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Waste management practices of small hotels in Accra: An application of the waste management hierarchy model

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Abstract

One of the most visible impacts of hotels on the environment is waste. Waste generated by hotels tends to have adverse impacts on the environment. There are, therefore, concerns that the proliferation of small hotels in Accra, the capital city of Ghana, could have adverse impacts on the environment since small hotels have been found to take little action to address their environmental impacts. This paper examines the waste management practices of small hotels in Accra, based on the Waste Management Hierarchy (WMH) model. A survey of 260 managers of small hotels in various parts of Accra was undertaken, employing the simple random sampling method. Results of the study indicate that waste management practices of hotels did not strictly adhere to the WMH model. Waste disposal, prevention and reduction practices were the most frequently undertaken whilst practices relating to reuse, recycling and recovery were less frequently undertaken. It is recommended that the hotels should employ the sufficiency approach by positively influencing the attitudes of employees and guests toward waste prevention and reduction.

Keywords

small hotel, waste, Accra, landfill, recycle

Revisions

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Waste Management Practices of Small Hotels in Accra: An Application of the Waste Management Hierarchy Model

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Abstract

One of the most visible impacts of hotels on the environment is waste. Waste generated by hotels tends to have adverse impacts on the environment. There are, therefore, concerns that the proliferation of small hotels in Accra, the capital city of Ghana, could have adverse impacts on the environment since small hotels have been found to take little action to address their environmental impacts. This paper examines the waste management practices of small hotels in Accra, based on the Waste Management Hierarchy (WMH) model. A survey of 260 managers of small hotels in various parts of Accra was undertaken, employing the simple random sampling method. Results of the study indicate that waste management practices of hotels did not strictly adhere to the WMH model. Waste disposal, prevention and reduction practices were the most frequently undertaken whilst practices relating to reuse, recycling and recovery were less frequently undertaken. It is recommended that the hotels should employ the sufficiency approach by positively influencing the attitudes of employees and guests toward waste prevention and reduction.

Keywords: small hotel, waste, Accra, landfill, recycle

Introduction

Waste management is one of the greatest environmental challenges confronting cities in developing countries. It is one of the most pervasive environmental problems which constantly engage the attention of policymakers, city administrators, and academia. According to a report commissioned by the World Bank, by 2050, 3.40 billion tons of waste will be generated around the world annually, increasing drastically from today's 2.01 billion tons (Kaza, Yao, Bhada-Tata, & Van Woerden, 2018). The cost of managing tons of waste generated on a daily basis in cities, coupled with the scarcity of landfill sites, has been a major cause for concern.

Accra, the capital city of Ghana, is a bustling commercial centre with all the trappings of urbanization, including a growing population, proliferation of infrastructure and superstructure, traffic congestion, and pollution. One of the unavoidable challenges associated with urbanization is the generation of wastes. Accra generates an estimated 3,000 metric tons of waste per day, of which about 30% remain uncollected (Today Newspaper, 2017). City authorities have been grappling with the problem of collecting heaps of garbage in various parts of the city. The lack of landfill sites has further compounded the problem, as city authorities have been hampered by the land tenure system of the country in the acquisition of land to build landfills and waste treatment centres.

Waste management could be a costly venture if not properly undertaken. A World Bank report (as cited in United Nations Environmental Programme [UNEP], 2009) estimated that about 20-50 percent of the budgetary allocations of municipalities in most developing countries are channeled towards solid waste management. In the same vein, the Accra Metropolitan Assembly (AMA) spends GH₵450,000 (US$307,340) a month on waste management, with an extra GH₵240,000 (US$163,910) used for the maintenance of landfill sites (Oteng-Ababio, 2010). Undoubtedly, tourism activities contribute to the urban waste management problem. One of the ways by which tourism impacts adversely on the environment is through the generation of wastes and pollutants. Hotels which are the most tangible manifestation of tourism development contribute to the waste management problem in tourist destinations by generating significant amounts of wastes (Chan & Lam, 2002; Robinot & Giannelloni, 2010; Wie & Shanklin, 2001). This is because, by the very nature of their functions, characteristics and services, hotels tend to consume substantial amounts of energy, water and non-durable products (Zorpas, Voukkali, & Loizia, 2015). Waste generation is probably the most visible environmental impact of the hotel industry (Bohdanowicz, 2005). Generally, wastes generated by hotel guests constitute a significant portion of state commercial waste stream (Georgia Hospitality and Environmental Partnership, 1996).

The hotel industry is the largest sub-sector of the tourism industry, and, thus, has, undeniably, the widest impacts on the environment (Graci, 2010). It has also been estimated that a typical guest produces in excess of one kilogram of waste per day (International Hotels Environment Initiative [IHEI], 2002). The amount of waste generated is said to double on checkout days (Shanklin, Petrillose, & Pettay, 1991). However, the amount of waste generated is dependent upon the size and type of hotel, as well as the existence of waste management facilities (Abdulredha et al., 2018; Davies & Cahill, 2000). According to International IHEI (2002), solid waste generated by especially small hotels is one of the most adverse environmental impacts of hotels. In spite of this, small hotels often pay little attention to their environmental responsibilities and predominantly undertake landfill as a primary waste disposal method (Radwan, Jones, & Minoli, 2012). The lack of attention to solid waste management by small hotels has been attributed to lack of funds and knowledge as well as poor decision-making (Ghadban, Shames, & Mayaleh, 2016; Malik & Kumar, 2012).

In view of the fact that small hotels contribute to the waste problem in cities, any attempt to arrest the problem in cities is bound to fail if hotels are not included in such a plan. As one of the main generators of wastes, it is imperative that hotels champion waste management at the destination. Wastes generated by hotels, if not properly managed, could have a debilitating effect on the environment. Dumping of waste at landfill sites often results in leaching and, thereby, pollute underground water sources. Landfilling also leads to the emission of greenhouse gases such as methane and creates unsightly conditions with health consequences. For instance, Ghadban et al. (2016) reported about a waste crisis in Lebanon in 2015, which was mainly caused by the production of solid waste by hotels.

Small hotels collectively produce a significant amount of solid waste (Radwan et al., 2012) yet most studies on reducing the environmental impacts of the hotel industry have centered on larger hotels and major hotel players (Morrison, 2002). The growing literature on environmental management practices of hotels have indicated that larger and upscale hotels have been at the forefront of environmental management (Alvarez-Gil, Burgos-Jimenez, & Cespedes-Lorente, 2001; Bohdanowicz, 2005; Erdogan &Tosun, 2009; Kirk, 1995; Mensah, 2014). Also, studies on waste management in hotels have focused on food waste which is undeniably the most significant waste generated by hotels. Additionally, Radwan, Jones, and Minoli (2010) have observed that

studies on waste management have centered on household waste and local authority waste management programmes to the neglect of hotel wastes.

Though there have been few studies on waste management in hotels, most of the studies have focused on determining the volume of waste generated by hotels (Ball &Taleb, 2011; Bhat et al., 2014; Byer et al., 2006; Chan & Lam, 2001; Chan, Wong, & Lo, 2009). Based on the waste management hierarchy (WMH) model, the ultimate goal of waste management is to reduce the amount of waste disposed of at landfill sites. However, the volume of waste generated can only be minimized if hotels undertake prudent waste management practices. However, it appears smaller hotels and guest houses usually lack the resources and managerial knowhow regarding waste management. Smaller hotels, which for the purpose of this study are hotels classified as budget, guest house or 1-2-star hotels and which do not have more than 50 guestrooms, account for the bulk of hotels in Accra. Based on the Ghana Tourism Authority's list of hotels in the Greater Accra Region in 2015, 684 out of the total number of 703 hotels were within this category, representing about 97% of the total number of hotels in the region (Ghana Tourism Authority, 2016). There has been a proliferation of smaller hotels in various parts of the city in response to a growing demand by tourists and visitors who throng the city. Though the wastes generated by individual small hotel units are usually minimal as compared to that of larger hotels, the cumulative impact of the wastes generated by the growing number of small hotels on the environment could be catastrophic (Mensah, 2006).

Studies have shown that smaller hotels tend to have a reactive posture toward environmental management, including waste management. As a result, many small hotel firms take very little action to reduce their environmental impacts (Webster, 2000). In a study by Sánchez-Medina, Díaz-Pichardo, and Cruz-Bautista (2016) on hotel businesses in Oaxaca (Mexico), they found that larger hotels found it easier to implement environmental management practices than did smaller ones. According to Kasim (2009), this is because, unlike larger businesses, small and medium enterprises (SMEs) do not have access to enough resources. Hoogendoorn, Grant, and Fitchett (2015) also mentioned the lack of space and time as one of the reasons why small businesses encounter a number of challenges in managing waste. It is against this background that this study seeks to examine the waste management practices of small hotels in Accra, based on the WMH model.

Literature Review

Waste Management Practices of Small Hotels

It is an undeniable fact that hotels impact adversely on the environment through the generation of solid and liquid waste, emission of dangerous chemicals, and pollution of the atmosphere (Chan & Lam, 2002; Scanlon, 2007). According to Al-Aomar and Hussain (2018), waste across hotel supply chains is growing. Disastrous environmental consequences are bound to occur when wastes are not properly managed. Such wastes could pollute water, land, and air as well as create unsightly conditions. Unscientific and improper waste treatment affects society and damages the environment (Dileep, 2007). Landfilling, which is the least favored waste management option under the WMH model, results in the greatest impact on the environment. Ironically, that is the commonest waste management practice undertaken by small hotels (Radwan et al., 2012). In a study on solid waste management by hotels in Tunisia, Chaabane, Nassour, and Nelles (2018) found that 83% of hotels generated mixed waste which was sent to the landfill, whereas only 17% of hotels had developed small recycling and composting initiatives. Landfill resulting from wastes

from small hotels contributes to the degradation of the environment through the pollution of groundwater through the creation of *leachate* and the emission of explosive gases like methane (Becklake, 1991).

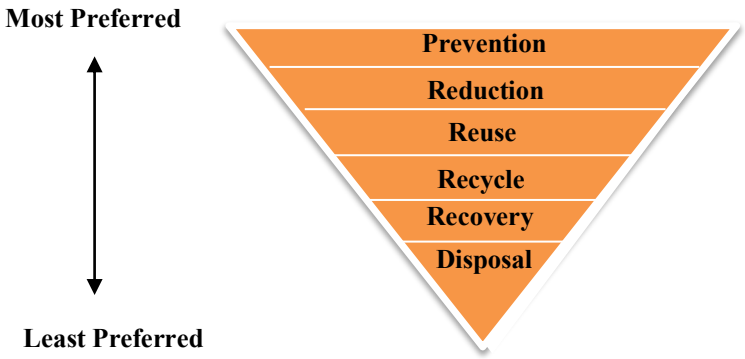
The practice of waste disposal at landfill sites is contrary to the fact that waste management practices have evolved from reduction of the environmental impacts of waste through the creation of landfill sites to resource recovery (Read, 2003). This shift in focus of waste management falls within the paradigm of industrial ecology. Industrial ecology is concerned with the shifting of industrial process from linear (open loop) systems, in which resource and capital investments move through the system to become waste, to a closed loop system where wastes can become inputs for new processes (Basu & van Zyl, 2006). However, Rojo, Glaus, Hausler, Laforest, and Bourgeois (2013) posit that waste management should not only aim at reducing the volume of waste sent to incineration or landfills but must also optimize social acceptability, economic gain and environmental compatibility, while promoting a sustainable and fair society.

Thus, the major objective of waste management in hotels should be to reduce the amount of waste that is finally dispatched to landfill sites. To reduce waste, hotels must concurrently undertake bulk purchasing to reduce customers' consumption and packaging, encourage the use of returnable containers and recycle materials such as glass and paper, as well as undertake selective rubbish collection, among other practices (Carmona-Moreno, Cespedes-Lorente, & Burgos-Jimenez, 2004). In spite of this, many small hotels do not recycle their wastes (Chan & Lam, 2001; Dewhurst & Thomas, 2003; Radwan et al., 2010). In a study of small hotels in Turkey, Erdogan and Baris (2007) found that almost all hotels collect, store and place their waste in designated places for collection and disposal by garbage collectors. Only 21.2% of the hotels reused bottles and papers. Similarly, most of the hotels in the Greater Accra Region of Ghana did not have appropriate waste management and recycling programmes in place. As such, 34 out of the 52 sampled hotels (65%) mostly dumped their waste into garbage bins or sent them to waste disposal sites (Mensah, 2009). In a related study in Lebanon, Ghadban et al. (2016) found that while all nine large hotels (hotels with more than 100 rooms) sampled were implementing solid waste management programmes, only three of the small hotels (hotels with less than 100 rooms) sampled were managing their waste by adopting recycling and re-using strategies.

Management of many small hotels have very little interest in reducing and/or recycling waste, believing that such activities are too expensive and time-consuming (Chan & Lam, 2001). In a study by Radwan et al. (2010), only a minority of small hotels were considering the adoption of sustainable solid waste management (SWM) practices, either because most hoteliers felt negatively about sustainable SWM alternatives or perceived challenges in their implementation. Generally, larger companies tend to be more proactive towards environmental management (Etzion, 2007). Pham Phu, Hoang, and Fujiwara (2018), in a study on solid waste management practices of the hotel industry in Hoi An, Vietnam found that the higher the scale of a hotel, the more the attention to solid waste management practices. Larger companies tend to enjoy economies of scale in the reuse, recycling, and recovery of waste. In the same vein, large hotel firms also tend to have idle resources, adopt a more formal approach to environmental management, and enjoy economies of scale on the use of wastes (Cespedes-Lorente, De Burgos-Jimenez, & Alvarez-Gil, 2003).

The Waste Management Hierarchy (WMH) Model

The WMH provides a model of the potential options for managing waste, namely, prevention, reduction, reuse, recycling, recovery and disposal (Waste Online, 2006). The model indicates an order of preference of actions to reduce and manage waste, presented diagrammatically in the form of a pyramid (UNEP, 2013), as shown in Figure 1. The higher up the hierarchy a waste management strategy is, the more sustainable it is (Nath, 2014). Thus, based on the environmental impacts of the various waste management options, waste prevention is the most preferred option while disposal at landfill is the least preferred option. Waste prevention means eliminating or reducing the amount or the toxicity of waste, including recyclables (Zorpas & Lasaridi, 2013). Waste reduction, on the other hand, means reducing the amount of waste produced through greater efficiency in the use of resources. Reuse is a process of putting waste materials back into use instead of discarding them so that they do not go into the waste stream, while recycling involves transforming or reprocessing the waste materials into new products. Though not all wastes can be reduced, reused or recycled, energy could be recovered from such wastes instead of being dumped. Sustainable waste management practices require optimization of the recovery of materials and energy from different waste streams in order to minimize the environmental impact, while maximizing the utilization of potential material and energy sources (Mirabella, Castellani, & Sala, 2014).



Source: Waste Online (2006)

Figure 1: Waste Management Hierarchy

At the bottom of the hierarchy is disposal, which is the least preferred waste management option. It involves the collection and disposal of waste at landfill sites. Solid waste generated from hotels is disposed of primarily in landfills. However, landfilling results in leaching, which pollutes the underground water table, enervates the quality of the soil, and permanently renders land unusable for any other purpose (Singh, Cranage, & Nath, 2014).

Methods

Study Area and Design

The study was carried out in hotels in the Accra Metropolitan Assembly (AMA), the capital city of Ghana. AMA is a bustling commercial centre undergoing rapid urbanization. It is the most urbanized city in Ghana, with 91% of the population in the Greater Accra Region living in urban areas (Ghana Statistical Service, 2014). The main economic activities are services, retail, marine fishing, and peri-urban agriculture. There has been a rapid increase in the number of hotels in Accra due to an increase in commercial activities and tourist arrivals.

A descriptive and cross-sectional design was followed since the purpose of the study was to describe the current status of waste management practices by the hotels. A cross-sectional survey which is a common method of data collection in descriptive studies was employed to collect data from a sample of hotel managers as primary data source. Based on the positivist paradigm, quantitative methods were employed for data collection and analysis.

Instrument

This paper is part of a larger study on waste management practices in small hotels in Accra. Data was collected, using structured questionnaires which were self-administered. The questionnaires contained close-ended questions relating to waste management practices of the hotels, characteristics of the hotels, and socio-demographic characteristics of the hotel managers. Questions relating to the waste management practices of hotels were based on the WMH, which provides a model of the potential options for managing waste (i.e. prevention, minimization, reuse, recycle, energy recovery, and disposal (Waste Online, 2006). A frequency rating scale ranging from *never* to *very frequently* was used to gauge the frequency with which the hotels implemented various waste management practices.

Population and Sample

The population of the study comprised all managers of all small hotels (budget hotels, guest houses, and 1-2-star hotels with not more than 50 rooms) in the AMA. There is no consensus as to what constitutes a small hotel. For instance, Avelini-Holjevac and Vrtodusic (1999) averred that small hotels usually have between 40 and 70 rooms while Milohnic (2006) classified hotels with 5-50 rooms as small hotels. For the purpose of this study, both quantitative (not more than 50 rooms) and qualitative (not more than 2-star rating) measures were employed as criteria for determining small hotels. A list of 703 hotels that fell within the small hotel category was compiled from the Ghana Tourism Authority's list of registered hotels for 2015 and used as a sampling frame.

The study employed probability sampling techniques. First, a sample size of 265 was determined using the Raosoft sample size calculator (Raosoft, 2004), which was based on a population of 684, a margin of error of 5%, a confidence interval of 95%, and a sample proportion of 50%. Though this gives a sample 249,16 was added to cater for possible non-responses and this resulted in a sample of 265. All the small hotels were numbered, and random numbers generated were used to select the hotels from the list until all the 265 hotels were selected. Once a hotel was selected, the General Manager was contacted for the survey.

Data Collection Procedures and Analysis

A pre-test was undertaken in 15 hotels in the Cape Coast – Elmina conurbation. Based on Czaja's (1998) recommendation, the pre-test was undertaken to address issues relating to four critical areas namely: respondent comprehension, burden and interest, interviewer tasks, questionnaire issues, sampling, as well as coding and analysis. The pre-test took an undeclared format, which is a situation whereby the survey is conducted in the same manner as intended for the main study. The major issues identified with the questionnaires during the pre-test were unexhaustive response sets and respondents' lack of understanding of some of the questions because they were not properly worded. The questionnaire was subsequently modified based on feedback from the pre-test. The actual data collection was undertaken by a team of six research assistants who had received training

on data collection. Data collection lasted for four months, from June to September 2018. To ensure a higher response rate, research assistants made personal calls to the hotels which had been randomly selected to seek audience with hotel managers. Where the hotel managers were unavailable, the questionnaires were left to be collected at a future date. Hotel managers who failed to complete the questionnaire were substituted with managers of other hotels on the list.

The scale for collecting data from hotel managers was subjected to reliability analysis. The Cronbach alpha values of the items on the scale were above the recommended threshold of .70 which is required for the internal consistency of the constructs. At the end of the data collection, only five questionnaires were found to be unsuitable for the analysis. SPSS software version 20 was employed for data analysis. SPSS was used to code data and also compute descriptive and inferential statistics. Data were analyzed and presented using descriptive statistics like frequency, percentage, mean, and standard deviation.

Findings

Socio-Demographic Characteristics of Hotel Managers

In small hotels, the strategic role of managers in dictating the course of the hotel cannot be underestimated. In view of this, hotel managers were targeted as respondents of this study. From Table 1, more than half of the managers were males (58.5%), with 41.5% being females. They were predominantly Ghanaians (90.8%), and more than half of them were aged between 21-39 years (54.6%), followed by those between the ages of 40-49 (37.3%), indicating that managers of the small hotels were quite youthful.

Table 1. Socio-Demographic Characteristics of Managers

Characteristic	Frequency	Percent
Gender		
Male	152	58.5
Female	108	41.5
Age		
less than 20 years	11	4.2
21-39	142	54.6
40-59	97	37.3
60 or more	10	3.9
Level of education		
Primary	4	1.5
Secondary/technical	33	12.7
Training college	72	27.7
Undergraduate	107	41.2
Postgraduate	44	16.9
Religion		
Christian	190	73.1
Muslim	67	25.8
Other	3	1.1
Marital status		
Single	82	31.5
Married	141	54.2
Separated	27	10.4
widowed	10	3.9
Nationality		
Ghanaian	236	90.8
Nigerian	13	5.0
Other	11	4.2

Note. $N = 260$

Only 10% were 60 years or more. In terms of their highest levels of education, they had mostly completed undergraduate programs (41.2%). Also, 27.7% and 12.7% had completed teacher training college and secondary school respectively. They were predominantly Christian (73.1%), with about a quarter being Muslims (25.8%). The marital status of the managers showed that more than half of them (54.2%) were married while 31.5% were single.

Characteristics of Hotels

Results of the study presented in Table 2 show that, among the hotels that were studied, more than one-third (35.4%) were guest houses, 30.4% were budget hotels, and 26.5% were 1-star hotels. Only 7.7% were within the 2-star category. Nearly three-quarters of these hotels (74.6%) were affiliated to the Ghana Hotels Association. Also, the majority of the hotels (81.5%) were not affiliated to any foreign multinational company. As such, they were predominantly self-managed by their owners (46.9%) or managers appointed by the owners or boards (30.4%).

Only 6.2% of the hotels had entered into franchise agreements while 16.5% were on management contracts. The management contracts were essentially undertaken by local hotel management companies instead of global brands. In terms of the business structure, the hotels were mainly sole proprietorship businesses (58.8%) which is typical of small businesses. The capacity of the hotels was also evident in the number of guestrooms and employees. The majority of the hotels had 20 rooms or less (65.4%). Less than 10% of the hotels had between 30-50 rooms. With regard to the number of employees, 86.9% had between 1-10 employees.

Table 2. Hotel Characteristics

Characteristic	Frequency	Percent
Class of hotel		
Budget	79	30.4
Guest house	92	35.4
1-star	69	26.5
2-star	20	7.7
Affiliation to foreign MNC		
Affiliated	48	18.5
Not affiliated	212	81.5
Membership of Ghana Hotels Association		
Member	194	74.6
Non-member	66	25.4
Management arrangement		
Self-managed by owner	122	46.9
Franchise agreement	16	6.2
Management contract	43	16.5
Manager appointed by owner/board	79	30.4
Type of ownership		
Local sole proprietor	153	58.9
Local partnership	49	18.9
Local and foreign partnership	30	11.5
Local limited liability company	24	9.2
Entirely foreign ownership	4	1.5
Number of rooms		
1-20	170	65.4
21-30	66	25.4
31-40	9	3.4
41-50	15	5.8
Number of employees		
1-10	226	86.9
11-20	32	12.3
21-30	2	.8

Note. $N = 260$

Waste Management Practices of Small Hotels

The results of the study, as shown in Table 3, indicate that, based on the WMH model, the most frequent waste management practice of small hotels in Accra was at the level of disposal (*M* = 4.569). Interestingly, waste prevention and waste reduction which are the first and second levels respectively of the WMH were the second and third most frequently undertaken waste management practices by small hotels in Accra, with means of 4.559 and 4.414 respectively. Thus, the hotels frequently practiced waste disposal and waste prevention while they occasionally practiced activities geared toward waste reduction. However, the least popular waste management practice was in the area of recovery (*M* = 3.247), followed by recycling (*M* = 3.657) and reuse (*M* = 3.760).

Table 3. Waste Management Practices of the Hotels

Waste Management Practice	*M*	*SD*
Prevention (*M* = 4.559)		
Purchasing from local sources	4.735	.94376
Purchasing recyclable materials	4.509	1.13231
Educating guests on waste management practices	4.348	1.18421
Educating staff on waste management practices	4.509	1.11843
Purchasing from environmentally responsible suppliers	4.695	.99787
Reduction (*M* = 4.414)		
Using energy-efficient equipment and products	4.542	1.20574
using non-disposable crockery	4.383	1.31430
Using environmentally-friendly detergents and equipment	4.636	1.17323
Installing water-efficient taps, showers and other equipment	4.750	1.05533
Purchasing in bulk to reduce the need for packaging	4.585	1.06706
Using returnable containers	4.229	1.22793
Receiving supplies in reusable containers	4.071	1.15139
Printing on both sides of paper	4.117	1.33243
Reuse (*M* = 3.760)		
Reusing papers, crates, bottles, cans and plastic materials	3.969	1.43605
Using reusable bags and containers for purchases	3.973	1.41258
Repairing broken equipment instead of purchasing a one new	4.315	1.38684
Donating leftover food to charity	3.267	1.56603
Asking guests to reuse linen and towel	3.411	1.48170
Using waste water for other purposes such as watering plants	3.500	1.56827
Installation of reusable soap dispensers	3.885	1.41495
Recycling (*M* = 3.657)		
Producing brochures and publicity material on recycled paper	3.475	1.48958
Using recycled products	3.926	1.33404
Recycling waste water for other uses	3.577	1.32100
Implementing a recycling programme	3.632	1.33157
Sorting waste into paper, glass, plastic etc.	3.723	1.35951
Sending waste to a recycling plant	3.610	1.48565
Recovery (*M* = 3.247)		
Composting organic waste	3.410	1.42517
Establishment of a bio gas plant	3.191	1.55881
Establishment of a Sewage treatment plant	3.139	1.59263
Disposal (*M* = 4.569)		
Providing dustbins for collection and dumping of waste at landfill	4.681	1.25923
Collection and dumping of waste by waste management company	4.457	1.48647

Note. $N = 260$

Results of the study affirm that of previous studies that waste disposal is the most popular waste disposal method employed by small hotels (Erdogan &Baris, 2007; Mensah, 2006; Radwan et al., 2012). This is evident in the provision of dustbins for collection and dumping of waste at landfills by the hotels (*M* = 4.681, *SD* = 1.2592) and employment of the services of waste management companies like Zoomlion Ghana Ltd. to collect and dump hotel wastes at landfill sites (*M* = 4.457,

SD = 1.4865). This is an indication that the hotels were not interested in deriving anything from the wastes through reuse, recycling or recovery from the wastes that they generate; rather, they were more interested in how they could get rid of them. This explains why practices geared toward reuse, recycling, and recovery were less popular.

Though reuse of waste offers a practically inexpensive solution to the waste management problem, many of the small hotels have not embraced it. Donation of food leftovers/unused food to charity and guest linen reuse programmes, which are practical ways of reducing both solid and liquid waste, had mean scores of 3.267 and 3.411 respectively, indicating that the hotels rarely undertook such practices. Even the most frequent reuse practices were occasionally undertaken, such as reuse of waste materials like papers, crates, and bottles (*M* = 3.969, *SD* = 1.436) as well as reuse of bags and containers for purchases (*M* = 3.973, *SD* = 1.413).

In consonance with the results of earlier studies which indicated that many small hotels do not recycle their wastes (Chan & Lam, 2001; Radwan et al., 2010), recycling of waste was seldom undertaken by the hotels. This was especially with regard to the recycling of waste water for irrigation and other uses (*M* = 3.577, *SD* = 1.321) and the production of brochures and publicity materials on recycled paper (*M* = 3.475, *SD* = 1.489). At this level of the WMH, hotel managers hardly make conscious efforts to even send their wastes to the recycling plant (*M* = 3.610, *SD* = 1.486). This is as a result of the lack of such recycling plants in the city. The most frequently undertaken practices at this level of the hierarchy (namely using recycled products and sorting of waste) were occasionally undertaken.

Waste recovery practices were rarely undertaken and were the least undertaken practices. Even the composting of waste, which was a more common practice under this domain, was rarely undertaken by the hotels (*M* = 3.410, *SD* = 1.425). The establishment of bio-gas and sewage treatment plants to generate energy was the rarest of all the waste management practices. This is probably due to the fact that the development of these facilities required some financial investment which most of the hotels could not afford or managers considered unnecessary.

In spite of this, the small hotels appeared to be frequently engaging in practices geared toward waste prevention and reduction. It appears efforts were being made by management of the hotels to prevent the occurrence of wastes mainly through green purchasing practices, including purchasing from local sources (*M* = 4.735, *SD* = 0.944), purchasing recyclable materials (*M* = 4.509, *SD* = 1.132), and purchasing from environmentally responsible suppliers (*M* = 4.695, *SD* = 0.998). Among the waste reduction practices, the most frequently undertaken by the hotels were the use of environmentally-friendly equipment and detergents (*M* = 4.363, *SD* = 1.173) and the installation of water-efficient equipment (*M* = 4.750, *SD* = 1.055) as well as bulk purchasing (*M* = 4.585, *SD* = 1.067) and use of energy-efficient equipment and products (*M* = 4.542, *SD* = 1.206). However, the popularity of waste prevention practices could be borne out of economic imperatives rather than environmental reasons. Waste reduction does not only help to reduce wastes but also the cost of operations. It is, therefore, not surprising that they were among the most frequently undertaken waste management practices by the hotels.

Conclusions

Results of this study point to the fact that the more the resources needed to carry out a waste management practice, the less likely that small hotels would undertake such a practice. This is evident in the rarity of practices relating to waste recycling and recovery. These practices require

some amount of financial investments to undertake, such as the cost of transporting waste to recycling plants, creation of recycling plants, procurement of additional dustbins for waste separation, as well as the procurement of composters, bio-gas plants, and sewage treatment plants. For small hotels, these costs could be substantial and could affect their profits. Under such circumstances, small hotels do not conform to the conventional WMH model. Disposal at landfill sites, which is the least preferred option under the WMH model, is rather the most preferred option for small hotels.

Theoretical Implications

Though there have been considerable amounts of studies on waste management in hotels in general, small hotels which often lack the resources and commitment from management for undertaking effective waste management have rarely been distinguished for research. Results of this study indicate that, though waste disposal is the least preferred option under the WMH model, small hotels will continue to pursue that option because it is the easiest and cheapest option available to the hotels. Unless some form of assistance is provided, small hotels will continue to pursue cost-cutting waste management options which do not require some financial commitment or investment. This explains why apart from waste disposal; waste prevention and waste reduction are the second and third most popular options respectively. Thus, waste management practices of small hotels do not strictly follow the sequence of waste management options in the WMH model.

Practical Implications

The fact that waste disposal at landfill is the most frequently undertaken option has implications for waste management in the city of Accra. Already, city authorities are grappling with the problem of mounting garbage in various parts of the city, which is increasingly becoming difficult and expensive to manage. Wastes from the growing number of small hotels which commonly end up at landfill sites simply compound the problem. The tons of wastes produced by these hotels collectively could be substantial since a typical guest produces in excess of one kilogram of waste per day (IHEI, 2002). However, the volume of waste could be reduced substantially if the hotels undertake waste management practices geared toward the reuse and recycling of wastes already generated as well as recovery of energy from such wastes.

The fact remains that small hotels lack the resources required for the recycling and recovery of wastes. It is, therefore, imperative for hotel managers and the regulatory authorities to promote attitudinal change among both employees and guests by adopting the sufficiency approach instead of the efficiency approach. The sufficiency approach to addressing environmental problems borders on behavioral change resulting from positively influencing people such as guests and staff to cut down on excessive personal consumption. Since these hotels lack the resources to acquire the necessary equipment and technology to carry out the waste management function, attitudinal change leading to waste prevention and reduction can help reduce the volume of end-of-pipe wastes. It is surprising that linen reuse programmes were rare in the hotels but that presents a good opportunity for hotels to reduce liquid waste and achieve cost-savings.

Results of the study also underscore the need for the Ghana Hotels Association, of which about three-quarters of the hotels were members, to pool the resources of its members in embarking on joint waste management projects such as the establishment of a recycling or bio-digester plant. Under the auspices of the Hoteliers Association, training programmes could be organized in collaboration with the AMA and the Environmental Protection Agency on waste management for

managers of the hotels. The AMA should further support the waste management efforts of the hotels with the needed resources and infrastructure such as bins for selective waste collection and recycling plants. AMA could spearhead the establishment of recycling plants across the city with the support of private waste management companies such as Zoomlion Ghana Ltd. This will provide avenues for the hotels to recycle their wastes instead of just dumping them.

Limitations and Future Research

This study had some limitations which should inform future studies. First, the waste management practices of the hotels were ascertained through the use of self-administered questionnaires. Thus, the waste management practices were self-reported by managers of the hotels. There is, therefore, the likelihood that, in some cases, some managers' responses may not entirely reflect the reality on the ground. The data collection process was also fraught with some challenges due to the fact that the hotels were not concentrated in one area but spread throughout the city and some managers of hotels that had been randomly selected were unwilling to take part in the study. Field assistants sometimes had to make several calls to those hotels before substituting them with other hotels. Though the study was about waste management in general, the focus was on solid wastes due to the use of the WMH as a framework. The WMH tends to focus on solid waste, so the management of gaseous and liquid wastes of the hotels was not adequately examined.

Though this study has provided evidence on the waste management practices of small hotels in Accra, it stops short of unearthing the reasons for manager's inertia in implementing waste management practices in the areas of reuse, recycling and recovery as well as the popularity of the waste disposal method. It is, therefore, recommended that future studies should seek to gain greater insights into the reasons underlying the waste management practices undertaken by the hotels and managers' motivations for undertaking those practices. Also, future studies should employ a qualitative and observational approach to unearth the waste management practices of the hotels and the obstacles to waste management by small hotels. It would also be useful to assess the situation from the perspective of other stakeholders such as guests, city authorities, waste management companies, regulatory agencies and other service providers because successful waste management by hotels requires the collaboration of all stakeholders.

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