

# ENVIRONMENTAL MANAGEMENT ACCOUNTING (EMA) IN THE DEVELOPING ECONOMY: A CASE OF THE HOTEL SECTOR

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## Abstract

The adoption of EMA is triggered by certain factors such as human resources, compliance to legislation, market factors, just to name but a few. However, the literature points out that there are limiting factors that impede the application of EMA, particularly in the developing economy. Currently, there is limited existing research on EMA practices available for use by the hotel sector in the developing economies. The overall aim of this study was to, therefore, investigate and describe factors that enable and limit the use of EMA tools by the hotel sector in South Africa, a developing economy. The research was an exploratory study and qualitative in nature using a single case study with embedded units approach. ABC Hotel Management Group formed part of this study along its 3 hotels which met the selection criteria. In-depth semi-structured interviews comprised the main method of data collection. Additional documents were analysed which included financial statements, policy documents, the Group's website, the hotels' websites, Group Energy Profile Analysis (GEPA) programme, and Building Monitoring Systems (BMS). There were 10 participants in this case study which included the group engineer, who is the main custodian of the Group's environmental management systems, 3 general managers, 3 financial managers, and 3 maintenance managers. The study discovered certain external and internal factors enabling the implementation of EMA tools; and there was the existence of limiting factors, internal and external, such as the shortage of skills and knowledge.

**Keywords:** Developing Economy, EMA Tools, Environmental Costs, Environmental Performance, Enabling and Limiting Factors

## 1. INTRODUCTION

Environmental issues and concerns are world-wide reality. There are a number of significant environmental threats to the future of humanity, including the over-consumption of non-renewable resources and global air pollution (Jones, 2010). Due to these environmental problems, the moral, ethical, social, and political arguments for taking action on environmental issues are becoming more persuasive and more widely accepted (Chan and Hawkins, 2012). A significant amount of research on the environmental management systems and initiatives has been done in the developed economies (Hsiao, Chuang, Kuoc and Yu, 2014). The emphasis is on industries, such as manufacturing, chemicals, farming, construction, farming, and electronics, but limited research has been done on the service industries (Chan and Hawkins, 2012). Even though the economic impacts of the service industries are significant, their environmental impacts are yet to be better known and are overlooked (Shrake, Bilec and Landis, 2013).

Various companies in the hotel sector, a service sector, have adopted various environmental initiatives to curb the scourge of the adverse environmental impact on our planet (Pirani and Arafat, 2014). According to Chan and Hawkins (2010), the hotel industry is embarking on a drive to engage on various initiatives, whether for the sake of

the environment, for economic reasons, or to build a positive image. However, literature reveals that there is limited research pertaining to the application of EMA tools, particularly in the hotel sector. As a result, the implementation and application process of EMA remains unclear. Gunaratne and Lee (2015) support this argument by stating that the development stages of EMA have not been empirically investigated well enough. 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 hotel industry. Qian, Burritt, and Chen (2015) add that the main focus of EMA studies has been on highly polluting and energy intensive industries. Jamil, Mohamed, Muhammad and Ali (2015) add that the importance and benefits of EMA have been reported by empirical studies. However, the level of adoption and implementation of EMA practice is still weak in firms in many countries, especially in developing countries.

## 2. PROBLEM STATEMENT

Traditional management accounting systems and mechanisms have been reported to be unable to add value in terms of providing adequate and appropriately meaningful knowledge that would assist environmental administration and

administrating-related environmental overheads (Vasile and Man, 2012). This has led to the understatement of costs and benefits that would ordinarily be achieved by organisations that adopt or implement appropriate EMA tools (Christ and Burritt, 2013). EMA is increasingly being investigated in order to fill in this gap. However, researchers point out that there are several factors that enable and/or limit the implementation of EMA tools (Mensah 2014; Ni, Chan and Wong, 2006).

### 3. AIM AND OBJECTIVES

#### 3.1. Aim

The main aim of this research is to identify critical factors enabling and limiting the use of EMA tools by the hotel sector in the developing economy.

#### 3.2. Objectives

The objectives of the study are as follows:

- to identify internal and external factors enabling the use of EMA tools by the hotel sector in the developing economy;
- to identify internal and external factors limiting the use of EMA tools by the hotel sector in the developing economy;
- to suggest recommendations that are aimed at improving the use of EMA tools by the hotel sector in the developing economy.

## 4. LITERATURE REVIEW

### 4.1. The adoption of environmental management practices

Research reveals that concerns for environmental issues are less intense in developing economies (Kang, Stein, Heo and Lee, 2012). For example, in Brazil, the adaptation of environmental management systems (EMS), which include EMA, is still low compared to the developed countries (de Oliveira, Serra and Salgado, 2010). Massoud, Fayad, El-Fadel and Kamle (2010) confirm this finding by adding that the adoption of the EMS in developing countries of Central and Eastern Europe accounts for an insignificant proportion. Latin America, Africa and the Middle East together account for less than 3% of ISO 14001 certified organisations worldwide. Developed countries, on the other hand, are trend setters in as far as the implementation of the EMS is concerned. For example, the Hotel Association of Canada has what is called Green Leaf Eco-rating System which is used to rate the hotels' environmental performance (Hsiao et al., 2014).

Phan and Baird (2015) point out that, often times, there is the variation in the extent to which organisations implement different environmental management practices given that the adoption of EMS and the certification of EMS is voluntary. Chan and Hawkins (2012) also acknowledge that there are different approaches in the application of EMS. Consequently, EMS can differ significantly across organisations in the comprehensiveness of their coverage and the ambitiousness of their objectives (Phan and Baird, 2015). Singh, Brueckner, and Padhy (2015) point out that organisations may well adopt environmental management practices as a means of merely signalling good environmental responsiveness to market, while in real terms, their

environmental performance may indeed be lower than that of their peers.

### 4.2. The emergence of EMA

The economic activities of an organisation may result in certain costs being incurred. However, coupled with an effective environmental management practices, this may result in benefits and cost savings. Several authors argue that traditional or conventional accounting methods do not offer the ideal framework capable of identifying necessary data as they generally focus upon the resources' cost employed and their accumulation without paying attention to activities (Jones, 2010; Vasile and Man, 2012). Consequently, Masanet-Llodra (2006) concedes the significance of exploring more accurate and precise measures for the physical flows (of energy, water, waste, etc.) and their associated costs. The accounting system could thus be employed to seek out, identify and exploit financial savings in resources' usage, waste and energy emissions that would necessarily lead to reductions in the organisation's environmental impacts.

Literature adds that the role that has been played by the traditional management accounting system has been determined to be complex due to certain factors such as identification, classification, measurement and reporting of environmental and social information (Farouk, Cherain, and Jacob, 2012). Conventional management accounting systems and practices often do not provide sufficiently accurate information for environmental management and environment-related cost management (Gale 2006). As a result, many organisations significantly underestimate both the costs and benefits of sound environmental management (Jasch, 2003). To fill in this gap, recently, the emerging field of EMA has been receiving increasing attention. Due to several limitations associated with the conventional management accounting, the United Nations Commission for Sustainable Development formed the Expert Working Group in 1998, whose responsibility included discussions and negotiations of environmentally-friendly practices (Jasch, 2003). The participants in the Expert Working Group (EWG) are from national environmental agencies and ministries, international organisations, industry, accounting firms, academia, and United Nations agencies (Jasch, 2003). The EWG published a report in 2001 titled 'Improving the Role of Government in the Promotion of Environmental Management Accounting (EMA)' (Farouk et al., 2012). The report was published in order to describe certain principles and procedures related to EMA, focusing particularly on techniques to quantify environmental costs for the development of national EMA guidelines and framework. According to this report, both conventional cost accounting and non-environmental costs of the accounts are assumed to be hidden with respect to management (Jasch 2003; Farouk et al., 2012).

### 4.3. EMA defined

Scholarly work by Burritt and Saka (2006); Janković and Krivačić (2014); and Jamil et al. (2015) maintain that, over the years, several attempts have been

made towards developing a comprehensive framework of EMA to reflect the following: EMA definition; description of internal and external users of environmental accounting information; and identification, tracking and allocation of monetary and non-monetary information relating to the environmental activities of an organisation. Burritt and Saka (2006) define EMA as the identification, collection, analysis and use of two types of information for internal decision making: i) physical information on the use, flows and destinies of energy, water and materials (including wastes); and ii) monetary information on environment-related costs, earnings and savings. According to De Beer and Friend (2006), EMA is an innovative sustainability initiative.

The International Federation of Accountants (IFAC), as quoted by Chang (2013), defines EMA as the management of environmental and economic performance through the development and implementation of appropriate environment-related accounting systems and practices. While this may include reporting and auditing in some companies, EMA typically involves life-cycle costing, full-cost accounting, benefits assessment, and strategic planning for environmental management. According to Vasile and Man (2012), the elements of the EMA, as integrated in the definition, makes EMA become a pivotal tool not only for the management of the environment but also for improved planning of processes, efficient allocation and control of costs, better pricing strategies and effective performance evaluation. The EMA definition encompasses three elements:

- The identification, allocation, and analysis of financial and physical information - this process may entail tracing and analysing the activities of the firm and then allocate costs on the 'cause and effect' basis. This process may assist in determining the precise financial and non-financial information that is likely to add value in determining accurate environmental costs incurred by the organisation.

- Environmental costs (internal and external) - there is general consensus in the body of knowledge that environmental costs are costs that emanate from the activities of the firm than, in turn, adversely affect organisations (Internal), society and individuals (External). They result from activities that affect quality of the environment, and can be expressed in monetary and non-monetary items (de Beer and Friend, 2006; Papaspyropoulos, Blioumis, and Christodoulou, 2012; Bouten and Hoozée, 2013). Irrespective of the types of environmental costs, it is important to incorporate them into internal cost accounting to facilitate internal decision making (Janković and Krivačić, 2014).

- Cost allocation - scholars maintain that environmental costs should be allocated directly to the relevant cost drivers, that is, to the activity that causes the costs (de Beer and Friend, 2006 and Chang, 2013). The management is able to identify cost saving opportunities by identifying, analysing and allocating environmental costs (de Beer and Friend, 2006).

Gunarathne and Lee (2015: 363) make an interesting observation that the definition of EMA stresses the importance of providing both financial and physical information and this potentially contributes in the establishment of two types of

EMA systems: monetary EMA (MEMA) and physical EMA (PEMA). The authors went on to describe these EMA systems as follows: 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 (Gunarathne and Lee, 2015). Since this study investigates the EMA tools used by the hotels in South Africa, a developing economy, a single EMA system which, incorporates monetary and physical information, was investigated. This is in line with several studies conducted in the same area, where EMA has been described as a single system that incorporates both monetary and physical information.

#### 4.4. EMA application within the hotel sector

Literature reveals that there is limited research pertaining to the application of EMA tools, particularly in the hotel sector. As a result, the implementation and application process of EMA remains unclear. Schaltegger, Viere, and Zvezdov (2012) point out that the even the EMA framework, like the multitude of proposed environmental accounting tools, does not explain the processes as to how corporate decision makers design their environmental information management and use processes. Gunarathne and Lee (2015) support this argument by stating that the development stages of EMA have not been empirically investigated well enough. 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. Qian et al. (2015) add that the main focus of EMA studies has been on highly polluting and energy intensive industries. Jamil et al. (2015) add that the importance and benefits of EMA have been reported by empirical studies. However, the level of adoption and implementation of EMA practice is still weak in firms in many countries, especially in developing countries.

## 5. RESEARCH METHODOLOGY

The research consisted of literature review and empirical study. The historical review laid a foundation that guided empirical study and provided an insight and understanding into the research problem.

Qualitative exploratory case study research method has been adopted in this study. This type of case study is used to explore those situations in which the intervention being evaluated has no clear, single set of outcomes (Yin, 2009). The use of case study as a research methodology to collect data is appropriate for this study because it is a means to provide rich drawings, descriptions, considerations and clarifications of the events being investigated. The primary data collection for this study came in the form of in-depth interviews using semi-structured questions. Furthermore, additional documents were analysed. These included the hotels' Group Energy Profile Analysis programme (GEPA), Building Management System (BMS), financial statements, policies and the group websites together with their individual hotel websites.

Purposive sampling was used in this study because, with purposive sampling, one needs to use one's judgement to select cases that will best enable the researcher to answer research questions and to meet objectives (Saunders, Lewis, and Thornhill, 2012). The hotels had to have an already developed EMS. Therefore, it had to have either a Green Leaf Eco Standard certification, Heritage Environmental certification or Fair Trade Tourism certification. The selected case is that of a hotel management company (for confidentiality purposes will be referred to as ABC Hotel Management Group) with its 3 hotels which met the selection criteria. The environmental management challenges faced by these establishments are universal. A total of 10 individuals participated in this study, which consisted of 3 general managers, 3 financial managers, 3 maintenance managers, and the Group engineer. Creswell (2015) recommends a sample size of between 3 to 10 participants for phenomenology studies like this one. The interviews

were conducted between May and June 2015 based on the availability of the informants.

## 6. RESEARCH FINDINGS

To ensure triangulation, field notes from direct observation, documentation and hotel websites were also incorporated into the analysis of data to complement in-depth interviews. This exercise was performed to ensure reliability and validity of the findings and thus address bias. Cross-case synthesis was used and the results were analysed in accordance to the theme and objectives. Table 2 shows the theme, objectives and interview questions that were used in this study. For each hotel, group interviews were held with the hotel management team (hence each table has only four columns which represent responses from the Group engineer and the management team from hotel A, B, and C).

**Table 1.** Themes, objectives and interview questions

Themes	Objectives	Interview questions
1. Internal and external factors enabling the use of EMA tools.	To identify internal and external factors enabling the use of EMA tools by the hotel sector in the developing economy.	<ul style="list-style-type: none"> <li>Do you think the hotel has provided enough incentives to motivate general managers or administrative divisions to control, or reduce environmental costs?</li> <li>How do you see the potential use of EMA practices in providing such incentives?</li> <li>What would trigger the hotel to consider the major environmental costs when making management decisions?</li> <li>Are any internal pressures forcing the hotel to account for any of its impacts on the environment? Who imposes the pressure? How does the hotel react to the pressure and what are the actions taken?</li> </ul>
2. Internal and external factors limiting the use of EMA tools.	To identify internal and external factors limiting the use of EMA tools by the hotel sector in the developing economy.	<ul style="list-style-type: none"> <li>Are there barriers (either technical or political) in the provision of such environmental reporting? If yes, please explain.</li> <li>Are there any impediments, either technical and/ or political, to provide an internal report on environmental performance to related parties?</li> <li>Are you aware of any compulsory regulations, or requirements, on hotels to control, or reduce, their major environmental costs? If yes, what are they? If no, do you think the government will impose compulsory regulations on hotels to control, or reduce, their major environmental costs?</li> <li>Are any external pressures forcing the hotel to account for any of its impacts on the environment? Who imposes the pressure? How does the hotel react to the pressure and what are the actions taken?</li> </ul>

### 6.1. Internal and external factors enabling the use of EMA tools

Table 2 reveals that, according to informants, the hotel has the culture to motivate management to

control and reduce environmental costs. Therefore, the overall response suggests that there are no financial rewards provided as incentives but directives embedded in the corporate culture.

**Table 2.** Incentives

Question	Do you think the hotel has provided enough incentives to motivate general managers or administrative divisions to control, or reduce environmental costs?			
	Hotel A	Hotel B	Hotel C	Group Engineer
There are no monetary incentives.		Not necessarily expected but part of the culture.	Yes, not monetary but part of the culture.	Not incentives but directives.

**Table 3.** EMA as a tool for incentives

Question	How do you see the potential use of EMA practices in providing such incentives?			
	Hotel A	Hotel B	Hotel C	Group Engineer
Owners must comment on this and must be understood by managers.		It is very important.	Yes, to provide KPIs.	'Key, provided there are fair KPIs in place'.

**Table 4.** What triggers the hotel to consider environmental costs?

Question	What would trigger the hotel to consider the major environmental costs when making management decisions?			
	Hotel A	Hotel B	Hotel C	Group Engineer
Cost Reductions. Meeting Green Leaf Eco Standards. Recyclability of materials bought. Acquisition of eco-friendly equipment.		Reduction of environmental impact by the hotel and reduction of costs.	Cost reduction and sustainability.	Costs.

Table 3 illustrates that the hotel management was positive towards the potential use of EMA practices in providing incentives to motivate general managers or administrative divisions. However, there is a concern that the EMA practices must be understood by managers and key performance indicators (KPIs) must be in place.

Cost reduction was the main trigger for the hotel to consider the major environmental costs when making decisions according to the respondents in Table 4. Meeting Green Leaf Eco Standards and sustainability were also considered.

**Table 5. Internal pressures**

Question	Are any internal pressures forcing the hotel to account for any of its impacts on the environment? Who imposes the pressure? How does the hotel react to the pressure and what are the actions taken?		
Hotel A	Hotel B	Hotel C	Group Engineer
Yes. Directors Green Leaf Eco Standard gives directives.	No.	No.	Yes. The group engineer and regional director.  More work but it gets done.

**Table 6. External pressures**

Question	Are any external pressures forcing the hotel to account for any of its impacts on the environment? Who imposes the pressure? How does the hotel react to the pressure and what are the actions taken?		
Hotel A	Hotel B	Hotel C	Group Engineer
None but international visitors somehow.  No action.	Yes. International organisations.  No action.	Occasionally by the government.  No action.	Yes. Tourists Initiatives and projects as set out in previous questions.

Table 5 shows that the management of hotels B and C in unison towards the questions asked. They responded that there is no internal pressure. However, hotel A and the group engineer agreed that there is internal pressure by citing the group engineers and directors as internal pressures forcing the hotel to account for the hotel's impact on the environment. The management responded that more work is expected from the general managers and Green Leaf Eco Standard provides the directive on how to react to the pressures.

The management was positive towards the questions asked in Table 6 and the general response was that there are no actions taken to respond to external pressures other than projects and initiatives

already done by the hotel. International visitors were said to be the main external pressures forcing the hotel to account for its impact on the environment.

## 6.2. Internal and external factors limiting the use of EMA tools

Table 7 shows that the hotel management is congruent with the question in responding that there are no barriers to the provision of environmental reporting. However, there is some consideration that technical skills are a potential barrier. Lack of in-house knowledge and skills is considered by Massoud et al. (2010: 207) as a major barrier for the provision of environmental reporting.

**Table 7. Barriers for environmental reporting**

Question	Are there barriers (either technical or political) in the provision of such environmental reporting? If yes, please explain.		
Hotel A	Hotel B	Hotel C	Group Engineer
No barriers.	No barriers.	No barriers.	It would require technical skills.

**Table 8. Impediments for internal reporting**

Question	Are there any impediments, either technical and/or political, to provide an internal report on environmental performance to related parties?		
Hotel A	Hotel B	Hotel C	Group Engineer
Yes. Confidentiality if provided externally.	No.	No.	Yes. Technical skills

**Table 9. Awareness of regulations**

Question	Are you aware of any compulsory regulations, or requirements, on hotels to control, or reduce, their major environmental costs? If yes, what are they? If no, do you think the government will impose compulsory regulations on hotels to control, or reduce, their major environmental costs?		
Hotel A	Hotel B	Hotel C	Group Engineer
No.	Yes.	Yes/ (No).	No.
They should.	International standards.	Green Leaf Eco Standards and upholding the hospitality regulations. (It may happen).	In the future, Yes. The carbon tax.

The hotel management's responses were divided towards the question in Table 8. The main

concerns were confidentiality and the availability of technical skills.

According to Table 9, respondents were divided in their responses to the questions. There is, however, an awareness of the Green Leaf Eco Standards and international standards that need to be adhered to. The informants responded that the government should or might impose compulsory regulations on hotels, carbon tax being one of them. Leonard and Dlamini (2014: 4) state that the Carbon Tax Policy, the Renewable Energy Policy and the Waste Policy have detailed measures on how government seeks to promote environmental sustainability with emphasised targets and goals to reach. However, there are limited, or no control measures in place.

### 6.3. Summary of key findings

The study identified the following internal factors perceived as motivating the use of EMA tools by the hotel sector:

- *Cost-reduction.* It was discovered that the strategic focus of investigated cases was to reduce costs.

- *Top-management's commitment to environmental management.* It is evident from the study that the top management, from the cases investigated, is committed towards environmental management and sustainability.

The following external factors were discovered as enabling the hotel sector to implement and use EMA tools:

- *Compliance to regulations.* Subscribing to certification programmes such as Green Leaf Eco Standard and Heritage Environmental Programme enable the hotel sector to implement and use EMA tools. This is due to the fact that, through such certification initiatives, the hotels' performance is continuously assessed to ensure full compliance and to ensure that the hotel is achieving its own environmental management objectives.

- *Pressures from international visitors.* Informants pointed out that some of the reasons why they participate in environmental management activities was the pressure received from international visitors who seek eco-friendly hotels. Therefore, as its marketing strategy, the hotels have implemented and used EMA tools in their eco-friendly activities to build a corporate image that attracts green travellers who desire to stay in eco-friendly establishments.

It was discovered by this study that there exist several internal factors that limit the use of EMA tools by the hotel sector. These are:

- *Lack of skills, knowledge, experience and specialist staff.* The main barriers established in the cases investigated were the shortage of skilled personnel who are able to use EMA tools appropriately and efficiently. This study acknowledges that these barriers are attributed to the fact that the area of EMA is still new in this sector, particularly in the developing economies such as South Africa.

- *Absence of appraisal system.* The informants admitted that there are no monetary incentives aimed at rewarding employees who achieve KPIs set for them. This limiting factor is exacerbated by the fact that there is lack of sufficient expertise required to set clear KPIs and align them with the efficient use of EMA tools so that these KPIs are achieved by

employees.

- *Inconsistent application of environmental management technologies within the Group.* There appears to be inconsistencies in terms of the installation of environmental management technologies within the properties managed by the same Group. This contributes to the incomparability of data used to assess, monitor and benchmark the performance between these hotels. Therefore, if the performance of the hotels which are not installed with technologies, such as BMS and GEPA, is better than those with these systems, then it would not make sense to invest in such technologies in those properties. However, it will limit the application of EMA tools.

- *Lack of proper communication of information within the Group.* The lack of knowledge and the inconsistencies in the application of environmental management technologies within the Group can be attributed to the lack of proper communication within the Group. The analysis of data demonstrated there were serious communication challenges within Group and these challenges would inevitably affect the application of EMA tools.

The following external factors were found by this study to be limiting the use of EMA tools within the hotel sector.

- *Lack of sector specific implementation guidelines and examples.* Limited research has been done that reveals the use of EMA tools within the hotel sector. This is a limiting factor because there are no real life examples that the hotel sector can refer to for the implementation of these tools.

- *Lack of promotion of use of EMA tools.* The existing environmental initiatives fall short in promoting EMA tools and providing convincing evidence that should encourage hotels to use these tools. Even if the environmental management initiatives such as the certification programmes are starting to increase within this sector, there is no clear indication as to how EMA tools can be integrated with these programmes.

- *Lack of government support.* The implementation of environmental practices is voluntary and the government support is absent. It was discussed in the preceding chapters that the government's role in promoting the use of environmental management accounting is very limited and the country is challenged since the government is not playing an effective role in assisting the hotel sector to establish an eco-friendly framework that will guide the implementation of EMPs.

- *Lack of promotion and enforcement of government regulation.* In as much as the country is endowed with environmental laws and policies, these are not actually enforced. The findings of investigated cases reveal that most of the environmental regulations that exist within the country are not known and, therefore, limit the use of EMPs that will, in turn, require the use of EMA tools.

## 7. LIMITATIONS

This study was limited to hotels within the province of KwaZulu-Natal, a province in South Africa, using a single case study with embedded units approach. Generalisation should be exercised with care in

terms of the findings being applicable to all hotels in the developing economy. It may add value to use multiple case studies in order to increase rigour of the analysis and to compliment this study.

## 8. IMPLICATIONS

The practice of EMA by the hotel industry in the developing economies remain arguably shallow. This is due to the fact that limited investigation has been done in this area. This study contributes to the identification and critical evaluation internal and external factors enabling and limiting the use of EMA by hotels based on the experiences applied by ABC Hotel Management Group.

## 9. RECOMMENDATIONS

### 9.1. Recommendations for ABC Hotel Management Group

It is evident from the findings that the group has implemented the environmental management systems to reduce its environmental costs. The study investigated only 3 of 11 hotels managed by the group, which is indicative of the fact that the hotel is at an infancy stage in terms of implementing these systems. It is recommended that the group appoints a group environmental officer who will assist in tracing and tracking environmental costs incurred by the hotels and establish the activities performed that results in these costs being incurred. The group is encouraged to conduct workshops for its hotel management and all the decision makers to create awareness about systems that are used in reducing and managing environmental costs. Uniformity and consistency is also recommended in the application of the EMA tools across all hotels in order to maintain order and facilitate the comparability of data and to improve monitoring and controlling.

### 9.2. Recommendations for future research

A longitudinal case study approach can be used to identify and evaluate EMA tools used by the hotel sector. This type of study would provider a much richer and more detailed evaluation of the EMA tools used by the hotel sector. This approach can assist in determining the extent at which these tools are used and how effective are they in reducing and controlling environmental costs and how are they reported. This study used a qualitative approach and therefore a quantitative method is recommended to test the relationship between various variables.

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