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Solid Waste Management in the Tourism Sector of Ghana. A Study of Selected Hotels in Ho the Regional Capital of Volta Region.

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Abstract
The rapid growth of the tourism sector throughout the World and change in life style has increased waste generation in hotels, which Ghana is no exception. Management of solid waste is an efficient method to increase resource efficiency thus material and energy recovery instead of landfill disposal. Various governments in Ghana have made several attempts as how waste generated in Ghana could be managed yet waste management and disposal has become a topic for debate in Ghana due to accumulation of waste in open areas. Moreover, there are a number of strategies, technologies, procedures employed in different parts of the World about solid waste management. To date little or no research has been conducted in this area in the tourism sector of Ghana. Thus, the present paper attempts to investigate how solid waste generated in hotels are processed and managed using selected hotels in Ho the capital of Volta Region. Data was collected from 150 hotel staff employed in the various sections of the hotels.
Results, from the study revealed that waste such as bones, food leftovers and vegetables peels, rubber, paper, plastic and bottles were disposed in dustbins and later on collected by waste management company and deposited at landfill site. Sometimes paper, plastic and rubber were incinerated. Recycling and other methods of waste disposal were not implemented. The conclusion drawn was lack of proper disposal of solid waste at landfill areas by waste companies in Ghana and burning of waste do not only creates conducive environment for pests like flies, rats and others but also pollutes the ecosystem and health hazards. There is the need for constant training and educating of staff of hotels on solid waste management and the use of more advance technology.
Keywords: Waste management, Tourism, Solid waste, landfill, Ecosystem, Recycling

1. Introduction

The rapid growth of hotels in both developed and developing countries and the high patronage of hotel facilities by tourists and other visitors have increased the amount of solid waste generated in the tourism sector at large which Ghana is no exception. This has become a public concern in developed and developing countries. Although there number of existing strategies, technologies and procedures employed in different parts of the World for waste management, the core problem lies with individual organizations waste generation and minimisation. Ghana is also facing similar problems with drastic increases in waste generation and seeking for an urgent remedy to manage its waste efficiently if it is to safeguard its environment from damaging effects. Inaddition, every department in a hotel generate solid waste and it is becoming more and more acute in the current technology–driven era. Hotels solid waste if left unmanaged tend to become breeding grounds for insects and vermin such as ants, cockroaches, houseflies, rats and mice among others. Inaddition, eminent odor may lead to the creation of poor environment for guests and staff lodging in hotels. Since hotel organizations in Ghana generate a lot of waste, it brings to the fore how wastes generated were managed in the tourism industry of Ghana. Inaddition, there are a number of strategies, technologies, procedures employed in different parts of the World. Understanding waste minimization behavior is the basis for sustainable waste management. Moreover, the Government of Ghana has collaborated with various recycling companies such as Zoomlion Ghana Limited**,** Blowplast and Jospong Group of Companies to collect, sort, process and recycle solid and liquid waste. The essence is to use them in the production of organic manure, rubber sandals and polythene bags etc. The Accra Compost and Recycling Plant have also been established to address the problem of solid waste. It is very crucial to find out how solid waste generated in hotels were recycled.

However, previous researches focused on environmental management practices in hotel organizations in Ghana. Therefore, the purpose of the study was to investigate how solid waste generated in hotels were managed using selected hotels in Ho the capital of Volta Region.

Objectives of the Study are as follows:
1. To investigate how solid waste generated in hotels were managed.
2. To explore the possible challenges solid waste poses to hotels and the tourism business in general.

3. Determine the level of readiness of hotels to recycle.

2. Literature Review

The fact cannot be denied that tourism is a major global economic force. Hardly a day goes by without a new pronouncement about the wider significance of what many call the world's largest industry. International tourism has grown substantially in recent decades, with technological improvements and broader processes of globalization leading to rapid increases in visitor number. Hence, the use of hotel facilities and waste generation throughout the World and there has been a clarion call towards minimising waste. Hotels in Ghana and other organizations generate lots of waste. Major cities, municipalities, and towns continue to struggle with the problem of solid waste management. However, past and present presidents of Ghana, stakeholders, environmental NGOs and public at large, have expressed concerns about waste management in Ghana.

The World Health Organization (WHO) defines Waste as "something which the owner no longer wants at a given time. This line of thought represented a broad- based approach towards the classification of what constitutes waste. Even though methods, procedures and policies are mandated to reuse and recycle, there exists significant gap when it comes to practical reality. Thus, solid waste management is a major priority issue all over the world (Sheeba & Mohd, 2007). Inaddition,Jayashree et al; (2013) argued that, solid waste management covers the issues in the control of waste generation, storage, collection, segregation, transfer and transport, processing and disposal of solid wastes (SW) consistent with the best practices of public health.

Moreover, there are various ways of disposing waste for instance the organic component of solid waste is biodegradable. However, the plastic waste component of the solid waste is problematic because it is non-biodegradable. Therefore can stay in the environment for a considerable length of time causing all sorts of health and environmental problems. In addition, the management of plastic waste through combustion is not environmentally friendly and sustainable since this may release carbon dioxide a major contributor to global warming. On the other, land filling with plastic waste is not also desirable since plastic is non-degradable and no economic value would have been derived from the waste in that case. The best option for sustainable plastic waste management is through recycling (Ziadat et al, 2005). This is because the benefits of recycling of plastic waste are numerous and environmentally friendly. Hotels in Ghana served water in plastic bottles and generate other types of solid waste through their daily activities.

Previous studies revealed that, hotels all over the world have struggled with proper management of the various types of waste (Thomas et al; 2007). Accordingly, the problem is more prevalent in developing countries. Thus, the need for better understanding of the complexities around waste disposal depends on lack of trust and credibility of disposal agencies and decision makers.

Furthermore, "The Waste Management Hierarchy" (minimization, recovery and transformation and land disposal) have been adopted by many industrialized nations for developing solid waste management strategies depending on the topography, population density, transportation infrastructure, socioeconomic and environmental regulations (Sakai,1996).

Inaddition, the prevention and reduction of waste by introducing appropriate measures have attracted the attention of many researchers (Peter Glaric, 1996). Past research by (Tonglet et al 2004) on waste minimization in developing countries found that, managements' attitudes and general lack of awareness and practices in waste/energy minimization. Waste reduction promotion/publicity material, education and information policies provided by local authorities, evaluating their effectiveness, and identifying any loopholes exist in public awareness (Tom and Adam, 2001).

In contrast, the education on industrial waste minimization is high in industries compared to solid waste minimization in the tourism sector, which is relatively low and or neglected. Moreover, there are programmes to drive recycling behavior not minimization in developed countries. Davidson (2011) argued that comprehensive plan could be developed to minimize waste generation and enhance recycling modes as well as knowledge of the waste composition and the need to conduct waste characterization studies or waste audits for logistical planning.

3. Methodology

Four hotels registered with Ghana Tourist Authority were surveyed in Ho. Ho municipality is endowed with lots of tourists attractions hence hotels sprung up in the region to provide accommodation and other important services to tourists from all walks of life. The study adopted stratified sampling in which each department in the hotels form a stratum. Simple random sampling was then used in selecting respondents from each stratum. This allows each member of the target population to have an equal chance and to avoid bias.

A questionnaire was used to collect data for this study. This method was used because of the advantages it has; it provides more responses than interviews and requires fewer skills to administer (Ndagi, 1999). The use of questionnaires also enables researchers to collect data on people's knowledge and values (Obasi, 1999). Two hundred 200 questionnaires were administered among employees in the various selected hotels in Ho Township.

Total of 150 questionnaires were returned and used for the analysis. The SPSS version 18 was used for data analysis. Cronbach alpha was used to determine the reliability of the data collected for each factor. Inaddition (Muller et al; 2004) argued that, Cronbach alpha was used widely to ensure reliability of a test and measurements. Advance sorting and weighing was also implemented.

4. Results and Discussion

The study examined solid waste management in selected hotels in Ho Township the capital of Volta Region in Ghana. One hundred and fifty respondents (150) were selected for the study. 53.94% of the respondents were females and males constitute 46.06% with age distribution between 18 to 25 and 26 to 35 years respectively. The educational qualification of respondents ranges from Higher National Diploma in hospitality and tourism management (HND) representing (30.30%), Senior High School representing 50.30% and 25% representing junior high school certificates.

On the issue of how solid waste is managed in the hotels and or whether they have any organization or department responsible for processing the waste being generated in the hotels. The findings revealed that, the selected hotels do not have any unit or department responsible for processing solid waste generated in the hotels but rather waste company known as Zoomlion does the collection and they are deposited at landfill site and sometimes each department disposed off their waste by the close of work and especially the rubber and paper were incinerated.

Inaddition, on the issue of how the various categories of solid wastes generated in the hotels were disposed off. It was revealed that food left over's, vegetables, bones, bottles, cans and plastic bottles that cannot be burnt were deposited of at landfill site.

Also wastes like wood and spoilt electrical appliances were sometimes not in high quantity and supported by high percentage of response rate as 73.94, 57.98 and 73.33 respectively and a high mean values showing (not indicated) by respondents. On would argue that the highest department that generate waste in the hotels are the Kitchen, restaurant, housekeeping departments and the back office.

Furthermore, on the issue of how other types of waste generated were disposed off, results revealed that 74.19% of the respondents argued that other types of solid waste generated are normally dumped in a dustbin at central point provided by the hotels while others have no idea.

On the issue of whether, employees were educated on hygienic ways of disposing of solid waste in hotels; results revealed that, 55.5% of the respondents were satisfied with the education on solid waste management and its environmental impact.

On the issue of quantities of waste generated in hotel establishment on daily and or weekly basis. The researchers sorted the type of waste generated in the selected hotels and weighed them the processes are shown in the Figures below.

Figure 1: **(Broken Bottles in Crates)**

The figure above shows broken bottles of assorted drinks in crates that weighed 137kg on daily basis.

Figure 2: (Food and vegetables)

The figure above shows food leftovers and vegetables peels for example from the restaurants and kitchen

weighed about 209kg on daily basis.

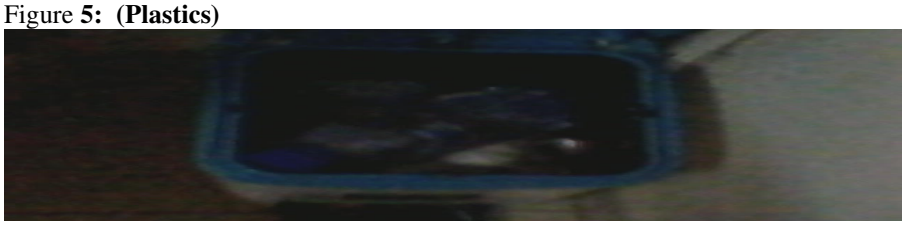
Figure 3: Solid waste in hotels (polythene bags and sachet bags)

Polythene bags thrown into dustbins after being used in the selected hotels ready for burning.

Figure 4: (Paper)

Waste paper generated in various offices weighed about 230kg. These papers are usually incinerated.

Figure **5: (Plastics)**



Plastics waste were also generated in hotels and weighed about 259kg per week comprises of water bottles, empty plastic drink containers, plastic plates, spoons, forks and cups.

The table below depicts the types and quantities of waste generated in the selected hotels on daily basis.

Table 1: The amount of various types and quantities of solid waste generated on daily basis in the hotels

Days	Bottles kg	Food leftovers and vegetables Kg	Polythene kg	Papers Kg	Plastic kg	Total kg
Monday	137	209	150	150	259	905
Tuesday	250	270	200	250	300	1270
Wednesday	200	280	250	300	450	1930
Thursday	190	290	350	320	280	1430
Friday	220	300	450	220	260	1450
Saturday	290	360	450	550	420	2070
Sunday	240	320	350	350	120	1380
Total	1527	2029	2200	2140	2089	10435

The table above shows 2200 kg of rubber/polythene followed by paper with 2140 kg, thick plastic 2089 kg, leftover food items 2029kg and bottles 1527kg are types that are generated in the hotels on weekly basis. From the table it has been identified that the amount of waste generated in the selected hotels per week is quite high and could be recycled rather than dumping them in the dustbin or incinerating them.

Furthermore, the result from Binomial test to find out if hotels received any assistance from other organizations or district councils in disposing of waste generated in the hotels revealed that, 0.88 proportions of the respondents agreed that waste management contractors assists them in disposing of their wastes while only 0.12% disagreed. However, the significant value of 0.00 confirms that there are differences in the responses provided. Thus, one would conclude that sometimes hotels received assistance from contractors to dispose of waste. Recycling and other modern technologies of disposing waste were not implemented. The findings revealed that dumping is the popular way of disposing waste generated in hotels in Ho Municipality. This is a divergent finding of Ziadat and Mott (2005) that recycling is, perhaps, the best and the most environmentally sound method used in solid waste management for reducing quantities of solid waste disposed of in landfills.

Conclusion

The study examines solid waste management in selected hotels in Ho Township. The advantages of proper

management of waste in hotels are numerous if hotel proprietors would understand the concept of recycling of waste. One major means of handling the nuisance of indiscriminate disposal of solid wastes in hotels is to recycle into products that can be reuse and for organic purpose. Rather than collecting and dumping them at the refuse dump or burning them that will have both short and long term effect on the environment.

The existing practices of solid waste management by hotels proprietors may have implications if steps are not taken to rectify the situation. Thus, this study addressed the gap and it is believed that a comprehensive approach would be developed for solid waste management in hotels in the Ho the regional capital of Volta Region and Ghana at large. Thus, the current research has better informed hotel proprietors and managers about the various ways of disposing solid waste. The study recommended the following: Hotel employees and proprietors should be trained on how solid waste could be recycled into other useful products.

Ghana Tourist Authority , Municipal Councils and other stakeholders need to provide continues education on advantages of recycling for managers of hotels and environmental implications if solid wastes are not managed properly.

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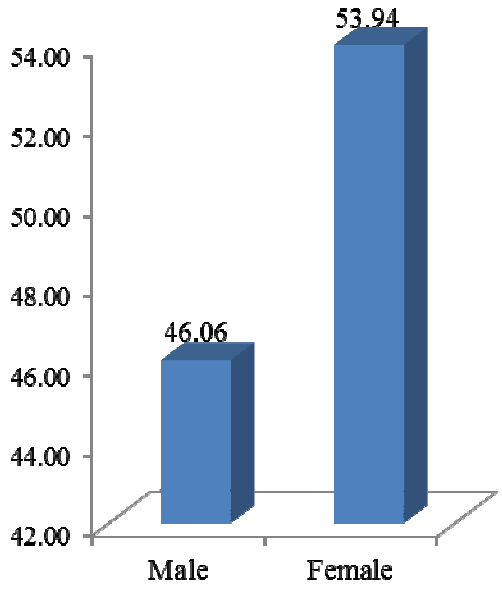
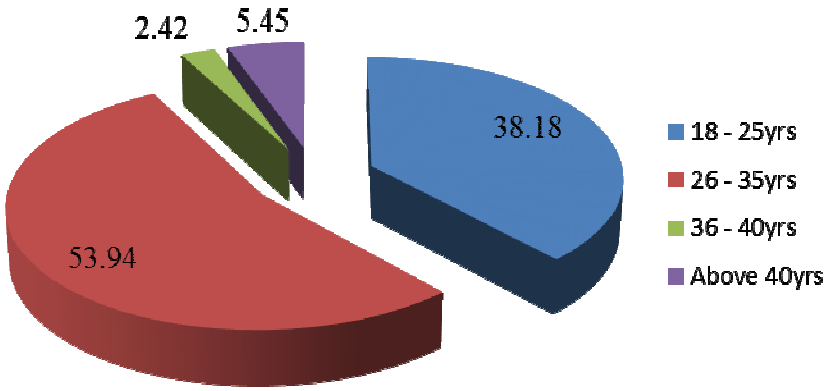
Note

Bar Chart Depicting the Gender Distribution of Respondent



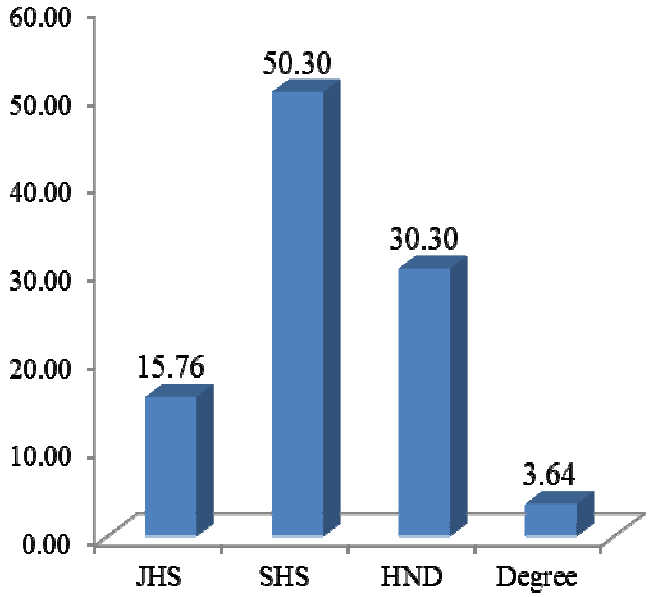
Source: Field Survey, 2013

Age Distribution of Respondents



Source: Field Survey, *2013*

Educational Qualification of Respondents



Source: Field Survey, 2013

Contingency Table 4: Institution In Charge Of Solid Waste Management

		Institution In Charge Of Solid Waste Management			Total
			All Departments	Housekeeping	
Have Solid Waste Department	Yes	108	0	0	108
	No	31	8	18	57
Total		139	8	18	165

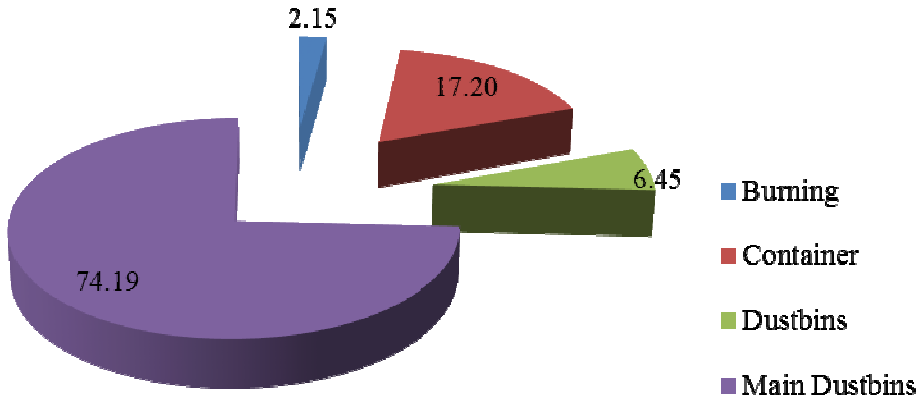
Source: Field Survey, 2013

Table 5:Types of solid wastes generated

Solid waste	Indicated (1)	Not Indicated (2)	Mean
Paper	77.58	22.42	1.22
Wood	26.06	73.94	1.74
Dust	42.42	57.58	1.58
Electrical gadgets	26.67	73.33	1.73
Bottles	70.91	29.09	1.29
Food remnants and vegetables	86.06	13.94	1.14
Ashes	53.33	46.67	1.47
Rubber	80.61	19.39	1.19
Bones	87.27	12.73	1.13
Plastics	76.97	23.03	1.23

Source: Field Survey, 2013

Figure: Means of disposing the wastes generated



Source: Field Survey, 2013

Care and awareness of solid waste

	Strongly Dissatisfied	Dissatisfied	Not Sure	Satisfied	Strongly Satisfied
Satisfied with solid waste in my environment	7.88	17.58	18.79	30.30	25.45
Satisfied with the way neighbors dispose solid waste	9.70	13.33	15.76	46.06	15.15
Satisfied with the management of solid waste in my hotel	7.88	6.06	3.64	60.61	21.82

Source: Field Survey, 2013

Table 4. Binomial test on the assistance of disposing waste

	Category	N	Observed Prop.	Test Prop.	Asymp. Sig. (2-tailed)
Organizations assist in disposing of solid waste	Yes	145	0.88	0.5	0.00
	No	20	0.12		
		165	1		

Source: Field Survey, 2013

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