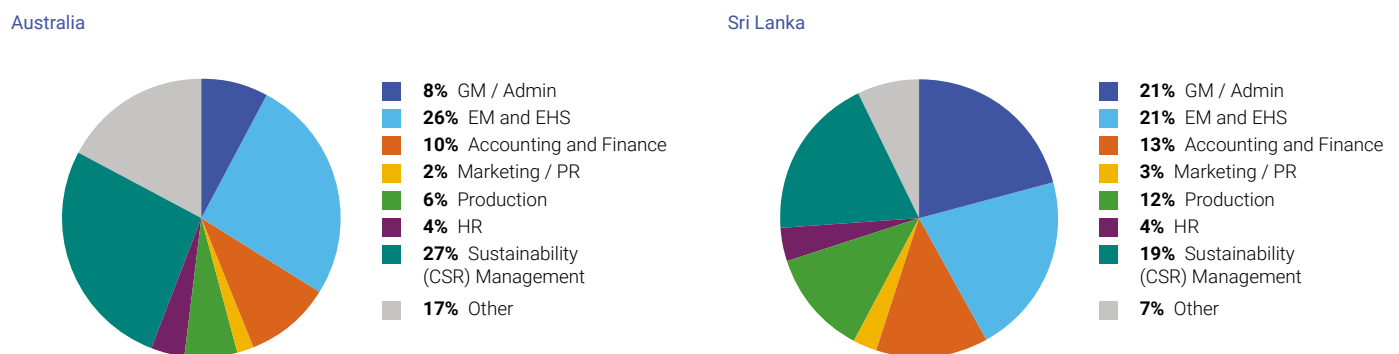
Interviewee, Sri Lanka

Further reflecting on this fragmentation of sustainability information, more than 60% of our respondents both in Australia and Sri Lanka argue that the capture of environmental costs is too difficult due to the lack of flexibility in their financial accounting systems. Moreover, more than half of the companies claim that the adoption of EMA practices is too costly. All this evidence echoes the fact that although sustainability is often integrated into a company's business strategy, the accounting of sustainable or environmental information still sits outside the traditional accounting systems and has not yet reached strategic integration.

Fluid demarcation between collectors and users of EMA information

An interesting finding of the study is the split between EMA information suppliers/collectors and the information users.

Figure 4: Collectors of EMA information



Note: GM/Admin: General Management and Administration; CSR: Corporate Social Responsibility; HR: Human Resources; EM; EHS: Environmental Management and Environment, Health and Safety and PR: Public Relations

According to the survey results, the two major collectors of EMA information in Australia are, on the one hand, sustainability and/or corporate social responsibility managers and, on the other, environmental management and environment, health and safety managers whereas in Sri Lanka it is general management (or administration) and environmental management and environment, health and safety managers (Figure 4). This indicates that in Australia EMA information is collected under a separate function dedicated to sustainability. Further, the results indicate the low level of information collected by the accounting and finance managers in both countries.

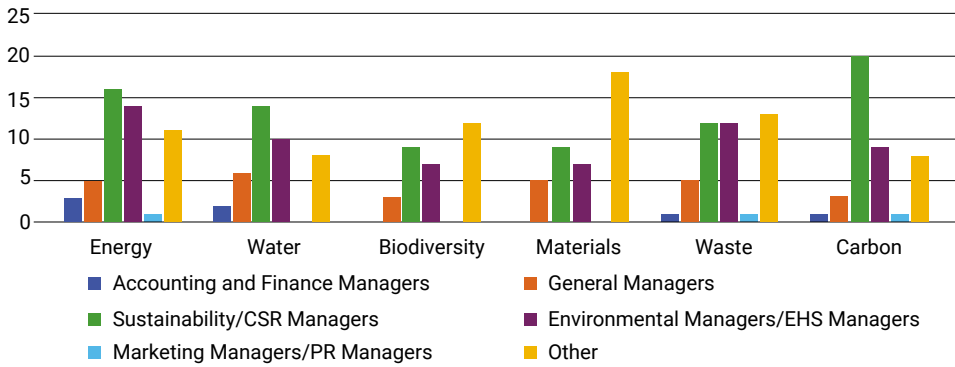
The results also reveal that in Australia and Sri Lanka EMA information is not used (e.g., on biodiversity) or only sparsely used by accounting and finance managers. While this is common to both countries, it is particularly evident in the Australian context. On the other hand, in both countries, the major users of EMA information are sustainability and CSR managers and EHS managers. Further, the results indicate that the Sri Lankan general managers also use all types of EMA information (Figure 5). Considering the users and collectors of EMA information it can be concluded that in the case of EMA the distinction between EMA information collectors and users is unclear. This implies that other departments/professionals are both data suppliers and data users at the same time. For example, EHS managers collect waste-related data for sustainability management and use the collected data for devising waste minimisation strategies. This indicates that these functional managers collect and use EMA for planning, decision-making and control purposes. Although this phenomenon has its own advantages, a danger is the fragmentation of information in different departments without concern for the full benefits of the information collected (Burritt, 2004) [see the next section for more details].

The Lack of EMA integration into corporate organisational management

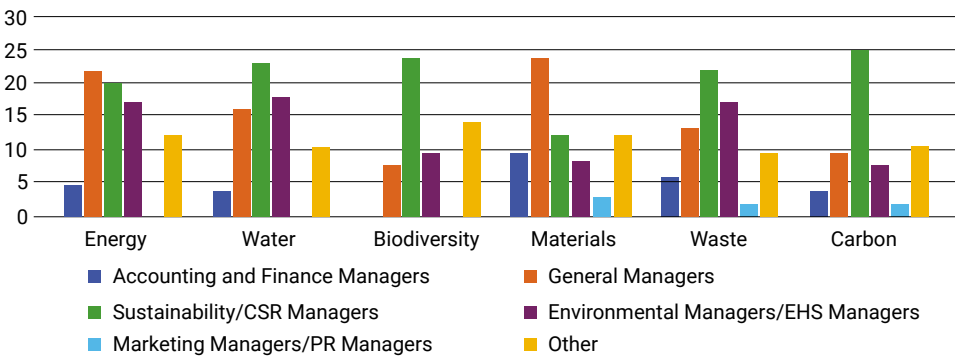
Our findings suggest that although sustainability plays an increasingly strategic role, the measurement and associated management systems to capture environmental data (physical and monetary data) do not seem to be strategically integrated in many companies yet. Instead, companies follow a largely fragmented approach, i.e., their EMA efforts are restricted to topics of interest that satisfy their immediate audiences. We found that one of the main causes for the fragmented EMA approach is the lack of company-wide systems for the use of EMA information and formal training and education in EMA. For example, more than one third of Australian companies admitted that they had only limited or little knowledge about EMA practices. Also, almost 40% of sustainability managers claimed that they do not have enough staff with expertise in EMA. This lack of formal education leads to either outsourcing environmental data collection and analysis or ineffective use of the EMA practices in Australian companies. Interestingly, Sri Lankan companies seem to have better trained staff as less than one third of the companies (compared to almost 40% in Australia) mention the lack of expertise as being a barrier to the implementation of EMA. One of the main reasons for the better level of expertise in EMA in Sri Lanka seems to be the availability of more qualified and/or trained accounting staff or employees. For instance, Sri Lanka has the highest number of chartered global management accountants (CGMA) outside the UK, which seems to play a significant role in the development of knowledge and competence in the adoption of EMA practices.

Figure 5: Users of EMA information

Australia



Sri Lanka



Conclusions

Our study identified three key areas which highlight the practical implications for the management accounting discipline and for company managers.

Firstly, EMA is an emerging field and the use of EMA practices in regard to certain environmental aspects such as carbon and energy reporting is becoming an increasingly mainstream practice in companies alongside traditional accounting methods. Especially in energy accounting, it is noted that the practice of responsibility accounting with the use of energy-related KPIs linked to managerial performance evaluation has enabled the Sri Lankan companies to explore opportunities for cost reduction and cost savings. While Australian companies see EMA as a reporting tool to satisfy stakeholders, Sri Lankan companies use EMA more for greater internal efficiency and for finding new markets. Against this background, companies focus on managing their environmental risks and opportunities while demonstrating to investors that their business models are sustainable. Sustainability becomes a relevant indicator for companies to gain high investor rankings and subsequently receive buyer and customer recommendations.

Secondly, it seems that many EMA practices are not strategically integrated into the corporate decision-making process, with little alignment between EMA and the mainstream accounting or finance functions. The majority of companies in Australia and Sri Lanka see an alignment between the two systems as being too costly and too difficult to implement. Our study identified top management involvement to be a key driver of strategic implementation, but often EMA practices in both countries are implemented on a case-by-case basis.

Thirdly, Australian companies admitted that they had either limited knowledge about EMA or little expertise in carrying out EMA practices. Interestingly, it appears that in Sri Lanka, a country with the highest number of chartered global management accountants (CGMA) outside the UK, the implementation of EMA practices has made much greater progress compared to Australia. Still, the limited or fragmented use of EMA in companies can be attributed to the lack of specific EMA education and training in both countries.

Finally, it is observed that at the operational level, it is sometimes difficult to distinguish between EMA information users and suppliers. It means that many contingent factors strongly influence the differentiation between EMA information users and suppliers.

In this study, all companies acknowledge that EMA will play a greater role in the future, and that environmental management practices will need to have a greater engagement with finance departments. Yet, this transition and implementation phase from a traditional accounting function to a more holistic accounting function – one that deals with both physical and monetary environmental information – is the most challenging task for companies. In order to enable a smooth transition and to have versatile accountants on board who are familiar with environmental management, more formal education is needed. This is where global management accounting bodies such as CIMA can target its members, directing them to play an active role in corporate environmental management.

Key lessons learned

Holistic approach

The survey and interviews provided evidence that certain EMA practices were largely implemented within organisations and considered useful for increasing the reputation, for spot cost saving opportunities and for promote process innovation. However, the usefulness of EMA and the levels of EMA applications are limited in practice due to the lack (or absence) of a structured, holistic approach to EMA. Currently, companies apply carbon and energy accounting mostly to gain a higher investor ranking and use waste and water treatment to save costs. So far, these activities are not 'bundled' and are used rather on a case-by-case basis. A more holistic approach that extends the range of EMA tools and techniques would help to build a comprehensive accounting and control system for long-term sustainability.

Strategic alignment

Participants who mentioned the fragmented approach of EMA practices also often acknowledged that the measurement and reporting of environmental activities was not part of the company's core financial or accounting system. Currently, separate stand-alone sustainability databases and systems are used to collect sustainability information. As pressure rises and investors demand more finance-related information regarding environmentally sustainable activities, integration or an alignment of environmental data systems and traditional accounting systems would be useful in capturing more financial data about environmental activities.

Formal training and education

When comparing the Sri Lankan data and the Australian data, it is interesting to note that in Sri Lanka, where a relatively higher number of accounting specialists have a strong professional background, companies also seem to have staff with greater expertise in EMA. As a result, the importance of implementing formal training and education incorporating EMA practices to help companies to establish environmental management systems cannot be underestimated. Proactive training and education in this emerging field will not only help companies to provide accurate sustainability management information to investors but will also help to implement corporate sustainability practices.

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Acknowledgements

We would like to thank CIMA's General Charitable Trust for funding this research project.

We also thank the companies who participated in the project in Australia and Sri Lanka respectively. In particular we are grateful to the staff and managers who participated in our study.

We would also like to add particular thanks to David M. Herold of Griffith Business School, Griffith University.

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May 2019
ISBN 978-1-85971-874-2

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