

ENVIRONMENTAL MANAGEMENT ACCOUNTING: A CONCEPTUAL MODEL FOR THE REPORTING OF ENVIRONMENTAL COSTS

Celani John Nyide*

* Department of Finance and Information Management, Durban University of Technology, South Africa

Abstract

The overall aim of this study was to identify factors that affect the use of EMA by the hotel sector in South Africa. The research was an exploratory study and qualitative in nature using a single case study with embedded units approach. ABC Hotel Management Group along its 3 hotels located in the province of KwaZulu-Natal, South Africa, met the selection criteria and thus formed part of this study. There were 10 participants in this case study. Additional documents were analysed which included financial statements, policy documents, the Group website, the hotels' websites, Group Energy Profile Analysis (GEPA) programme, and Building Monitoring Systems (BMS). The results of this research established a number of factors that affect the use of EMA by the hotel sector in South Africa. The adoption of a prototype EMA model by the hotel sector is then suggested by the study.

Keywords: Developing Economy, EMA Model, Environmental Costs, Environmental Reporting, Hotel Sector

1. INTRODUCTION

As the business world endeavours to respond to increasing pressure from various stakeholders to reduce the impact of its activities on the physical environment, the need for new techniques to assist managers in meeting the challenge of environmental sustainability becomes apparent. One method suggested as being able to align corporate activities with the environmental agenda more closely is EMA (Christ and Burritt, 2013: 163). Moreover, these pressures have forced organisations to have ER practices in place which are seen as the vehicle for providing environmental data designed to satisfy the accountability relationships and to indicate corporate consciousness through a moral discourse on environmental issues (Sumiani, Haslinda, and Lehman, 2007: 896). According to Boutena and Hoozée (2013: 334), there is a relationship between ER and EMA, meaning that procedural changes in one may elicit procedural changes in the other. Despite the positive outcomes that emerge from implementing EMA tools, the EMA adoption rate for environmental reporting is still low in the developing economies such as South Africa (Nyide and Lekhanya, 2016: 482).

2. PROBLEM STATEMENT

Research indicates that ER has become part of companies' daily affairs, where the question now is no longer whether to report or not, but how to report (Hsieh, 2012: 113). In terms of Assaf, Josiassen, and Cvelbar (2012: 597), ER has the potential to give the hotel sustainable competitive advantage because an increase in the firm's ER often contributes positively in environmental

performance. However, several studies maintain that there are no consistent environmental reporting standards that have been established in the hotel industry (Hsieh, 2012: 109; Rao, Tilt, and Lester, 2012: 144; Ni, Chan and Wong, 2012: 189). This problem might be a contributing factor towards the hotel sector's slow response rate to the call to disclose environmental costs. Therefore, this study seeks to propose the adoption of an EMA model to enhance the reporting of environmental costs by the hotel sector.

3. RESEARCH AIM AND OBJECTIVES

3.1. Aim

The main aim of this research is to identify the existing critical factors affecting the use of EMA by the hotel sector in South Africa and then propose the adoption of an EMA model to improve the reporting of environmental costs by this sector.

3.2. Objectives

- To identify internal and external factors affecting the use of EMA by the hotel sector in South Africa.
- To suggest a prototype EMA model to improve the reporting of environmental cost by the South African hotel sector.

4. ENVIRONMENTAL REPORTING IN THE HOTEL SECTOR

ER is broadly defined as a means of providing information relating to the environmental implications of the firm's operations (Rao et al.,

2012: 143). This information is often disclosed in corporate environmental reports, which Hsieh (2012: 109) describes as publicly available, freestanding documents that companies use to communicate environmental performance to their stakeholders. These reports often contain information regarding the company's policy, overall position with regard to the environment, progress towards specific targets established in previous reports, and new targets to improve performance. Traditionally, these reports have been produced in hard copy annually and freely distributed to selected recipients or have been available on request. Assaf et al. (2012: 596) point out that ER is integrated to triple bottom line (TBL) reporting - a comprehensive approach to achieve sustainability as it integrates reporting on environmental, social and financial issues. Rao et al. (2012: 144) assert that there is a growing trend for organisations throughout the world to provide information that relate to their environmental activities. However, some countries do not have mandatory requirements for organisations to disclose their financial performance. In the study conducted by Hsieh (2012: 112), 50 hotel chains were sampled and these companies have 45 245 hotel units worldwide, and it was discovered that only 46 percent of the sampled hotels include environmentally-related information on their web sites. Of those, 69 percent were Europe-based hotel companies, 37 percent were North America-based hotel companies, and 33 percent were based in Asia. The European trend towards greater environmental reporting by hotel companies was based on the fact that governments in Western Europe and Japan were found to either mandate or encourage certain corporate environmental disclosures (Hsieh, 2012: 112). The study further revealed that hotel establishments seem slow to respond to the call to disclose environmental information (Hsieh, 2012: 112).

Hotels, being relatively low polluters, ER is considered to be in the early stages (Janković and Krivčić, 2014: 114). However, for larger hotel groups with publicly-traded shares, there is greater pressure to report on environmental performance and those hotels with newer buildings (with newer cleaner technologies) are considered to have a higher environmental performance and therefore have a willingness to report on their environmental performance (Font, Walmsley, McCombes, and Häusler, 2012: 1546). Jones (2010: 131) asserts that organisations should be accountable for the environment because they are stewards of the environment. The author further mentions that organisations can be seen as being accountable to their shareholders for their stewardship of natural assets. Rao et al. (2012: 145) add that environmental reporting is crucial for organisations' long-term survival and organisations need to be sure that there are no 'skeletons in the closet' which may, subsequently, come to the light, damaging the reputation and viability of the organisation. Font et al. (2012: 1546) stress that ER should be mandatory. This argument is supported by Jones (2010: 134) who states that mandatory regulation is likely to be more effective than voluntary regulation.

5. GLOBAL ENVIRONMENTAL REPORTING INITIATIVES AND STANDARDS

According to Hsieh (2012: 113), Global Report Initiative (GRI), such as G4 standard sustainability reporting guidelines, have been widely adopted by firms and, therefore, hotel companies can adopt these reporting standards. Milne and Gray (2013: 18) and Willis (2003: 233) point out that GRI has since arguably become the most influential institution with the aim of developing a voluntary reporting framework that will elevate sustainability reporting practices to a level equivalent to that of financial reporting in rigour, comparability, auditability and general acceptance. Global Report Initiative (2015) echo that a sustainability report conveys disclosures on an organization's most critical impacts - be they positive or negative - on the environment, society and the economy. By using the Guidelines, reporting organisations can generate reliable, relevant and standardized information with which to assess opportunities and risks, and enable more informed decision-making - both within the business and among its stakeholders. Table 1 shows the set of G4 standard guidelines that firms are expected to follow.

Table 1. GRI - G4 Guidelines for environmental reporting

Economic	Environmental
- Economic Performance	- Materials
- Market Presence	- Energy
- Indirect Economic Impacts	- Water
- Procurement Practices	- Biodiversity
	- Emissions
	- Effluents and Waste
	- Products and Services
	- Compliance
	- Transport
	- Overall
	- Supplier Environmental Assessment
	- Environmental Grievance Mechanisms

Source: Global Reporting Initiative (2015)

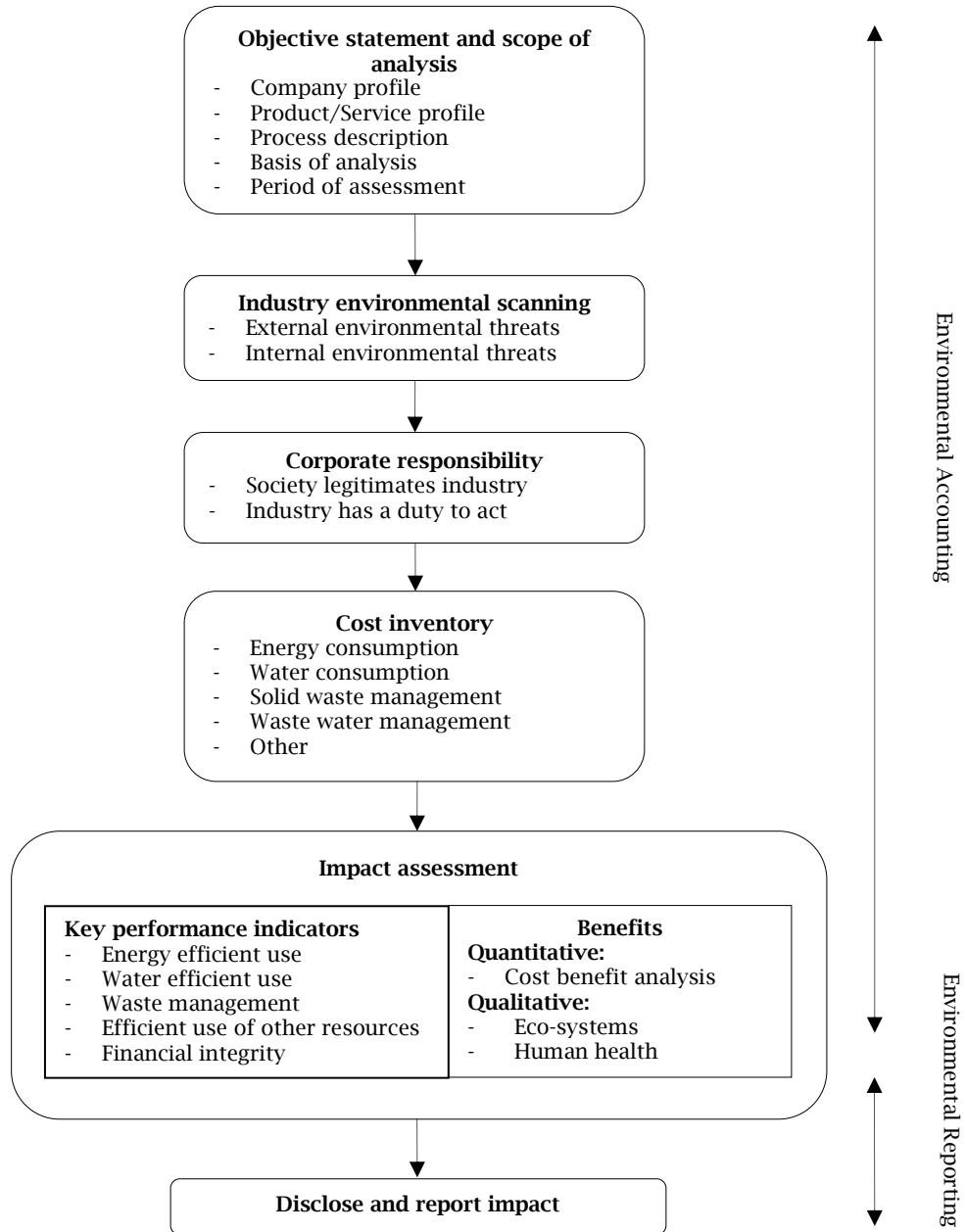
These guidelines provide sustainable performance indicators, as pointed out by Jones (2010: 133). Ni et al. (2012: 178) echo that this promotes a standardised reporting system that facilitates the comparison of results of various hotel operations and it fosters greater reporting conformity. Vigneau, Humphreys, and Moon (2014: 4) maintain that, by providing reporting guidelines, the GRI aims at promoting organisational transparency and accountability as well as stakeholder engagement. The GRI also provides application-level information, as corporations can self-assess their reports (or get a third party assurance), based on the number of GRI indicators disclosed in their reports. It is clear that the GRI is now providing more information about what to report (performance indicators), than how to report (protocol of reporting); placing importance on certain issues, such as materiality, stakeholder and social inclusiveness. As a result, companies are integrating these issues into their business practices (Vigneau et al., 2014: 5).

6. PROPOSED EMA MODEL

Figure 1 shows a proposed EMA model for the adoption by the hotel sector. Having reviewed the

literature about the use of EMA tools, this study suggests the adoption of the model, as depicted in Figure 1, which underpins the EMA and reporting.

Figure 1. Proposed EMA and reporting model for the hotel sector



Source: Adopted from Jones (2010: 125 and De Beer and Friend (2006: 552)

This model consists of six major parts and is based on prior literature (Jones, 2010: 125; de Beer and Friend, 2006: 552) and on the principles of the total cost assessment environmental management accounting. The model consists of pathways, which the hotel sector must follow in a specific analysis of the environmental impacts on the hotels. These different pathways depend on the objective statement and scope of analysis, and the amount of data the user needs to acquire or record. This model is intended to serve as a tool used by the hotel

sector to analyse the environment in which the hotel operates and assess the impact of the hotels' activities on the environment (using a combination of EMA tools) and suggest ways to avert or minimise such impacts for the good of the environment and to report on the environmental costs associated with the hotels' activities.

6.1. Objective statement and scope of analysis

The first step of the model is the compilation of an

objective statement and scope of analysis that incorporates an analysis background. An analysis background entails a background of the hotels and provides some informative value to the product and process being considered. The scope of analysis determines the type of cost comparison and the time frame that is desired for the analysis.

6.2. Industry environmental scanning

This step includes factors which are external to the hotels e.g., environmental and social effects that occur to the general public and also internal factors affecting the environment, e.g., air emissions.

6.3. Corporate responsibility

Under the broad heading of corporate responsibility, two interlocking premises will be discussed:

6.3.1. Society legitimises industry

According to Jones (2010: 127), under this premise, commonly put forward by environmental accounting researchers, is that the authority of hotels may be seen as legitimised by society through minimally accepted moral standards (legally enshrined) and through collective societal moral responsibility

6.3.2. Industry has a duty to act

As per this premise, the organisation or individual (and that includes managers and accountants) cannot afford to be complacent when faced with potential environmental threats.

6.4. Cost inventory

Economic values will be calculated by recording/entering all relevant present and future environmental costs and revenues in cost inventory forms. These forms are categorised into the following environmental groups: energy consumption, waste, waste water, solid waste, and other costs that do not fit into any of the categories above.

6.5. Impact assessment

Following the cost allocation in the cost inventory, the impact can then be assessed to ascertain the sustainability indicators, e.g., energy efficient use and resource efficient use.

6.6. Disclose and report impact

The final report can be compiled according to company specific regulations, incorporating the reported value/s as given in the costs incurred by type form, the cost types by year form and the cost report form of the model.

7. 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, 2012). 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.

8. 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 2. Theme, objectives and interview questions

Themes	Objectives	Interview questions
Internal and external factors enabling the use of EMA	To identify internal and external factors affecting the use of EMA by the hotel sector in South Africa	Does the hotel have any form of environmental reporting? If yes, what is reported? Is it including the major environmental costs? At what level are the major environmental costs reported (if any)?
		Does the hotel trace any of the major environmental costs (either physical or monetary)? If yes, what are they and how are they categorised?
		Do you think the hotel should provide major environmental cost information as a means to increase environmental awareness and encourage behaviour change? If not, why not? If so, whom do you think should be provided with this information (consider in your answer both general managers and administrative divisions)? What do you think would be the major barriers (either technical or political) to the provision of such information to heads of departments or internal managers?
		Are there barriers (either technical or political) in the provision of such environmental reporting? If yes, please explain.
		Are there any impediments, either technical and/or political, to provide an internal report on environmental performance to related parties?
		Does the hotel issue any internal report on environmental performance? If yes, at what level is the environmental performance assessed and what is the purpose of issuing this report? If not, why not (e.g. not mandatory, not a normal practice in hotels, or not cost effective)? Are there any impediments, either technical or political, to provide an internal report on environmental performance?

The results are discussed below as follows:

Theme Internal and external factors enabling the use of EMA

Table 3. Environmental reporting and major environmental costs

Question	Does the hotel have any form of environmental reporting? If yes, what is reported? Is it including the major environmental costs? At what level are the major environmental costs reported (if any)?			
	Hotel A	Hotel B	Hotel C	Group Engineer
	Yes. Energy and water consumption are reported monthly using the internal system (BMS). It is reported hotel wide.	Yes. Energy, water and waste are reported subject to Green Leaf Eco Standard. These are reported monthly across all divisions with the hotel.	Yes. Energy, waste and water. Reported internally across the board.	Yes. Reported monthly to the regional manager. It is included in the General managers' pack. Water, energy and occupancy (which includes conferencing, bed nights sold and room nights sold). The reporting is done across all departments.

In Table 3, the hotel management was positive towards the question. However, there appears to be an inconsistency in the way environmental reporting is done. Having said that, energy, water and waste are the major costs reported by hotels B and C, whilst A focuses on energy and water consumption

and these were also mentioned by the group engineers who also added occupancy-related information. There seems to be a lack of standardised information reported by the hotels under study.

Table 4. Tracing of environmental costs

Question	Does the hotel trace any of the major environmental costs (either physical or monetary)? If yes, what are they and how are they categorised?			
	Hotel A	Hotel B	Hotel C	Group Engineer
	Both physical and monetary. These are recorded separately. Water and lights.	'Consumption more than monetary' Recorded separately. Energy, water and waste.	Physical information Recorded separately. Water, energy and waste.	Yes, GEPA is used to trace the major environmental costs. Both monetary and physical information is recorded. Water, energy and occupancy information.

According to Table 4, respondents were in agreement to the question and to recording the major environmental costs separately. However, there was no consensus on the way the major environmental costs are traced. The group engineer reported that environmental costs are traced using both financial and physical information. This is similar to what hotel A is doing. On the contrary, hotels B and C trace the major environmental costs using physical information more than monetary information. Water and energy are the major costs

widely traced by the group even though hotels B and C also trace waste-related costs (physical). As indicated in the above discussion, environmental reporting can be considered as the necessity to demonstrate the hotels' environmental responsibility. However, the most significant problem is that disclosed environmental information is not fully comparable, which makes it a challenge to rank hotels depending on their environmental responsibility. The reason for this problem is the lack of information about how data is measured.

Table 5. Environmental cost information and awareness

Question	Do you think the hotel should provide major environmental cost information as a means to increase environmental awareness and encourage behaviour change? If not, why not? If so, whom do you think should be provided with this information (consider in your answer both general managers and administrative divisions)? What do you think would be the major barriers (either technical or political) to the provision of such information to heads of departments or internal managers?			
	Hotel A	Hotel B	Hotel C	Group Engineer
	Yes. On the webpage and broader booking platforms. No barriers.	Yes. To everyone and improve the Green Leaf Eco Standard scoring which currently stands at 75%. No barriers.	Yes (internally). Staff and guests. No barriers.	Yes. Everyone Technically it would be a challenge. Confidentiality and completion.

Informants were in agreement towards the question. However, confidentiality was the main concern for the provision of information relating to major environmental costs for the hotel. Therefore, Table 5 shows that even though the informants responded that the information should be provided to everyone, the emphasis was that it should be provided internally. The general managers along with the maintenance managers and financial managers responded that there are no barriers to the provision of such information, contrary to the view of the group engineer who cited technical

barriers, competition and confidentiality.

Table 6 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.

The hotel management's responses were divided towards the question in Table 7. The main concerns were confidentiality and the availability of technical skills.

Table 6. 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 7. 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 8. Issuing of the internal report on environmental performance

Question	Does the hotel issue any internal report on environmental performance? If yes, at what level is the environmental performance assessed and what is the purpose of issuing this report? If not, why not (e.g. not mandatory, not a normal practice in hotels, or not cost effective)? Are there any impediments, either technical or political, to provide an internal report on environmental performance?			
	Hotel A	Hotel B	Hotel C	Group Engineer
	Yes. Across the board. None.	Yes. Across the board. None.	Yes. Hotel-wide. None	No. Lack of understanding and no reason and incentives to drive it down. No technical skills.

Contrary to the group engineer's response to the questions asked in Table 8, the management of

hotels A, B and C agreed that their respective hotels issue internal reports on environmental performance

across all departments and there are no impediments to provide such reports. On the other hand, the group engineer disagreed that the hotels issue internal reports on environmental performance citing that there is no reason to do so and there is lack of understanding and incentives and also there are no technical skills to issue such a report.

8.1. Summary of key findings

8.1.1. The use of EMA tools to report environmental costs

In Table 4, the group engineer revealed that the organisation uses GEPA to trace the major environmental costs by analysing physical quantities the hotels consume and the associated costs incurred. This practice was confirmed by informants from other hotels who conceded that both BMS and GEPA are used for the analyses and recording of both financial and physical information. This confirms the use of EMA tools to report environmental costs.

8.1.2. Factors affecting the use of EMA to report environmental costs

By definition, EMA facilitates the identification and allocation of major environmental costs for their effective management. However, in Table 5 - Table 8, it is evident that that this process is currently a challenge within the group because of lack of knowledge, skills and understanding. This lack of knowledge, skills and understanding may serve as an impediment for the effective implementation of EMA tools.

9. 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.

10. IMPLICATIONS

It is revealed from the investigated cases that there is concern pertaining to data inaccuracies and the understanding of data which can be attributed to a number of factors such as lack of skills, knowledge, and experience. This has resulted in the inconsistent application of EMA tools. Therefore, this study suggests the application of an EMA model which provides pathways which the hotels must follow in a specific analysis of the environmental impacts on the hotel.

11. RECOMMENDATIONS

11.1. Recommendations for ABC Hotel Management Group

Uniformity and consistency are 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. This will also facilitate the implementation of these tools in other facilities that are currently not resourced with these tools because similar systems will be implemented across all hotels managed by the Group. The group is also encouraged to conduct workshops for its hotel management and all the decision makers to create awareness about systems that are currently in use aimed at reducing and managing environmental costs. These workshops and training sessions are envisaged to optimise the use of the technologies and tools currently implemented with the aim of improving the Group's performance.

11.2. Recommendations for future research

This study suggested the adoption of an EMA model by the hotel sector. Future research is encouraged to critically evaluate the applicability and the effectiveness of this model and suggest any possible improvements.

REFERENCES

1. Assaf, A.G., Josiassen, A. and Cvelbar, L.K. 2012. Does Triple Bottom Line reporting improve hotel performance? *International Journal of Hospitality Management*, 31: 596 - 600.
2. Bouten, L. and Hoozée, S. 2013. On the interplay between environmental reporting and management accounting change. *Management Accounting Research*, 24:333 - 348.
3. Christ, K.L. and Burrit, R.L. 2013. Environmental management accounting: the significance of contingent variables for adoption. *Journal for Cleaner Production*, 41: 163 - 173.
4. De Beer, P. and Friend, F. 2006. Environmental accounting: A management tool for enhancing corporate environmental and economic performance. *Ecological Economics*, 58: 548 - 560.
5. Creswell, J.W. 2015. *A concise introduction to Mixed Methods Research*. California: SAGE Publications, Inc.
6. Font, X., Walmsley, A., McCombes, S.C.L. and Häusler, N. 2012. Corporate social responsibility: The disclosure-performance gap. *Tourism Management*, 33: 1544 - 1553.
7. Global Reporting Initiative. 2015. An introduction to G4: The next generation of sustainability reporting. [Online]. Available: <https://www.globalreporting.org/standards/g4/Pages/Introduction-to-G4-brochure.aspx> [Accessed on: 11/08/2015].
8. Hsieh, Y.C. 2012. Hotel companies' environmental policies and practices: a content analysis of their web pages. *International Journal of Contemporary Hospitality Management*, 24 (1): 97 - 121.
9. Janković, S. and Krivačić, D. 2014. Environmental accounting as perspective for hotel sustainability: Literature review. *Tourism and Hospitality Management*, 20 (1): 103 - 120.
10. Jones, M.J. 2010. Accounting for the environment: towards a theoretical perspective for environmental accounting and reporting. *Accounting Forum*, 34: 123 - 138.
11. Milne, M.J. and Gray, R. 2013. W(h)ither Ecology? The Triple Bottom Line, the Global Reporting Initiative, and Corporate Sustainability Reporting. *Journal of Business Ethics*, 118:13 - 29.

12. Ni, S., Chan, W. and Wong, K. 2012. Enhancing the Applicability of Hotel Uniform Accounting in Hong Kong. *Asia Pacific Journal of Tourism Research*, 17 (2), 177 - 192.
13. Nyide, C.J. and Lekhanya, L.M. 2016. Environmental Management Accounting practices: Major Control Issues. *Corporate Ownership & Control*, 13 (3): 476 - 483.
14. Rao, K.K., Tilt, C.A. and Lester, L.H. 2012. Corporate governance and environmental reporting: an Australian study. *Corporate Governance: The international journal of business in society*, 12 (2): 143 - 163.
15. Saunders, M., Lewis, P. and Thornhill, A. 2012. *Research methods for business students*. 6th Edition. Harlow, Essex: Pearson Education Limited
16. Sumiani, Y., Haslinda, Y. and Lehman, G. 2007. Environmental reporting in a developing country: a case study on status and implementation in Malaysia. *Journal of Cleaner Production*, 15: 895 - 901.
17. Vigneau, L., Humphreys, M., and Moon, J. 2014. How Do Firms Comply with International Sustainability Standards? Processes and Consequences of Adopting the Global Reporting Initiative. *Journal of Business Ethics*, DOI 10.1007/s10551-014-2278-5.
18. Willis, A. 2003. The Role of the Global Reporting Initiative's Sustainability Reporting Guidelines in the Social Screening of Investments. *Journal of Business Ethics*, 43: 233 - 237.
19. Yin, R.K. 2012. *Applications of Case Study Research*. 3rd Edition. California: SAGE Publications, Inc.