Environmental Management Accounting (EMA) for environmental management and organizational change

An eco-control approach

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Abstract

Purpose – The purpose of this paper is to identify the development and implementation of Environmental Management Accounting (EMA) and environmental management at the level of a firm in the hotel sector in Sri Lanka.

Design/methodology/approach – Case study method was used in the study. The primary data were collected through semi-structured interviews supported by observations of various facility centers (on-site assessment). Accounting records such as the Green Book, daily and monthly material and energy records, online resources and various other documents were content analyzed as sources of secondary data.

Findings – The study observed that the hotel had reinvigorated some of its environmental management and EMA practices in an urgent, cost-saving bid when faced with a financial crisis. Having realized their cost-saving potential and strategic benefits, the management developed these selective practices over time into comprehensive practices that are integrated into the daily management process supported by all stakeholders. The development stages of EMA reflect how the hotel moved from a survival phase to an integration phase.

Originality/value – The paper attempts to apply an integrated eco-control approach in an emerging South Asian country, Sri Lanka. Because eco-control of EMA is a new approach in developing countries, this paper provides important insights into the development of eco-control and EMA.

Keywords Sustainable management, Eco-control, Environmental management accounting

Paper type Case study

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1. Introduction

There are numerous reasons that call for organizations around the world to consider its environmental performance seriously (Parker, 2000; Soonawalla, 2006; Lee, 2012). These include, but not limited to, human-made as well as natural disasters such as BP's oil spill in the Gulf of Mexico, hurricanes, the Asian tsunami and global warming. These incidents have resulted in increased media coverage and a growth in public awareness that have led to a mounting demand by stakeholders for organizations to adopt cleaner and safer environmental practices (Burritt *et al.*, 2002a). Environment-friendly practices

have given rise to a body of accounting practices referred to as Environmental Management Accounting (EMA). Despite its lack of a definite boundary or definition, EMA has emerged as an interface between management accounting and environmental management (Bennett *et al.*, 2002). Numerous recent studies on EMA from different perspectives reflect the importance of accounting when pursuing environmental management strategies (Schaltegger *et al.*, 2013).

The term EMA has various definitions [Bartolomeo *et al.*, 2000; Bennett *et al.*, 2002; Burritt *et al.*, 2002b; Burritt, 2004; International Federation of Accountants (IFAC), 2005]. Yet, there is no single, universally accepted definition (IFAC, 2005), despite a fairly common understanding of EMA for the past two decades (Schaltegger *et al.*, 2013). EMA provides physical and monetary information on the use and flow of energy, water and materials *and* monetary information on environment-related costs, earnings and savings (Burritt *et al.*, 2002a, 2002b). This gives rise to two types of EMA systems: monetary EMA (MEMA) and physical EMA (PEMA). MEMA deals with environmental aspects of corporate activities expressed in monetary units, while PEMA focuses on a company's impact on the natural environment expressed in terms of physical units. In addition, EMA distinguishes between *ad hoc* and routine information while focusing on past, current or future time frames and short and long terms (Burritt *et al.*, 2002a). Based on these dimensions of EMA information, Burritt *et al.* (2002a) have suggested a comprehensive framework for EMA and possible tools which can be used. Adoption of EMA has been witnessed throughout the world including developing and developed countries. Much research on EMA has so far focused on developed countries and research on developing countries has started to appear (Herzig *et al.*, 2012 for case studies on South-East Asian economies such as Indonesia, the Philippines, Thailand and Vietnam). However, it is largely unknown how organizations in other emerging economies in South Asia like India, Pakistan and Sri Lanka develop and implement EMA, at a time when South Asia plays an important role in the global economy.

Most of the studies on EMA have focused on the manufacturing sector owing to its significant environmental impacts (Kim, 2002; Kokubu and Kurasaka, 2002; Koefoed, 2010; Setthasakko, 2010; Jalaludin *et al.*, 2011; Lee, 2011). Despite the usefulness of EMA in the service sector industry, it is little known how companies in the service industry adopt and/or implement EMA practices and how these practices develop over time, particularly in emerging South Asian countries (Bouma and van der Veen, 2002; Carmona-Morenoa *et al.*, 2004; Kasim, 2009). Zvezdov (2012) too highlights that the adoption of sustainability accounting practices has hardly been examined to date. Thus, the objective of this study is to identify the development and implementation stages of EMA and environmental management at the level of a firm in the hotel sector in Sri Lanka.

The remainder of this paper is organized as follows: Section 2 presents a review of the relevant literature to develop the research framework. Section 3 deals with the research methodology and Section 4 presents the findings and results. The final section discusses the findings followed by conclusions and implications for further studies.

2. Literature review

2.1 Motivations for adopting EMA

The limitations of conventional management accounting practices have been suggested as the main challenge that restrains the adoption of EMA in following environmental

strategies (Gray *et al.*, 1993; Burritt, 2004; IFAC, 2005; Burnett and Hansen, 2008; Lee, 2011). In explaining the problem of conventional accounting systems, Gray *et al.* (1993) suggest that both the current accounting practices and accounting frameworks hinder environmental initiatives and positively encourage environmentally malign activity. According to IFAC (2005), the limitations in conventional management accounting can lead to management making decisions based on inaccurate or misinterpreted information because relevant information is missing and not available to management. 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.

There are many compelling reasons why organizations should consider the environment in accounting at a time when the environmental pressures that organizations face are increasing in both number and frequency (Medley, 1997; Parker, 2000). These compelling pressures can come from legislators, customers, green groups, the community, bankers, shareholders and acquirers (Medley, 1997; Schaltegger and Burritt, 2006a, 2006b). Whilst the pressure for environmental sustainability comes from various stakeholders, some common benefits that could motivate organizations to pursue environmental sustainability are managing regulatory compliance and business case, responding to stakeholder influences and achieving competitive advantage (IFAC, 2005; Schaltegger and Burritt, 2006a, 2006b; Doody, 2010). Gray *et al.* (1993) suggest that these motivations can be broadly divided into legislative or market-based motivations. Encouraged by these motivations, taking action to protect the environment may provide avenues for additional revenue streams and cost-saving opportunities for an organization [Coltman, 1994; Environmental Protection Agency (EPA), 1995; Certified Management Accountants (CMA), 1999; Bennett *et al.*, 2002; Schaltegger and Burritt, 2006a, 2006b; Doody, 2010; Godschalk, 2010; Lee, 2011]. While these motivations are general in nature, there are more specific factors/reasons that have been identified in relation to the environmental strategies in the hotel sector.

In attempting to identify these specific reasons, Carmona-Morenoa *et al.* (2004) have considered stakeholder influence, chain affiliation and hotel size as contextual factors that decide the environmental strategy of hotels. They found stakeholder influence to be one of the key determinants of a firm's environmental management. In a similar study, Gil *et al.* (2001) identified that age of facilities, size, chain affiliation, stakeholder environmental pressures and the use of operations management techniques exert a lasting influence on the degree of implementation of environmental management practices by hotel firms. However, Kirk (1998) found that there was no association between the characteristics of the hotel in terms of size, ownership and classification and the presence of a written environmental policy. Hence, there is no agreement in the business world as to how environmental strategy influences a hotel's performance empirically. The hotel sector, therefore, reveals a spectrum of factors driving the environmental agenda (Carmona-Morenoa *et al.*, 2004; Chung and Parker, 2008). Yet, consciousness about profit and cost is increasingly needed in the tourism sector as its growth promotes the operators to expand the scale of operations, but economic hard times force the industry to manage cost (Coltman, 1994). Thus, it is vital that organizations understand environmental costs as a potentially powerful management motivator to incorporate environmental variables into mainstream management thinking and decision-making (Parker, 2000).

2.2 Organizational change through environmental strategy and EMA

Numerous guidelines are available to guide the implementation and also sustenance of environmental management practices with the help of environmental cost information and many other factors (Epstein and Roy, 2003; Doody, 2010). IMA (1995) suggest three stages in designing/developing the corporate environmental strategy of an organization: managing regulatory compliance (Stage 1), achieving competitive advantage (Stage 2) and completing environmental integration (Stage 3). In taking a similar view, Sakai (2007) identifies three sustainable environmental management viewpoints as environmental correspondence, environmental conservation and sustainable environmental management in describing the environment efforts of the Ricoh Group in Japan.

Organizations in stage one, as per IMA (1995), develop environmental management programs in response to external regulatory pressure and internal awareness of the risks associated with these pressures. IMA suggests that it is necessary to get top management commitment, develop an environmental policy, prepare an action program to achieve the objectives set in the policy and create an environmental management system during this stage. Sakai (2007) identifies this stage as environmental correspondence in which an organization passively corresponds to external pressures such as regulation or customer demand.

Organizations in stage two, as per IMA (1995), will move beyond regulatory compliance to achieve competitive advantage by efficient resource utilization with the main focus on cost management. This stage will include the following actions: system for external environmental reporting; design of products or processes taking environmental impacts into account and decision-making incorporating environmental impact information. However, in the second view point of Sakai (2007), environmental conservation stage, corporate efforts are taken with a sense of mission as an earth citizen to reduce the environmental impact of business activities.

Organizations in stage three move to integrate environmental considerations into the long-term sustainable strategy of the organization (IMA, 1995). This is where the environmental issues become a part of the day-to-day decision-making process of an organization. During this stage, environmental strategy will often include: environment impact-integrated performance evaluation systems, revenue generating and marketing strategy based on green products, etc. The viewpoint three, sustainable environmental management as suggested by Sakai (2007), is similar to this stage. The organizations in this stage enjoy the full potential/benefit of environmental management strategies.

Moreover, Zvezdov (2012) has followed a change management approach to identify obstacles in the adoption of sustainability accounting practices in the organizations in the UK and Germany. He has followed a change management perspective and identifies most companies are in the unfreezing stage of change due to the complex challenges identified in overcoming this stage.

To make structural organizational changes through environmental management, it is important to understand how to implement environmental management and its strategy. Epstein and Roy (2003) suggest the following steps to implement environmental management:

- *Step 1*: Formulate a specific environmental strategy.
- *Step 2*: Establish and document environmental policies.

- *Step 3*: Develop a capability building program for environmental management.
- *Step 4*: Design supporting management systems.
- *Step 5*: Identify appropriate measures.

They consider these five steps as basic starting points of the implementation process of environmental management. More recently, Epstein and Roy (2007) developed environmental management implementation steps further. They provided five elements of the environmental strategy:

(1) setting environmental objectives and targets for facilities;
(2) certifying a facility to an international environmental standard;
(3) designing environmental programs;
(4) allocating financial resources for environmental programs; and
(5) implementing systems to evaluate facilities' environmental performance.

It is worth noting that the appropriate measurement of environmental performance will improve environmental management and environmental strategy by making appropriate decisions for environmental management. In this regard, EMA can play an important role in facilitating environmental management and its strategy to support decision-making in implementing environmental strategy.

The next section presents the concept and the application of eco-control of EMA to support environmental strategy.

2.3 EMA and eco-control for environmental strategy

Burritt (2004) and Lee (2011) highlight the key problems with conventional management accounting which may hinder the search for an improved EMA system. These key problems include assuming of immateriality of environmental costs, amalgamating environmental costs with general overheads, focusing on too narrow and short-term-oriented performance appraisal techniques, excluding external considerations in investment appraisal and ignoring accounting for externalities and social issues. In addition, underdeveloped communication/links between accounting and other departments have been suggested as a barrier for improved EMA system (IFAC, 2005).

To develop and implement environmental strategy, EMA provides a useful approach to collecting both environmental and financial information. In particular, environmental cost information can yield competitive advantage, as most of the environmental costs and associated opportunities are not generally identified by organizations and/or competitors (Gray *et al.*, 1993; EPA, 1995; CMA, 1999; Burritt, 2004). Further, to successfully implement a corporate environmental strategy, decision-makers require precise information about the current, future and potential environmental costs of the company's products, processes and activities (EPA, 1995; CMA, 1999). In addition to these internal requirements, the demand for environmental cost information may come from external stakeholders (Kim, 2002). The nature and extent of environmental costs are widely debated, and different types and forms of environmental costs have been suggested (EPA, 1995; CMA, 1999; Kim, 2002; Parker, 2000). As Medley (1997) has highlighted, the key problem is that there are few formalized definitions, despite some progress made in this area.

To provide useful information for decision-makers, it is important to establish a management system to pursue EMA and environmental management strategy. We consider the concept of eco-control can offer a useful approach to integrated environmental information and cost into environmental management strategy. Under EMA, eco-control was initially introduced to help firms to measure, control and disclose their environmental performance (Henri and Journeault, 2010). Henri and Journeault (2010, p. 64) offered a definition of eco-control as "the formalized procedures and systems that use financial and ecological information to maintain or alter patterns in environmental activity". This concept indicates that environmental and financial performance information should be an integral aspect of formal procedures and systems within organizations. Schaltegger and Burritt (2000, p. 382) held a similar view stating that "eco-control is designed to ensure that environmental issues are dealt with through a continuous, company-wide process, by focusing on incentives for making congruent decisions". As core procedures of eco-control implementation, Schaltegger and Burritt (2000) highlighted five procedures including:

(1) goal and policy formulation;

(2) information management (environmental performance information);

(3) decision support;

(4) steering and implementation; and

(5) internal and external communication.

In particular, information management is the core activity of any environmental management system at the firm level. Because the information should be assessed by its relevance and usefulness for environmental management strategy, it is important to collect the relevant and useful information for the "right" decision to continuously improve the cycle of eco-control procedures (Schaltegger and Burritt, 2000; Lee, 2012). Figure 1 shows an integrated eco-control for environmental management.

In our study, we refer to EMA as a decision support tool which assists the management in following various environmental management strategies. In effect, EMA is viewed as an interface between management accounting and environmental management (Bennett *et al.*, 2002). Based on the literature review, we use the integrated eco-control for environmental management shown above as the research framework to examine our case of a Sri Lankan hotel in this study. The next section explains the research methodology of the study.

3. Research methodology

Despite this importance of the environment for service sectors such as tourism, hotels and restaurants, very little is known about environmental management or EMA in developing countries (Collier, 1995; Chung and Parker, 2008). This can be mainly attributable to the low level of research on the service sector, as most research has so far focused on the manufacturing sector owing to its easy explicability of the environmental impact (Collier, 1995; Carmona-Moreno *et al.*, 2004; Lucas and Wilson, 2008). According to Hashimoto (1999), the physical and social impacts of tourism have reached a crucial juncture which can no longer be neglected. There is, therefore, a real need for tourist organizations to follow EMA to face mounting pressure to be environmentally conscious. This requires a systematic adoption of EMA (Godschalk, 2010).

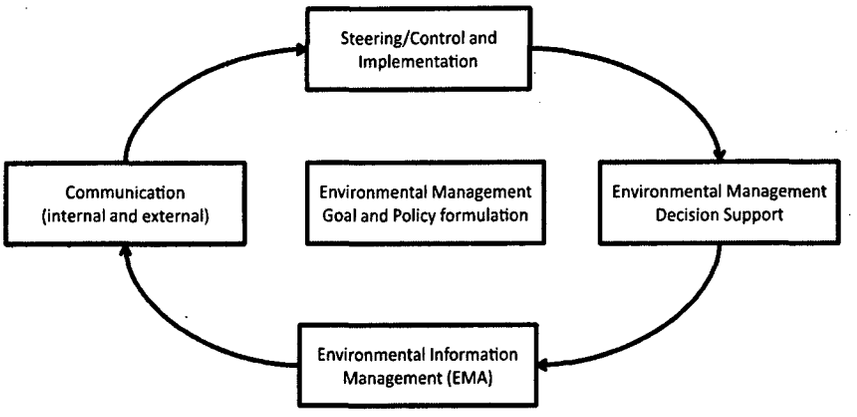


Figure 1.
Integrated eco-control for environmental management

Source: Adapted from Schaltegger and Sturm (1998) and Lee (2012)

Bartolomeo *et al.* (2000) and Lee (2011) suggest that the existing EMA practices have not been systematically and comprehensively implemented internally. Systematic and comprehensive adoption of EMA has to be an evolutionary process which an organization achieves after completing some of its early stages. The development stages of EMA have not been empirically investigated well enough in the extant literature so far. Thus, there is a need to identify and demonstrate how companies have continuously developed and systematically adopted environmental strategies with the support of EMA practices over the years, especially in the tourism sector. We were prompted by this gap to select a hotel in Sri Lanka that has built its position as one of Sri Lanka's leading environment-friendly hotels in recent years as our unit of analysis in this research. We expect this study will be of use for organizations to identify how to develop environmental strategies with the support of EMA to derive better benefits.

We used a case study approach in the study because of the nature of the research question, the lack of control over events and the focus on the contemporary real-life phenomenon (Yin, 2009). For the purpose of collecting data, we selected a hotel in Sigiriya[1] near the UNESCO declared World Heritage site, the Lion Rock, due to its leading position as a green hotel in the country. The location gives an advantage for the hotel in attracting guests. The hotel has all facilities such as air-conditioned rooms, bar, spa, Ayurveda center, library, swimming pool, etc., which are features of a typical four-star hotel. Further, it has an eco-center, which has all the information regarding its green strategies and other environmental information. The hotel has about 280 employees both permanent and temporary. It is listed in the country's stock exchange while being rated among the top 100 brands in Sri Lanka. Over the recent years, the hotel has built its position as one of Sri Lanka's leading environment-friendly hotels. The green initiatives it adopts have been recognized by various local and international organizations. Recently, the hotel won Green Award in the category of Value Hotels, Best of Country Award and the Grand Award from the International Restaurant and Hotel Association (IRHA), Silver Award from the Ceylon Chamber of Commerce *and* the International Green Apple Award for environmental best practices from the Green Organization, UK. It was highly commended as the Best Large Accommodation by Virgin Holidays Responsible Tourism Awards, UK.

This study was conducted between October 2012 and January 2013. Prior to visiting the hotel, we searched and analyzed the Web site and other documents such as annual report, news paper and magazine articles available online. The General Manager of the hotel was briefed about the objective of the study on the telephone. We then sent the interview guide to him. After visiting the hotel, we conducted an initial interview with him regarding EMA practices. Having an idea about their practices, we visited various locations of the hotel with him. We photographed these various locations including the biomass plant, sewerage treatment plant, compost bin, organic farm, kitchen, rooms, public areas, restaurant, wash room and information center. The General Manager explained the functioning and the practices of these various locations. During our visit, we also interviewed various personnel in charge of these locations such as the laundry manager, chef, garden manager and naturalists. After visiting these locations, we once again had an interview with the General Manager and the site Accountant. In addition, we conducted an interview with the Engineer of the hotel. Also, we had an interview with the ex-CEO on the telephone to get a better understanding of the early development stages of environmental management of the hotel. Finally, an interview was also conducted with the Group General Manager at the head office in Colombo. This on-site assessment method followed in the study enabled us to get a deeper understanding of environmental management activities and how EMA is interwoven with them.

These interviews that were carried out can be characterized as in-depth and semi-structured, in which we had a list of themes to be covered. The questions which were raised in the interviews were either complex or open-ended and the order and logic of questioning varied depending on the respondent/response. According to Saunders *et al.* (2003) in such a situation, semi-structured or in-depth interviews are the most appropriate approaches for data collection. A semi-structured interview method is rich in heuristic potential despite it being subject to the intrusive effects of interviewer bias (Lillis, 1999). This bias can significantly affect the credibility of the research. Thus, we prepared interview guides by perusing literature to mitigate bias while ensuring completeness (Appendix 1). All these interviews were electronically logged and transcribed. We analyzed these records to gather the relevant information.

We also used extensively the hotel's internal documents such as the *Green Book*, daily and monthly material and energy records, guest book and other records to collect the data required for analysis. We also used publicly available information such as Web sites, news paper articles, magazines, etc. Later, by email and telephone too, we obtained further information and clarifications.

McKinnon (1998) has highlighted observer-caused effects, observer bias, data access limitations and complexities and limitations of the human mind as the main threats to validity and reliability in this type of research. We took several steps to improve the validity of the study by following different modes of triangulation (Golafshani, 2003; Länsiluoto and Järvenpää, 2008; Vaivio, 2008; Yin, 2009). These include actions such as personally observing the practices where possible, *and* keeping records and photographs, interviewing the site manager and other employees who are responsible for such practices (who occupy different horizontal and vertical positions in the organization), using probing questions and content analyzing the secondary data.

The data gathered were analyzed using the explanation-building approach (Yin, 2009). In this regard, the environmental management development stages of IMA (1995) and Sakai (2007) were used to identify how the EMA practices have been developed in

this organization. The data collected were organized in chronological order into three phases of the development of EMA: survival, conservation and environmental integration. Then, the data relevant to these three phases were analyzed to build up the story of the case with integrated eco-control model. The next section provides the findings and results of the data analysis.

4. Findings and results

This section presents the main findings of the study. Based on the integrated eco-control framework, we present how the case firm adopted EMA practice in the development stages. In particular, we highlight three development stages of the case firm to adopt EMA in corporate environmental strategy:

(1) how the survival compelled the hotel to adopt EMA (survival phase);

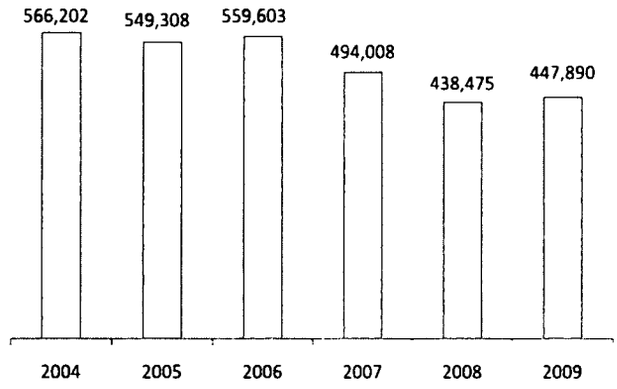
(2) how the cost savings were realized through conservation efforts (conservation phase); and

(3) how the EMA practices were integrated into the daily management of the organization (environmental integration phase).

4.1 Goal and policy formulation

As the first procedure of eco-control framework adoption, this hotel set the goals and formulated the policies for its environmental management strategies. Yet, the goal setting and policy formulation of this hotel had taken place over many years. The hotel started its operations nearly four decades ago. From the inception itself, it had taken certain measures to conserve the neighboring environment. The hotel was gradually turning itself as an eco-friendly destination for a long period of time. These practices, however, had not been followed vigorously until the firm faced a critical situation in the year 2007. This situation was created mainly due to the war against terrorism in Sri Lanka which drastically reduced tourist arrivals in the country by more than 11 per cent in the years 2007 and 2008 compared with the preceding years (Figure 2).

Adverse travel advisories and the global financial crisis had a negative impact on the leisure sector further compounding the challenges the hotel had to face. The hotel's occupancy rate fell to an all-time low of 37 per cent in 2007 and 45 per cent in 2008. The low occupancy amidst heavy price pressure and increasing operational expenditure led to a decline in revenues and profit. In 2008, the top line and bottom line were badly affected, resulting in a decline of revenue by more than 20 per cent and profit by more than 200 per cent. The company was not in a position to declare dividends for the shareholders from 2007 and this adversely affected the share price. Pressurized by significant losses and nervous shareholder concerns, the management of the hotel was desperately looking for avenues to maintain its bottom line by exploring various cost-saving and revenue-enhancing venues. These actions included staff layoffs, introduction of various packages to attract guests, discount schemes targeted at local tourists, cost-saving strategies, etc. However, the measures aimed at improving the revenue were not successful because of the crisis in the entire tourism industry of the country during this period. While taking cost-saving action, the management recognized that much savings could be achieved in the areas of energy, material, waste and water. These areas were all related to the environment and offered an opportunity for the hotel to be environment-friendly while saving costs. The General Manager explained how they initiated the environmental management practices as follows:



Source: Sri Lanka Tourism Development Authority (2009)

Figure 2.
Tourist arrivals to Sri Lanka

> Our main concern in following environmental management strategies with a clear focus was the cost. In fact, in 2007/8, our hotel was making tremendous losses so that we had to search for avenues of reducing cost. Being environment-friendly offered us many cost saving opportunities.

The management then devised a clear vision to develop the hotel's commitment to the green hotel concept while saving costs. The goal of this project was to promote nature-friendly and environmentally sustainable tourism by integrating it into the daily management practices of the hotel. In this direction, the hotel specifically aimed to achieve the following objectives through the environmental policy:

- conserve energy and water;
- minimize solid waste, air pollution and other chemical pollution;
- maximize practices to reduce, recycle and reuse;
- maximize the use of environment-friendly materials;
- maximize the use of indigenous flora landscaping and eradicate invasive alien species; and
- conserve biodiversity and support local livelihoods.

4.2 Steering and implementation, information management (environmental performance information) and decision support

Armed with this clear direction stemming from the environmental policy, the hotel initiated an action plan to achieve its objectives as the next element of eco-control. Implementation of these actions was well supported by the provision of environmental information, through EMA, which is another element of eco-control. EMA provided requisite information to support the various actions taken in the areas of energy, water, garbage and waste.

Practices were initially developed in the areas of energy and water, as those two items represented significant and easily achievable cost-saving potential during the survival phase. After analyzing its operational costs, the management realized that energy costs represent the single most important cost element. Thus, it paid much attention to cost

saving by focusing on electricity and other sources of energy. The importance of energy cost for a hotel is highlighted by the hotel's Engineer as follows:

> Energy costs of a typical hotel will range around 20-25 per cent of its total operational expenses, up from 13-14 per cent a few years ago [...] and we had to continuously find avenues for energy cost savings.

The importance of saving electricity cost has been well identified by Goonasekara (2004) and Gunarathne and Fonseka (2012) in the hotel sector. The hotel carried out an energy audit (EPA, 1995) to devise a comprehensive energy conservation plan which resulted in numerous initiatives during this period. These included introducing solar water heating panels, installing card key switching room air conditioning, scheduling light switching, color coding all light switches, replacing incandescent, halogen and fluorescent lights with compact fluorescent lamps (CFL), installation of freezer curtains in cold rooms and installation of bio-mass plant for steam production.

Understanding the importance of the use of water, the hotel took a number of steps to conserve water and manage waste water. These included installation of a self-contained biological sewerage treatment plant, discharging the treated water used for garden irrigation, introducing water-saving cisterns and optional re-use of room linen.

To successfully implement these changes during this phase, the hotel sought the support of its immediate key stakeholders, i.e. employees. It trained the employees on the new environmental management initiatives. As the hotel was in a financial crisis and everyone's job security was at risk, getting employee support for these initiatives was not difficult. The General Manager states that:

> Employees at all levels supported these measures immensely. We explained the importance of saving these costs and how these actions are critical for the survival of the organization [...] we had no problem in getting their initial support.

The statement of the General Manager clearly highlights how top management commitment and effective internal communication could overcome resistance to change as suggested by Zvezdov (2012). In an attempt to quantify the cost savings, the hotel started calculating the physical energy and water savings realized from these various practices. With these efforts, during this period the first seeds of EMA emerged in terms of energy accounting and water accounting (Bennett and James, 1997). The main focus of EMA during this period was on past-oriented, *ad hoc* PEMA, as only the savings were calculated in physical units such as kilowatts and liters (Burritt *et al.*, 2002a, 2002b). Further, the environmental costs identified during this stage reflected conventional private costs and material costs of product output (EPA, 1995; IFAC, 2005).

The hotel soon realized that these various practices result in significant cost-savings potential than originally envisaged which propelled it to the next level of development of EMA, i.e. conservation phase. During this period, the hotel realized the environmental conservation potential of these actions taken that were confirmed through cost savings. These energy-saving measures adopted were mostly simple and inexpensive but effective in reducing energy use in the hotel. To support and confirm these energy conservation measures, PEMA were further developed into MEMA practices during this period (Bennett and James, 1997; Wilmshurst and Frost, 2001; Burritt *et al.*, 2002b). In this regard, the hotel calculated the energy savings from replacing fluorescent lights with CFL and installing solar panels.

In accounting for water, the company calculated the water savings arising from the various aforementioned measures, for example, savings of water from the introduction of the sewage treatment plant and cisterns. A saving of approximately 30,000 liters of fresh water daily was identified. The hotel started assigning a monetary value to these savings to realize the potential benefits of the practices. Thus, the accounting for water during this period manifested the PEMA and MEMA similar to the accounting of energy (Burritt *et al.*, 2002b). However, the accounting for water did not represent the calculation of water footprint as the indirect use of water is not accounted by the hotel (Hoekstra and Chapagain, 2008).

During this phase, the hotel expanded its focus to other areas that were contained in the environmental policy such as waste, bio diversity, etc. in addition to energy and water. Solid waste management was a main area the hotel focused during this period. It initiated various steps in this regard including gradation of garbage, re-cycling, reusing, reducing (3Rs), composting of garden refuse including vermi-composting, using all water discharged from the sewage treatment plant for the garden and dried sludge in the garden, reduced use of chemicals, non-use of plastic, and reusing office stationery.

The waste management of the hotel represented the traditional end-of-pipe treatments as well as innovative approaches [United Nations Environment Program and United Nations Industrial Development Organization (UNEP & UNIDO), 1991]. Further, the waste costs identified by the hotel can be considered as pollution prevention and pollution treatment costs or waste control costs (Kim, 2002; IFAC, 2005). Together with the expansion of EMA practices, the costs reported by the hotel have also expanded in scope during this period.

In addition to these measures, the hotel has maximized the use of indigenous flora in landscaping and eradicated invasive alien species. It has taken care of the wildlife around the hotel and has sought to find ingenious solutions to problems faced. In all expansion projects, the hotel carefully identified the impact on the environment and attempted to incorporate environmental considerations into the design phase. This was well evidenced in the newly refurbished restaurant which does not use any air conditioning or fans due to its environmentally friendly design that maximizes day-light and natural ventilation. To justify the new design of facilities, the Engineer together with the Accountant of the hotel calculated the total energy cost saving of the restaurant over its life time. These practices represent the application of environmental impact assessment and life-cycle design (EPA, 1995; Bennett and James, 1997; Soonawalla, 2006). It is evident that the hotel has been able to realize the potential cost savings with EMA practice after focusing on the full range of items contained in the environmental policy.

4.3 Internal and external communication

As an element of eco-control, the hotel engaged in communication with internal as well as external stakeholders. When engaged in these aforementioned environmental management actions, the hotel soon realized that a better image can also be generated in addition to significant cost savings. Having achieved sizable cost savings, the hotel further moved in the same direction to develop these practices into the environmental integration phase to earn a better customer image. The hotel's ex-CEO states as follows:

> Most of these initiatives were begun primarily to reduce energy costs, but we found that there were greater benefits accruing not only directly but indirectly. This has become a useful

marketing tool now, where discerning travelers are beginning to choose hotels, which are more environment-conscious.

Next, the hotel took various communication steps aimed at external stakeholders, especially potential guests. Redesign of the Web site, use of the hotel's green actions in its marketing campaign, educating the guests on the green initiatives of the hotel, etc. are among many actions taken in this regard.

Owing to these successful commutation measures, as highlighted by the ex-CEO, the environmental strategies have become the driver for attracting more guests to the hotel. In effect, the green initiatives adopted by the hotel have generated a favorable customer image which in turn acts as the catalyst to attract green-conscious tourists (Elkington, 1994; Kirk, 1995, 1998; Chung and Parker, 2008). The guests who had visited the hotel wrote in the Web site:

> The hotel has nice green practices. We were so pleased and happy to witness and experience them [...]. I would not hesitate to recommend this hotel to anyone going to Sigiriya.

Another guest wrote:

> I selected this hotel mainly because it is GREEN [...] [t]he hotel ambiance was superb, perfect place to relax. So happy to witness the hotel's commitment to save the environment [...] [and] we ended up staying for an extra night and if you are coming to Sigiriya I can definitely recommend this as a place to stay.

The green practices of the hotel have been admired and recognized by not only the guests but also other organizations. It is during this period that the hotel received many awards that were mentioned previously in recognition of its green practices.

The hotel focused on guests who reserve the hotel to successfully implement the environmental practices through various communication mechanisms. This is important, especially in an establishment such as a hotel in which guest-related activities determine the greater part of costs. Hence, the hotel has put up notices in all bathrooms requesting guests to reuse towels to conserve water and reduce the use of plastic straws, etc. In addition, the hotel organizes an "Earth Hour" on the last day of every month switching off all the lights when meals are served by candle light. This gives the guests a novel experience while helping the hotel to further enhance awareness of the importance of conserving energy and the environment. A guest has written the following in their guest book:

> [T]he earth hour was a fantastic experience. We really enjoyed the meal in candle light [...] and it was also a real eye-opener for us on the burning environmental issues we face today.

EMA practices have become a part of the organizational culture which has been embedded into its daily management process. To successfully integrate these practices into day-to-day operations, the hotel focused its communication to seek the support of all other stakeholders in addition to guests. These stakeholders include employees at all levels, suppliers and even the community. The success of the adoption of EMA is largely dependent on the support received from employees at all levels. This is even more important in an establishment such as a hotel. In many hotels, the information necessary for successful implementation of EMA is scattered across various facility centers such as the kitchen, laundry, lobby and garden. This makes the support of employees mandatory for the implementation of EMA. The criticality of receiving employee

support for the sustainability information flow has been well identified by Zvezdov (2012). The General Manager says:

> You can't implement these practices without the support of all the employees successfully. This is because these practices are implemented by the managers of the facility center (kitchen, garden, laundry, lobby, etc.) and they have the information needed for the management of these practices. The top management always needs their support [...] In our daily meetings, every facility center manager brings the respective data of their department which is then compiled by the Accountant for the Green Book[2]. In that way we constantly keep a tab on what is happening.

To facilitate continuous employee support, the hotel provides an extensive training every three months to all its employees. Further, it has developed many practices which facilitate EMA adoption by getting the support of its employees on a routine basis. Some of these practices carry out preventive maintenance according to a planned schedule, reading and monitoring of water and energy meters daily, creating awareness about energy conservation among all staff, training employees on garbage separation at their sources of origin in all departments and carrying out a daily maintenance check.

Furthermore, as suggested in IMA (1995), the hotel considers the environmental concerns into its performance evaluation system now. In the service centers such as the kitchen, garden, laundry the company targets are set for the employees with regard to the use of energy, water and consumable materials. In daily and weekly meetings with engineers, accountants, the chef and laundry manager, these matters are discussed in detail. The Accountant states:

> We know the daily average energy and water consumption per guest depending on the occupancy rate and some other factors [...] We daily monitor them and discuss in the morning meetings every day. If there are considerable deviations we trace which facility center is responsible and the manager of the respective center will have to immediately look into the matter and take action.

The outstanding environmental performance in terms of environmental aspects such as savings of water and energy is considered in performance evaluation and promotions.

The hotel has taken various steps to win the support of the suppliers such as educating them to use reusable plastic crates or cardboard boxes to bring their goods, supplying glass bottles instead of plastic bottles, sending wet garbage to a piggery and requesting the pest control service to use no toxic chemicals. These measures have shown that over 90 per cent of the suppliers now use bulk packaging that is either environment-friendly or reusable. For these environmental practices, the hotel has sought the support of the community as well. It buys gliricidia for its biomass unit, which provides a renewable source of energy, from the villagers providing them an additional income. Moreover, the hotel conducts awareness programs in schools and villages to educate the community about the importance of saving the environment.

Overall, an integrated eco-control for environmental management as an EMA practice provides a formalized structure to conduct environmental management. Importantly, the eco-control approach encourages identifying physical and monetary information (PEMA and MEMA) which may capture potential opportunities for cost savings and environmental impact reduction. Under this approach, formal environmental goals and policy give clear directions and steps for environmental management supported by environmental information management. Further, the

details of implementation processes are well communicated internally and externally. The eco-control approach shows the usefulness of EMA practice over the development stages by offering organizational change toward environmental management.

5. Discussion

The analysis of the development stages of EMA of the hotel reflects how economic hard times provided the impetus for the already existing environmental practices to flourish (Coltman, 1994). Initially, the dire need for survival due to external pressure arose from unfavorable market conditions and shareholders (Medley, 1997; Carmona-Morenoa *et al.*, 2004; Chung and Parker, 2008). These compelled the hotel to reinvigorate the existing environmental practices. Subsequently, when the cost-savings potential was realized (during the conservation phase), the hotel revived these practices further. It reveals that the forces driving environmental initiatives and EMA could change from external to internal over time and critical events could strengthen (or weaken) their sustenance (CMA, 1999; Länsiluoto and Järvenpää, 2008). After the hotel realized a causal link between improving environmental performance and guest attraction, the practices have become a part of the day-to-day management process of the hotel during the environmental integration phase (Godschalk, 2010; Länsiluoto and Järvenpää, 2008).

The environmental management strategies of the hotel have been implemented with consistent commitment and evaluated analytically with the support of an EMA system. They are well interwoven with EMA practices that include accounting for material, energy, environmental impact assessment, life-cycle design, etc. Thus, EMA practices are the underlying common thread that facilitates the various green practices of the hotel. The *Green Book* launched by the hotel showcases the many EMA initiatives adopted during the past few years and acts as a tool that accounts for energy, water and other various types of materials used in the hotel. Thus, the study identified that making the EMA a part of the day-to-day management process is a crucial driver "back stage" in sustaining the practices. Today, the PEMA and MEMA practices support the environmental strategy of the hotel by the provision of routine and *ad hoc* information on a short- and long-term basis covering many dimensions of the framework suggested by Burritt *et al.* (2002a). The EMA practices adopted by the hotel largely represent basic practices which have evolved over time in the hands of the Management Accountant and the Engineer based on the experience. The lack of management awareness of management accounting has, therefore, not inhibited the use of EMA in this organization contrary to the findings of Fonseka *et al.* (2005), Goonasekara (2004) and Subasinghe and Fonseka (2010). The limitations of conventional management accounting, the commonly identified barrier for the adoption of EMA, are, to a great extent, not applicable in this organization (EPA, 1995; Burritt, 2004; IFAC, 2005; Burnett and Hansen, 2008).

The internal reporting system of the hotel identifies the various environmental costs by the facility cost center. Thus, there is no pooling of environmental costs in the general overheads in this organization which acts as a barrier to EMA adoption (EPA, 1995; IFAC, 2005). Also, due to the reporting and organizational structure adopted by the hotel, there is no distance between the accounting department and other divisions that collect the environmental information. Due to the environment consciousness prevailing in the culture of the organization, the hotel always considers environmental aspects as

important in its decision-making process. This is contrary to what was suggested by Burritt (2004) and Lee (2011).

During the survival period, the hotel focused on the main items that offered the greatest cost-saving potential ("low hanging fruits"). Thus, some selective PEMA practices (for energy and water) were developed with the help of its key internal stakeholders, the employees. Then, during the conservation period, these already existing PEMA practices were developed into MEMA practices and new EMA practices emerged to account for other areas such as waste, pollution and bio-diversity. With consistent commitment, the hotel today has moved into the environmental integration phase. The environmental integration status that the hotel now enjoys can be viewed as a holistic approach to the implementation of EMA with four main attributes. First, these initiatives have been consistently followed with a clear vision spelled out in its environmental policy over a period of time. Second, they cover a comprehensive spectrum of aspects from water, energy, pollution, bio-diversity to waste management. Third, its consistent approach is well supported by all important stakeholders such as employees, suppliers, guests and the community on a regular basis. Finally, they have been embedded into the daily management process of the organization.

We argue that the environmental integration phase in which an organization enjoys the full potential of environmental management strategies and EMA is an outcome of the successful shift from survival to correspondence, finally, to integration. This has to be achieved through the continuous pursuit of EMA over time with a clear vision as elucidated in this study.

We also notice that stakeholder issues can cause certain challenges to implement effective EMA practice. Implementation of EMA practices in a hotel requires the support of various stakeholders in order to reap the full benefits. However, the challenge was to persuade these parties to take part on a regular basis. Despite the various steps taken, the hotel still faces the challenge of convincing some stakeholders, especially guests and employees with diverse needs. A guest had written the following comments in a Web site:

> We had to ask twice for straws. The waiter first did not say anything. Then the manger who came later said they do not use them due to their environmental policy [...]. It was ridiculous.

The general manager of the hotel also states:

> However much we train them, if we do not monitor closely, they try to ignore the company requirements and try to behave in a way that is easier for them [...] this is equally true for the suppliers even.

This statement highlights the challenge in getting the support of some employees and suppliers for these practices. To use the eco-control approach of EMA fully, we may consider some supplementary approaches such as an environmental management system (ISO 14000) or a performance evaluation and incentive system.

6. Conclusion

The study reveals an empirical case of EMA practice under corporate environmental strategy. We used an integrated eco-control framework to examine a Sri Lankan hotel in this study. This study highlights how an organization can successfully develop from survival to environmental integration over time. The successful implementation of EMA, thus, goes beyond the mere application or superiority and sophistication of

techniques and requires the successful engagement of all the stakeholders on a regular basis to cover many environmental aspects comprehensively with a well-defined vision, that is, a *holistic* approach to its implementation.

The findings of the study will be useful for hotel sector organizations, in particular, and the service sector, in general, to develop EMA practices, as they constantly come in touch with the human factor. In addition to these practical implications, the paper attempted to contribute theoretically to fill the paucity of research in the hotel sector in the developing countries, especially in emerging South Asian economies by identifying the development stages of EMA over time with the eco-control approach.

The contributions of the study may be limited, however, by its inherent limitations. The qualitative case study method followed in the study poses the limitation of generalizability of the findings. The results will only be capable of being theoretically generalized in a contextual way (Lukka and Kasanen, 1995; Enquist *et al.*, 2006). In our study, following-up clarifications for research validity were obtained when further information was needed. As a means of triangulation, we relied on observations, artifacts, documentary evidence and an array of secondary data sources which mitigated any issues with interviews. For further studies, researchers will benefit from multi-industry or country studies in order to increase research validity. In particular, the findings of this study can be further explored by way of multiple case studies or survey data covering different sector organizations of different sizes and locations.

Notes

1. Sigiriya is an ancient kingdom of Sri Lanka which is 160 km away from its capital city of Colombo. It is one of the most visited historic sites in the country.
2. Green Book is a document prepared by the organization which highlights the various environmental actions and their impacts. The information collected for the Green Book is provided by all the departments and it is used as the main tool of management reporting of environmental practices of the hotel. Certain segments of the Green Book are made available for the guests and published annually.

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Appendix 1. Summarized themes of the interview guide

History of the green practices

- What drove the hotel to become a green hotel? What were the main objectives?
- What were the accounting practices adopted?
- How did these practices evolve?

- What were the challenges encountered?
- How did you overcome the challenges?
- What are the benefits (cost savings and other) obtained by becoming a green hotel?

Current situation of the green practices

- What is your current level of adoption of green practices?
- How do you sustain these practices? What are the systems/mechanisms in place?
- What are the strategies pursued to convince various stakeholders especially employees and guests to become involved? Who else is involved?
- How do you report environmental practices internally and externally?
- What sorts of costs are collected now?
- What are the challenges you face now?

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