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This study explores the factors that account for the environmental performance of hotels in the special context of a developing country, Ghana. It also examined the socio-demographic characteristics of managers and organizational characteristics that determine the environmental performance of Ghanaian hotels. A stratified random sampling method was employed to survey 200 hotel managers from different categories of hotels in Accra. Ninety-four per cent were independent, and Ghanaian-owned. Sixty-seven per cent had fewer than 20 rooms; only 45 had more than 100 rooms. Only 11.6% were affiliated to foreign multinational companies in any way. Six key factors that accounted for the environmental performance were extracted from a factor analysis. They included, in order of most practised, the environmental education and training for staff, measures to support for the host community, conservation project support, compliance with environmental regulations, waste management, and voluntary programmes. A hierarchical multiple regression analysis indicated that larger size and better class of hotels, as well as those with membership of the national hotel trade association, had better environmental performance as did hotels with better paid managers. Affiliation to foreign multinational chains did not predict better performance. A series of suggestions are made to improve the environmental performance of Ghana's hotels.

Keywords: hotel; Accra; environment; environmental performance; organizational characteristics; socio-demographic characteristics

Introduction

The world is increasingly confronted by environmental problems including climate change and global warming, population growth, deforestation, resource depletion, pollution and waste. Ironically, most of these environmental problems are anthropogenic, resulting from the exploitation of natural resources and production of goods and services to meet the needs and demands of consumers. As a result, multilateral organizations, governments, local residents, NGOs, consumers and other stakeholders are exerting stronger pressures on businesses to demonstrate greater environmental responsibility in order to reduce these environmental problems and to ameliorate their effects on society.

Historically, smokestack industries came under immense scrutiny, whilst service industries, which Hutchinson (1996) refers to as 'the silent destroyers of the environment', received less attention. Studies, however, show that hotels that occupy a pivotal position in the tourism industry adversely affect the environment (Gössling, 2002; Hunter & Green, 1995; Mathieson & Wall, 1982). Tourist accommodation, the largest sub-sector of the tourism industry, has the widest impact on the environment after transport (Graci, 2010).

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Also, an estimated 75% of the environmental impacts of the hotel industry can be attributed to the excessive consumption of both local and imported non-durable goods, energy and water (Italian Agency for Environmental Protection and Technical Services, 2002).

The environmental problems confronting many destinations, coupled with tourism's potential to destroy the environment that it thrives on, have led to calls for sustainable tourism practices by the hotel industry. The World Conference on Sustainable Tourism held in Lanzarote, Spain, in 1995, recognized that sustainable hotels lead to sustainable destinations, which in turn leads to successful hotel businesses. Therefore, for sustainable tourism to be realised at a destination, the hotel industry must implement environmental management practices.

Generally, the hotel industry appears to recognise its environmental responsibilities. Many hotels and hotel-related associations are undertaking environmental management at different degrees. In Hong Kong alone, a survey in 1992 found that about 30% of hotels had launched environmental programmes with different degrees of success (Barlett, 1992). However, multinational hotel chains and larger hotels of western origin have been at the forefront of environmental initiatives (Mensah, 2006; Mowforth & Munt, 1998; Pigram & Wahab, 1997). Apart from environmental initiatives by hotels at the corporate level, there have also been joint initiatives at national, regional and international levels. Such initiatives include the International Hotels Environment Initiative (IHEI), Asian Pacific Hotels Environment Initiative (APHEI), Caribbean Alliance for Sustainable Tourism, and International Tourism Partnership (ITP). ITP, which comprises chief executives, chairpersons and executive directors of leading travel and tourism organizations, has initiated a Hotel Carbon Measurement Scheme (ITP, 2012). This initiative will help standardize and improve reporting of hotel carbon emissions. However, most of these initiatives have been spearheaded by multinational hotel chains in developed countries: an example of a typical initiative is described in Bohdanowicz, Zientara, and Novotna (2011). It is therefore imperative to assess the environmental performance of hotels in a developing country like Ghana, where though there is a gradual infiltration of multinational hotels, small independent hotels form the bulk of the hotel stock.

Accra, the capital of Ghana, is experiencing a growth in hotel development largely as an opportunistic response to a sustained increase in tourist arrivals. Tourist arrivals to Ghana grew from 583,821 in 2004 to 698,069 in 2008 and, during that period, the number of registered hotels in the Greater Accra Region grew by 23.2% from 1,295 to 1,595 (Ghana Tourist Board [GTB], 2010). It is also interesting to note that hotel development and operations in Accra have sometimes been haphazard and some hotels are not registered with the GTB and are not included in their data on hotels. Such unplanned developments have the tendency to worsen the impacts of hotels on the environment. There is therefore the need for hotels to improve their environmental performance.

De Burgos-Jimenez, Cano-Guillen, and Cespedes-Lorente (2002, p. 208) citing James (1994) described an organization's environmental performance as "relating to the benefits and damage in terms of the natural surroundings (fauna, flora, landscape, human life and the necessary means of existence – land, water and air) that are brought about as a result of the organization's activity as well as how interactions with the environment affect the organization". However, most studies on environmental management in the hotel industry have been limited to environmental management practices and/or the attitudes of management towards environmental management (Bohdanowicz, 2005a; Erdogan & Baris, 2007; Kirk, 1998; Mensah, 2006; Stipanuk, 1996; Witham, 1995). Moreover, studies on the environmental performance of hotels have largely been carried out in developed countries. Also, in previous studies, measurement of environmental performance has not taken into

consideration the full range of environmental management activities that hotels could undertake (Erdogan & Tosun, 2009; Leslie, 2007). Indicators of energy conservation, water conservation, waste management, environmental compliance and environmental education have mostly been employed to the neglect of indicators of voluntary environmental activities such as eco-labelling, certification, environmental auditing and support for host communities.

It is against this backdrop that this study sought to determine the factors that account for the environmental performance of hotels in Accra. It also examined the socio-demographic characteristics of managers and organizational characteristics that influence the environmental performance of hotels in the context of a developing country like Ghana where most of the hotel businesses are small to medium scale and therefore face peculiar organizational and managerial challenges. The next section reviews the available literature on the environmental performance of hotels and its relationship with the organizational characteristics of hotels as well as socio-demographic characteristics of hotel managers.

Literature review and hypotheses

Measurement of the environmental performance of hotels

Environmental performance indicators (EPIs) are needed for the evaluation of the environmental performance of activities, processes, hardware and services (Carlson, 2002). They are financial and non-financial numerical measures that provide information on a firm's impact on the environment, compliance with regulations, relationship with stakeholders and organizational systems (Henri & Journeault, 2008). At the heart of the categories of EPIs are material use, energy consumption, non-product output and pollutant release (Ditz & Ranganathan, 1997). There are two main categories of EPIs: environmental condition indicators (ECIs) and environmental management indicators (EMIs). ECIs provide information about the direct impacts on the environment as a result of an organization's operations, while EMIs indicate the actions undertaken to reduce any negative environmental impact.

Though most studies have not drawn a clear distinction between environmental management and environmental performance (Buckley & Araujo, 1997; De Burgos-Jimenez et al., 2002; Feldman, Soyka, & Ameer, 1996; Walls, Phan, & Berrone, 2009), there is a direct relationship between them, because an organization's environmental management activities can be used as a yardstick for measuring its environmental performance (see James, 1994; De Burgos-Jimenez, 2002). De Burgos-Jimenez et al. (2002) identified two approaches to measuring environmental performance in hotels; the measurement of the environmental performance of individual hotels and the measurement of the environmental performance of various hotels together, to allow for comparison. In the case of the former, the tool commonly used is environmental auditing. James (1994), after an extensive review of the available literature, identified 10 ways of measuring companies' environmental performance. These are: companies' impact on the environment; harmful effects of organization's operations on the environment; volume of pollutants or contaminants generated; environmental protection initiatives; resource consumption levels; efficiency in the use of inputs; clients' environmental needs and concerns; expenditure on environmental initiatives and cost savings; standardized measurement of waste or resource consumption; and an aggregate measurement covering all complex environmental performance.

There has been a modicum of studies on the environmental performance of hotels. Erdogan and Tosun (2009) in their study of the environmental performance of tourist accommodation at the Goreme Historical Park used 39 indicators, grouped under seven main categories: architecture and landscape design, energy efficiency, waste reduction,

water efficiency, education and training, communication for environmental awareness and knowledge of management on environmental protection. Leslie (2007), in a study of the environmental performance of self-catering accommodation in Cumbria, UK, used a questionnaire based on an extensive set of environmental performance indicators developed by Bell and Morse (2002). Other studies in the accommodation sector employed environmental management practices such as energy and water conservation, waste management and environmental education to gauge environmental performance (Buckley & Araujo, 1997; Erdogan & Tosun, 2009; Rivera & de Leon, 2004; Rivera & de Leon, 2005). However, there seems to be no agreement in the literature on the standard indicators for measuring the environmental performance of hotels. Also, most of these measures have not incorporated indicators of voluntary environmental management and the full complement of environmental activities undertaken by hotels.

The most popular environmental management practices in the hospitality industry are conservation practices geared towards cost savings, waste management, recycling, energy and water conservation (Mensah, 2007; Withiam, 1995). However, voluntary environmental management practices, such as ecolabelling and certification, are also becoming popular environmental management tools in the hospitality industry (Font & Bendell, 2002; Hamele, 2004). However, environmental auditing, another voluntary environmental management practice, is not popular with hotel managers (Stabler & Goldall, 1997). Certification schemes such as ISO 14001:2004, ISO 14004:2004 and other voluntary environmental management systems are being increasingly adopted by hotels and resorts around the world in order to improve their resource-use efficiency, reduce operating costs, increase staff involvement and guest awareness, and gain international recognition in the travel and tourism marketplace (Meade & Pringle, 2001).

Another area that has not been given serious consideration in the development of measures of the environmental performance of hotels is compliance with environmental laws and regulations by hotels. Since the Rio Summit in 1992, many governments have made it a statutory/regulatory requirement that large new public and private sector projects undertake Environmental Impact Assessment (Middleton & Hawkins, 1998). Hotels are also obliged to comply with laws and regulations relating to planning guidelines (including building permits), permissible levels of greenhouse gas emissions, land-use planning and development restrictions.

Ultimately hotel development and operations should be beneficial to host communities. Hotels undertake projects to enhance the well-being of people in communities where they operate (Lee & Park, 2009). Hotels' support for host communities may also be in direct fulfilment of their corporate social responsibility. In Western Samoa, an EU-funded hotel construction project used traditional designs and techniques and imported only foreign materials when local substitutes were not readily available. The sites for the hotel were owned by local villagers; local people were employed and local agricultural produce was consumed by tourists (Eber, 1992). Similarly, Grecotel, the largest hotel chain in Greece, uses only local materials in the design of facilities which conform to local architecture. Grecotel also sustains the local economy, serves local dishes, encourages environmental conservation and encourages guests to visit smaller villages (Middleton & Hawkins, 1998).

Influencing the behaviour of guests through the promotion of a responsible environmental behaviour is seen as another dimension of the environmental performance of hotels (Leslie, 2007). Other environmental management practices in hotels include environmental policy formulation (Bohdanowicz, 2005a; Erdogan & Baris, 2007), green purchasing (Bonilla Priego, & Palacios, 2008) and green marketing (El Dief & Font, 2010). An assessment of the environmental performance of hotels should therefore take into

consideration this full range of environmental management activities expected from hotel businesses.

Environmental performance and organizational characteristics

Delmas and Toffel (2003) argue that both firm-specific and institutional pressures influence the environmental performance of companies. A firm's environmental performance could be affected by characteristics such as age and size (Anton, Deltas, & Khanna, 2004). Research has, however, shown that the environmental performance of hotels is influenced by organizational characteristics such as age of facility (Ingram & Baum, 1997); size of facility (Buckley & Araujo, 1997; Mowforth & Munt, 1998; Pigram & Wahab, 1997); class of facility (Alvarez-Gil, Burgos-Jimenez, & Cespedes-Lorente, 2001; Bohdanowicz, 2005a; Erdogan & Baris, 2007) and affiliation to multinationals (Bohdanowicz, 2005b; Rivera, 2004).

The age of firms affects their environmental performance (Melnyk, Sroufe, & Calantone, 2003). According to Roberts (1992), younger firms are more active than older ones in protecting the environment. The relationship between age of facility and environmental performance is explained by the use of new technology, since new technology tends to be more eco-efficient (Alvarez-Gil et al., 2001). Also, older firms are expected to be less productive and are likely to find it more expensive to achieve a given level of environmental performance (Shadbegian & Gray, 2006).

Based on resource-based theory, business performance is driven by firms' use of their unique resources, including both tangible and intangible resources, which Branzei, Jennings, and Vertinsky (2002) refer to as eco-capacity. An organization's complementary resources related to labour and capital may facilitate the adoption of environmental management systems and standards (Darnall, Henriques, & Sadorsky, 2008). These are upscale, larger and affiliated hotels that tend to possess these resources. Larger hotels are more proactive or more committed to environmental management (Buckley & Araujo, 1997; Mensah, 2006; Mowforth & Munt, 1998; Pigram & Wahab, 1997). Mowforth and Munt (1998) attribute this to the fact that small- and medium-scale accommodation companies do not have the capital resources or internal structural arrangement to effectively undertake environmental management. Also, small hotel businesses are less likely to know the practical steps to take in order to address environmental issues (Horobin & Long, 1996). According to Edwards (2000), small hotels generally view themselves as placing little burden on the environment; hence there is little effort towards incorporating environmental practices into their day-to-day operations. Large firms, on the other hand, are assumed to have idle resources, adopt a more formal approach to environmental management and enjoy economies of scale for making use of waste (Cespedes-Lorente, De Burgos-Jimenez, & Alvarez-Gil, 2003). They are also more visible, receive stronger pressures for environmental performance from various stakeholders and are more sensitive to reputation damage (Branzei et al., 2002). However, some studies have found no clear difference between large and small hotels in terms of environmental performance (Erdogan & Tosun, 2009; Kirk, 1995). Erdogan and Tosun (2009) in their study on the environmental performance of accommodation facilities in the Goreme National Park in Turkey could not establish a link between environmental performance and the quality or size of accommodation establishments.

Chain affiliation is also considered as having an influence on corporate environmental performance. Zyglidopoulos (2002) claims that multinational corporations are often subjected to higher social and environmental standards than national companies, because

they face additional pressures from stakeholders from foreign countries. They are also more likely to be subjected to greater expectations and monitoring on their environmental performance because they are more visible to local and international stakeholders and more likely to gain access to cost-effective pollution prevention technology (Christman & Taylor, 2001). In a study of European hoteliers, Bohdanowicz (2005b) discovered that those representing chain establishments exhibited more knowledge in eco-friendly initiatives than their counterparts from independent establishments.

However, the argument that global firms are more environmental-conscious is refuted by the 'pollution haven hypothesis' which posits that multinational firms react to increasing regulatory and social pressures for environmental performance in one geographic area by relocating to areas with less stringent regulations (Walter, 1982). Destinations in developing countries like Ghana appear to be such havens. Rugman (1995) suggests that even large multinational enterprises in smaller countries are not subjected to tight domestic environmental regulations, since the relevant environmental regulators are those of their foreign customers.

Another organizational characteristic considered as influencing environmental performance is membership of trade associations. Trade associations are able to drive members to improve their environmental performance through peer pressure by requiring their members to adopt the trade association's environmental standards or guidelines or risk losing membership if they fail to do so (Nash & Ehrenfeld, 2001). Rivera (2004) found trade association membership to have a significantly positive relationship with the adoption of a voluntary environmental programme by hotels in Costa Rica.

The effect of hotel occupancy on environmental performance is evident in the areas of resource consumption and waste. For instance, in the area of energy consumption, Önüt and Soner (2006), based on a study of five-star hotel buildings in the Antalya Region of Turkey, concluded that the occupancy rate and energy consumption have a strong correlation. Meade and Del Mónaco (2000) also found that in Jamaican hotels, water and energy indices rose during low-occupancy months and dropped during high-occupancy months. Drawing from the above arguments, the following hypotheses are proposed.

H_1: Affiliation to multinational hotel chains is positively related to the environmental performance of hotels.

H_2: Size of hotel is positively related to the environmental performance of hotels.

H_3: Class of hotel is positively related to the environmental performance of hotels.

H_4: Age of hotel facility is positively related to the environmental performance of hotels.

H_5: Occupancy of hotel is positively related to the environmental performance of hotels.

H_6: Membership of trade association is positively related to the environmental performance of hotels.

Environmental performance and characteristics of managers

The environmental performance of organizations has also been linked to the socio-demographic characteristics of managers. This is based on the premise that environmental values and attitudes determine the pro-environmental behaviour (Corraliza & Berenguer, 2000) and therefore a manager with a positive environmental attitude will engage in a pro-environmental behaviour which will enhance the environmental performance of their

hotel. Studies have shown that the environmental performance of hotels depends to a large extent on the manager's or owner's attitude towards change, their knowledge of the benefits of environmental practices and relations with the external environment (Bohdanowicz, 2005b; Erdogan & Baris, 2007). According to Cottrell (2003), socio-demographic variables are consistently used as predictors of behaviour. Also, the demographic characteristics of managers are widely recognized as influential over various business actions (Tihanyi, Ellstrand, Daily, & Dalton, 2000). Generally, formal education is positively correlated with environmental consciousness (Ewert & Baker, 2001; Kollmuss & Agyeman, 2002). There is therefore the assertion that businesses would significantly improve their environmental performance if the management were more educated and knowledgeable about innovative pollution prevention and cost-saving technologies (Porter & Van der Linde, 1995; Rivera & de Leon, 2005). Age has also been found to relate to the level of environmental commitment. Petts, Herd, and O'hEocha (1998) discovered that people in the over -55 age group had significantly higher levels of concern on environmental issues. Also, females have been found to be more pro-environmental than males (Deng, Walker, & Swinnerton, 2006). In terms of nationality, businesses managed by people born in industrialized countries and foreign CEOs are more likely to be proactive and to exhibit higher levels of environmental performance (Christman & Taylor, 2001).

A study by Chen et al. (2011) revealed that single respondents generally demonstrated more pro-environmental behaviours than married respondents due to the fact that marital responsibilities place time constraints on the pro-environmental behaviour. It has also been suggested that there is a positive relationship between people's income and pro-environmental attitude and behaviour because environmental quality is considered a luxury good which people are more likely to engage in when their material needs have been well satisfied (Scott & Willits, 1994). Moreover, research has indicated that people with Judeo–Christian beliefs are less environmentally conscious (Schultz, Zelezny, & Dalrymple, 2000).

However, very little empirical research has been conducted to determine if the socio-demographic characteristics of hotel managers could determine the environmental performance of hotels. Rivera and de Leon (2005) in their study of CEOs and voluntary environmental performance in the Costa Rican hotel industry found that CEOs who were more educated were more likely to participate in voluntary environmental programmes. However, they could not find a significant relationship between CEOs' other demographic characteristics, such as gender and income, and environmental performance. The following hypotheses are therefore proposed.

H_7: Age of hotel manager is positively related to the environmental performance of hotels.

H_8: Nationality of hotel manager is positively related to the environmental performance of hotels.

H_9: Level of education of hotel manager is positively related to the environmental performance of hotels.

H_{10}: Marital status of hotel manager is positively related to the environmental performance of hotels.

H_{11}: Income of hotel manager is positively related to the environmental performance of hotels.

H_{12}: Religion of hotel manager is positively related to the environmental performance of hotels.

H_{13}: Gender of hotel manager is positively related to the environmental performance of hotels.

Method

The study area

The study was undertaken in Accra, comprising the 11 sub-metros of the Accra Metropolitan Area (AMA) as well as the Ga East Municipal Area, Ga West Municipal Area and Ga South Municipal Area, Adenta Municipal Area and Ledzokuku Krowor Municipal area. The study area is on the east coast of Ghana and was chosen because it has the largest concentration of all classes of hotels in Ghana. The Greater Accra Region accounted for 42% of all hotel rooms in Ghana in 2007 (GTB, 2010). According to the 2000 Population and Housing Census, the AMA accounted for 25% of all urban dwellers in Ghana and has a population growth rate of 4.2% per annum (Ghana Statistical Service, 2008).

The capital city, Accra, is the commercial and political nerve centre of Ghana, with a concentration of businesses in manufacturing, commerce and services in addition to its cultural, educational, political and administrative functions. It is the most urbanized city in Ghana. Accra is also a vibrant tourist destination with popular attractions like the National Museum, National Theatre, and Centre for National Culture, Independence Square, Kwame Nkrumah Mausoleum, Accra International Conference Centre, Christiansborg Castle, Osu Oxford Street and Makola Market. It also has the highest concentration of hospitality facilities in Ghana, including restaurants, night clubs and travel agencies. It is considered as the gateway to West Africa, linked internationally by the Kotoka International Airport and locally by first class roads to other Ghanaian cities.

Sample

The study population comprised all categories of hotels in Accra as of December 2009. Managers of the selected hotels were surveyed during June and August 2010. The stratified random sampling procedure was used to select a total of 243 hotels from the various categories of hotels shown in Table 1. All classes of hotels, from budget to five star, were represented in the sample.

The sample was drawn on the basis of the four steps outlined by Sarantakos (2005). First, the target population was divided into six strata based on the classification of hotels by the GTB. Secondly, the sample frame for each stratum was extracted from the GTB list of hotels in 2009.

Thirdly, a sample size was allocated to each stratum to ensure that each class of hotel was adequately represented in the sample. To this end, all hotels in the three-, four- and five-star categories were selected due to their small population. Fourthly, hotels were randomly selected from the sample frame of each stratum using random numbers generated from a

Table 1.   Sampling of hotels in Accra.

Class of hotel	Population	Sample (%)
Budget	380	99 (40.74)
Guesthouse	62	44 (18.11)
One star	58	33 (13.58)
Two star	71	55 (22.63)
Three star	7	7 (2.88)
Four star	4	4 (1.65)
Five star	1	1 (0.41)
Total	**583**	**243 (100)**

random numbers table. Finally, the individual samples from each stratum were put together to constitute the sample size for the study. Estimation of the sample size of hotels was based on a formula for determining a sample size based on confidence level needed from a given population as provided by Krejcie and Morgan (1970).

Instrument and data collection

A semi-structured questionnaire containing both close- and open-ended questions was employed. A copy of the questionnaire is available as an appendix to the web-based version of this paper at http://www.tandfonline.com/toc/rsus. It elicited information on the socio-demographic characteristics of hotel managers, characteristics of the hotels such as the number of employees, number of guestrooms, occupancy rate, ownership and classification as well as the environmental performance of the hotels. For this study, environmental performance was an aggregate score based on the performance of a hotel in 10 key areas of environmental management, namely: conservation; waste management and recycling; environmental education and communication; support for local communities; compliance with environmental laws and legislation; eco-labelling and certification; environmental auditing; environmental health and pollution prevention; green marketing; and green purchasing.

A pre-test was undertaken in Cape Coast, a popular tourist destination in the central region of Ghana, to ensure the content validity of the instruments for actual data collection. The major issues identified with the questionnaires during the pre-test were inadequate response sets, questions not properly structured or worded and the irrelevance of some of the questions in the Ghanaian context. The instruments were subsequently revised.

The questionnaires were mostly self-administered due to the low response rates and non-response bias associated with mail questionnaires (Armstrong & Overton, 1977). According to Oppenheim (1992), self-administration of questionnaires ensures a high response rate, accurate sampling and minimal interviewer bias. Personal calls were made to the premises of sampled hotels, where questionnaires were presented to managers. Personal persuasion was used to encourage managers to take part in the study; however, where managers were uncooperative, the substitution sampling method was adopted; a hotel of a similar class was randomly sampled from the list of the remaining hotels and the manager contacted. A total of 209 of the questionnaires were returned from the field but 200 were considered useful for the analysis. The response rate of a survey is critical to the quality of the data. In this survey, though 243 hotels were sampled, 200 questionnaires were considered appropriate, representing a response rate of 82.3%.

Measurement and data analysis

The environmental performance scale was subjected to reliability analysis. The Cronbach alpha value of 0.911 was well above the limit of 0.70 required for the internal consistency of the constructs (Nunnally & Bernstein, 1994). The data passed all the requirements for using factor analysis. The result of Barlett's test of sphericity, which is 3220.994, reached statistical significance ($P = 0.000$) supporting the factorability of the data. Inspection of the correlation matrix revealed the presence of many coefficients of 0.3 and above, with the Kaiser–Meyer–Oklin value 0.84, exceeding the recommended value of 0.6 (Kaiser, 1974). The results suggested that the scales held together quite well and the six factors extracted had a significant relationship.

The data collected from the field was edited, coded and processed using SPSS version 16. The scores for environmental performance were derived through an aggregation of scores

for the 33 EPIs. Each hotel's environmental performance was therefore based on how well it performed on all 33 items based on a six-point Likert scale ranging from *never* (1) to *very frequently* (6). This yielded continuous variables for environmental performance, which was the dependent variable in the regression analysis. Also, dichotomous, independent variables were transformed into dummy variables.

The hypotheses were tested through a regression analysis. A preliminary analysis indicated that the assumptions of normality, linearity and homoscedasticity were not violated.

The correlation between environmental performance and most of the predictor variables was moderate and significant at the $p < 0.01$ level.

To assess the strength of the relationship between the organizational characteristics and environmental performance of the hotels, a hierarchical multiple regression analysis was employed. Initial tests were undertaken to ensure that none of the assumptions underlying the use of this tool was violated. The sample size of 200 was considered large enough for the analysis. Also the assumption of multicollinearity was not violated since the independent variables correlated but were not highly correlated. An inspection of the residual scatter plots revealed that the assumptions of normality, linearity and homoscedasticity of residuals were also not violated. The regression model used is as follows:

$$Y_1 = \alpha + \beta_1 x_1 + \cdots + \beta_{15} x_{15} + \varepsilon,$$

where $Y_1 = $ the dependent variable (environmental performance); $\alpha = $ an intercept; $\beta = $ the slope; $x_{1-15} = $ independent variables; and $\varepsilon = $ the error term.

Discussion of findings

Characteristics of respondents and hotel managers

Respondents were mostly (70%) male, reflecting the gender bias in top managerial positions in the Ghanaian hospitality industry, with more than half (56.8%) between the ages of 21 and 39 years. Also, 65% were or had been married.

They were predominantly Christians (95.5%) and Ghanaians (98.5%). Most of them (77.7%) earned monthly incomes between ¢50 and ¢450 (US$32–$280) and about two-thirds (66%) had completed universities and polytechnics.

Table 2 shows that the majority of the hotels studied (94.4%) were independent. Only 11.6% were affiliated to foreign multinational companies in the form of franchisees, management contracts or joint ventures. This coincides with the findings of Rivera (2004) in a related study on hotels in Costa Rica, where 93.9% of the hotels were not affiliated. Also, in this study, 93.9% of the hotels were entirely Ghanaian-owned with 71.2% being sole proprietorship businesses. They were mainly small- to medium-scale enterprises. More than two-thirds (67.3%) had fewer than 20 guest rooms and only 4% had 100 or more rooms, showing an overall average number of 23.84 guestrooms. This lends credence to assertions by Stabler and Goldall (1997) that the hospitality sector is fragmented, consisting of relatively small units. The results were also consistent with those found in studies conducted in developing countries, as in Rivera's (2004) study in the Costa Rican hotel industry, where only 5.5% of the hotels had more than 100 rooms.

However, the situation seems different in the developed countries where, in Bohdanowicz's (2005b) study on European hotels, the average number of guest-rooms was 110.4. Moreover, 53.1% of the hotels in this study employed fewer than 10 people with only 4.6% employing more than 100 people. Only 1.6% of the hotels had more than 90% occupancy and more than three-quarters (77.5%) were members of the Ghana Hotels Association (GHA).

Table 2.   Organizational characteristics of hotels.

Characteristic	Frequency	%
Management arrangement		
Independent	187	94.4
Affiliated	11	5.6
Total	198	100
Type of ownership		
Entirely local ownership	185	93.9
Foreign ownership/participation	12	6.1
Total	197	100
Number of guestrooms		
Fewer than 10	46	23.1
10–39	132	66.3
40–69	9	4.5
70–99	4	2.0
100 and above	8	4.0
Total	199	100
Mean = 23.84, mode = 10		
Number of employees		
Fewer than 10	104	53.1
10–39	72	36.7
40–69	6	3.1
70–99	5	2.6
100 and above	9	4.6
Total	196	100
Mean = 21.80, mode = 10		
Occupancy		
50% or less	41	22.0
51%–70%	115	61.8
71%–90%	27	14.5
More than 90%	3	1.6
Total	186	100
Membership of the GHA*		
Member	155	77.5
Non-member	45	22.5
Total	200	100

*GHA stands for the Ghana Hotels Association, a trade association of hotels in Ghana.

Indicators of environmental performance

All the 33 items from the reliability analysis were subjected to factor analysis. The PCA revealed the presence of nine components with eigenvalues exceeding 1, cumulatively explaining 67.4% of the variance. However, six factors were extracted after an inspection of the scree plot. The six factors explained 57.1% of the variance. Results of the factor analysis as presented in Table 3 indicate that six main factors, namely environmental education (factor 1), support for host community (factor 2), conservation (factor 3), compliance (factor 4), waste management (factor 5) and voluntary programmes (factor 6) were extracted as key indicators of the environmental performance of hotels.

Environmental education accounted for a greater percentage of the variance (13.25%) with an eigenvalue of 9.18. Generally, items related to education and information dissemination had the highest loadings. Support for host communities also explained 10.14% of the variance. It measured programmes and initiatives geared towards improving the lives of communities in which the hotels were located.

Table 3. Varimax rotated factor analysis for environmental performance indicators.

Factor	Loading	Eingenvalue	% of variance explained
Factor 1 – environmental education		9.18	13.25
Guests' education on eco-friendly practices	0.834		
Staff education on eco-friendly practices	0.781		
Guests' information about hotel's environmental activities/policies	0.741		
Enforcement of no-smoking in public areas	0.645		
Provision of accurate information to guests	0.601		
Use of ozone-friendly detergents and equipment	0.541		
Measures to ensure sanitation and food safety	0.505		
Production of brochures and publicity material using recycled paper	0.472		
Modification of operations to reduce environmental impacts	0.553		
Factor 2 – support for host community		2.93	10.14
Employment of people from the local community	0.838		
Use of local materials	0.729		
Promotion of the local traditional culture	0.719		
Purchases from local sources	0.675		
Improvement of lives of local residents by ploughing back profit	0.578		
Factor 3 – conservation projects		2.11	9.66
Use of energy-efficient equipment and products	0.769		
Installation of water-efficient devices and equipment	0.716		
Prescription of environmental standards for suppliers	0.484		
Purchase of eco-friendly materials and/or detergents	0.468		
Cash or kind contribution towards conservation projects	0.464		
Purchasing in bulk	0.400		
Factor 4 – compliance with legislation and bye-laws		1.77	9.13
Submission of environmental impact statement (EIS) to the EPA	0.863		
Acquisition of environmental permit from the EPA	0.852		
Submission of environmental management programme (EMP) to the EPA	0.811		
Acquisition of health permit from the AMA	0.553		
Implementation of a linen and towel-reuse programme	0.400		
Factor 5 – waste management		1.54	7.64
Composting of waste	0.754		
Implementation of a recycling program	0.719		
Sorting of waste into paper, glass, plastic, etc.	0.540		
Reuse of papers, cans, bottles and plastic	0.528		
Factor 6 – voluntary programmes		1.32	7.28
Acquisition of an ISO 14001 certification	0.724		
ISO 14010 or environmental audits by external organizations	0.648		
Eco-labelling or certification	0.586		
Periodic environmental audit	0.581		

Conservation projects accounted for 9.66% of the variance and had items that measured the conservation practices of the hotels. Hotels' compliance with environmental legislation and bye-laws accounted for 9.13% of the variance. It measured the extent to which hotels complied with environmental legislation and bye-laws in Ghana. Waste management accounted for 7.64% of the variance, consisting of only three items concerning the waste management practices of the hotels. Voluntary environmental programmes, which have received increasing attention as a result of the ineffectiveness of command-and-control approaches in environmental regulation, had four items which accounted for the least percentage of the variance (7.28%).

Determinants of environmental performance

Table 4 presents the results of the hierarchical multiple regression analysis. First, socio-demographic characteristics of the hotel managers that were the control variables were entered. This was followed by other organizational characteristics. In all, four models were tested. The first model which had the control variables (socio-demographic characteristics of hotel managers) was significant and indicated that independent variables significantly explained 10% of the variance in environmental performance ($R^2 = 0.10$; $F = 2.15$; $p < 0.05$). The second model, which had the occupancy rate and the age of the hotels as independent variables, was, however, insignificant. The age of the hotel and occupancy rate did not contribute to the variance in environmental performance ($\Delta R^2 = 0.00$; $F = 1.66$).

In the third model, the independent variables (multinational affiliation, type of ownership and membership of the GHA) significantly contributed 7% to the variance in environmental performance ($\Delta R^2 = 0.07$; $F = 2.23$; $p < 0.05$). Model 4 had the class of hotel, number of guestrooms and number of employees as the independent variables and they explained 11% of the variance in environmental performance ($\Delta R^2 = 0.11$; $F = 3.36$; $p < 0.01$). Overall, the independent variables significantly explained 29% of the variance in environmental performance. Though an R^2 of 0.29 means that a greater proportion of the variance in environmental performance is not accounted for by the independent variables, it nonetheless indicates the importance of some organizational characteristics of hotels in predicting environmental performance.

The result of the analysis as presented in Table 4 indicates that the only socio-demographic variable which had a significant positive relationship with environmental performance was income in models 1–3 all at the $p < 0.05$ significance level ($\beta = 0.27$, 0.28). Manager's income levels therefore influenced environmental performance. However, the influence of income on environmental performance was significantly reduced in the full model when class and size of hotel were entered as independent variables ($\beta = 0.09$; $p > 0.05$). The significant positive relationship between managers' income and environmental performance of hotels could be attributed to the fact that managers with higher incomes generally managed upscale hotels and upscale hotels had better environmental performance. So, all other things being equal, the greater the income of a manager, the better the environmental performance. The other socio-demographic variables, namely nationality, age, marital status, religion and gender did not relate to environmental performance.

In a similar study conducted by Rivera and de Leon (2005) in the Costa Rican hotel industry, they did not find a significant relationship between CEO's demographic characteristics, such as gender and income, and environmental performance, except their educational level. Therefore, the socio-demographic characteristics of hotel managers did not significantly influence the environmental performance of hotels except income. Hypotheses H_7, H_8, H_9, H_{10}, H_{12} and H_{13} could therefore not be supported.

Table 4. Summary of hierarchical regression analysis for variables predicting environmental performance.

Variable	Model 1			Model 2			Model 3			Model 4		
	B	SE B	β	B	SE B	β	B	SE B	β	B	SE B	β
Age	6.13	4.80	0.12	6.22	4.85	0.12	2.53	4.84	0.05	2.35	4.58	0.05
Level of education	1.13	4.49	0.02	1.43	4.66	0.03	3.06	4.60	0.06	−2.28	4.73	−0.04
Religious affiliation	8.30	12.53	0.06	8.18	12.63	0.06	1.17	12.47	0.01	−2.44	11.75	−0.02
Gender	3.00	4.60	0.06	2.82	4.67	0.05	2.32	4.58	0.04	2.11	4.35	0.04
Marital status	6.65	4.82	0.13	6.60	4.89	0.13	5.29	4.79	0.10	4.55	4.55	0.09
Income	17.18	5.41	0.27*	17.13	5.72	0.27*	12.56	5.81	0.20*	5.56	5.81	0.09
Nationality	−10.17	25.17	−0.03	−10.31	25.41	−0.04	−23.46	25.07	−0.08	−28.45	23.64	−0.10
Occupancy				−0.08	3.47	−0.01	−0.62	3.47	−0.02	−0.77	3.28	−0.02
Age of facility				−0.08	0.26	−0.03	0.11	0.26	0.04	0.05	0.24	0.02
Multinational affiliation							12.85	10.08	0.12	5.11	9.65	0.05
Type of ownership							−1.28	11.14	−0.01	−15.56	12.55	−0.13
Membership of the GHA							15.29	5.23	0.26*	7.80	5.26	0.13
Class of hotel										7.44	2.67	0.29*
Number of guestrooms										11.77	4.69	0.35*
Number of employees										−4.80	4.52	−0.14
F value	2.15*			1.66			2.23*			3.36**		
R^2	0.10			0.10			0.17			0.29		
ΔR^2	0.10			0.00			0.07			0.11		
F for ΔR^2	2.15*			0.04			3.64*			6.67**		

*$P < 0.05$; **$p < 0.01$.
$N = 200$.

Organizational characteristics that had a positive and significant relationship with environmental performance were size of hotel, class of hotel and membership of GHA, at the $p < 0.05$ significance level. However, other organizational characteristics, namely number of employees, multinational affiliation, type of ownership, occupancy and age of facility could not significantly predict the environmental performance of the hotels. The results emanating from the testing of hypotheses 1–6 are presented as follows:

H_1: Affiliation to multinational hotel chains is positively related to the environmental performance of hotels.

The relationship between multinational affiliation and environmental performance was insignificant in model 4 ($\beta = 0.05$, $p > 0.05$). The hypothesis could therefore not be supported as there is no statistical evidence of a hotel's multinational affiliation influencing its environmental performance. Whilst this coincides with the findings of Rivera (2004), it challenges the findings of Christman and Taylor (2001) and Rivera (2004) who found hotels affiliated to multinational chains to be more environmentally active.

H_2: Size of hotel is positively related to the environmental performance of hotels.

The relationship between size of hotel and environmental performance of hotels was found to be positive and significant ($\beta = 0.35$, $P < 0.05$). The hypothesis is therefore supported. There is significant evidence that the environmental performance of a hotel is positively influenced by its size. This supports the findings of Mowforth and Munt (1998), Edwards (2000), and Alvarez-Gil et al. (2001).

H_3: Class of hotel is positively related to the environmental performance of hotels.

The class of a hotel was found to positively and significantly relate to its environmental performance ($\beta = 0.29$, $P < 0.05$). The hypothesis is therefore supported. Based on this result, the class of a hotel positively influences its environmental performance. This supports the findings of Alvarez-Gil et al. (2001), Bohdanowicz, (2005a) and Erdogan and Baris (2007).

H_4: Age of hotel facility is positively related to the environmental performance of hotels.

The relationship between age of facility and environmental performance of hotels was found to be insignificant ($\beta = 0.02$, $p > 0.05$). There is no statistical evidence to support the hypothesis. This result contrasts the findings of Alvarez-Gil et al. (2001) that the age of a facility negatively influences the environmental performance of hotels, suggesting that older facilities are less committed to environmental management.

H_5: Occupancy of hotel is positively related to the environmental performance of hotels.

There was also no significant positive relationship between occupancy and environmental performance of hotels ($\beta = -0.02$, $p > 0.05$). There is no statistical evidence to support this hypothesis. Occupancy therefore has no significant effect on the environmental performance of hotels.

H_6: Membership of trade association is positively related to the environmental performance of hotels.

The relationship between trade association membership and environmental performance of hotels was significant albeit only in model 3 ($\beta = 0.26$, $p < 0.05$). The hypothesis could therefore be supported. Thus hotels that are members of the GHA performed better environmentally than non-members. This supports the results of a similar study on the

Costa Rican hotel industry where Rivera (2004) found trade association membership to have a significantly positive relationship with the adoption of a voluntary environmental programme.

Conclusions, implications and recommendations

Hotels undeniably play a very important role in the economy of tourist destinations but could also be self-destructive if their impacts on the environment are not checked. It is therefore imperative for hotels to improve their environmental performance by reducing their ecological footprints. This study has identified factors that influence the environmental performance of hotels in Accra, an emerging tourist destination. Size and class of hotel emerged as the best predictors of hotels' environmental performance. The relationship between size and class and environmental performance of hotels was found to be significant at the $p < 0.05$ significance level. Organizational characteristics are more important in determining the environmental performance of hotels than the socio-demographic characteristics of managers. Hotels should therefore institute the requisite structures and systems to facilitate environmental management if they are to improve their environmental performance. Larger and upscale hotels have better environmental performance since they tend to have more financial and technical resources needed for undertaking successful environmental management. Larger hotels are also more likely to benefit from economies-of-scale and make significant cost savings on energy, water and other resources by undertaking conservation practices. This then provides the motivation for improving their environmental performance.

The findings have implications for environmental management in hotels in Accra. The bulk of hotels in Accra are smaller facilities. At the time of the study, 442 hotels (76%) were not star-rated. In view of this, there should be a conscious effort by policy-makers and the GHA to bring these smaller hotels that constitute the 'silent majority' on board the environmental management bandwagon since their cumulative impact on the environment could be substantial. The government and the GHA should help build the environmental management capacity among managers of these hotels through training programmes. The GHA could embark on a collaborative environmental management initiative to the benefit of all its members and provide the opportunity for the larger hotels to share their experiences and expertise in environmental management practices.

The study makes significant contributions to understanding the predictors and determinants of environmental performance of hotels by building on the works of Alvarez-Gil et al. (2001) and Cespedes-Lorente, De Burgos-Jimenez, and Alvarez-Gil (20003), thereby lending further credence to the fact that larger and upscale hotels have better environmental performance. Also, the 33 indicators of environmental performance in six key areas resulting from the factor analysis could serve as a benchmark for self-assessment of environmental performance by hotels, as it provides specific initiatives and activities to be undertaken by hotels in order to improve their environmental performance. Areas of environmental performance that hotel managers seemed to have neglected have been indicated, especially voluntary initiatives which should provide a new sense of awareness for hotel managers to balance their environmental scorecard through the adoption of a more holistic approach to environmental management. Other environmental management practices that are unpopular in Ghana and that have been unearthed in the study should broaden the "environmental management horizons" of hotel managers.

The study adds to the growing literature and stock of knowledge on environmental performance in the hotel industry. Most studies in the area of environmental management

and environmental performance in the past have been in the smokestack, manufacturing and extractive industries. This study adds to the existing stock of knowledge by building on the growing number of works by previous tourism and hospitality researchers, and is especially important because it examines a fast-growing, developing country destination.

Future studies should explore further the drivers of environmental performance. An R^2 of 0.29 from the regression analysis suggests that there are other factors that influence the environmental performance of hotels but were not captured by the model in this study. There is therefore the need to discover the other factors that drive the environmental performance of hotels.

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