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Waste Management Practices Influence on Operating Cost among Selected Classified Hotels in Nakuru County, Kenya

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Abstract

The world is currently battling the challenge of environmental degradation which is rising at an alarming rate. The situation is greatly attributed to poor waste management. The hospitality industry being a major consumer of resources contributes a lot towards waste generation. Regardless of the high level of waste generation, a lot of hotels continue to use improper waste management practices. The purpose of this study was to examine the effect of waste management practices on operating cost of classified hotels in Nakuru County, Kenya. The study sought to determine the effect of waste reduction strategies, waste composting, and waste collection and disposal on operating cost of classified hotels in Nakuru County, Kenya. The study also ascertained the moderating effect of stakeholder cooperation on the relationship between waste management practices and operating cost of classified hotels. The study adopted descriptive survey research design. The study population comprised of 61 classified hotels in Nakuru County. Structured questionnaires and semi-structured interview guides were used to gather data. Quantitative analysis employed descriptive and inferential statistics. The research revealed that waste management practices affect operating cost of hotels (R^2 = 0.467, p = 0.000). Waste reduction was found to have a negative and statistically significant effect on operating cost (β = -0.167, p = 0.021). Waste composting was found to have a negative and statistically significant effect on operating cost of classified hotels (β = -.161, p = 0.030). Waste collection and disposal was found to have a positive and statistically significant effect on operating cost of hotels (β = 0.299, p = 0.001). Lastly, stakeholder cooperation was found to have a statistically significant moderating effect on the relationship between waste management practices and operating cost of hotels (R^2 = 0.532, p = 0.019). Therefore, the study recommend that hotels should prioritize effective waste management practices ascertained to be waste reduction, recycling and waste composting in order to curb the challenge of increasing operating cost. The research also recommended that national waste management policy makers should enact policies that facilitate implementation of effective waste management practices recommended by the study.

Keywords: *Waste management practices, waste reduction, waste composting, waste collection and disposal, stakeholder cooperation, operating cost*

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1.1 Background of the Study

The world is currently battling the challenge of environmental degradation which is rising at an alarming rate. The situation is greatly attributed to the use of improper waste management practices (Kim, Ko & Park, 2013). This has increased the debate on sustainability emphasizing on disposing waste in an environmentally safe and economically sustainable manner. The threats posed to the environment have further led to increasing social demand on organizations to reduce their environmental impacts.

The hospitality industry is a major consumer of resources and thus it contributes a lot towards waste generation (Ghadban et al., 2017; Ranieri et al., 2014). According to Giang et al. (2017) a hotel guest generates between 0.8 to 3.3 kilograms of waste per day. Despite the high level of waste generation, majority of hotels in developing and under-developed countries have continued to use improper waste management practices (Omidiani & Hashemi, 2016) which has led to increase in operating cost. Researchers attribute the inability of hotels to use effective waste management practices to continuous problems in establishment and implementation of the practices (Hornsby et al., 2017).

Although waste is clearly a big issue in the hospitality industry, effective waste management practices can be found across the industry globally. According to Baker (2020) international hotel brands in developed and developing countries such as Hilton Tokyo Bay in Japan have invested and are practicing effective waste management. Their decision regarding effective waste management was informed by the knowledge that landfills around the world are diminishing, at a time when operating cost is escalating. The European Union Waste Framework Directive (EUWFD) define waste as any substance or item which the holder disposes of or intends to get rid of. Waste from hotels is broadly categorized into wet (organic or bio-degradable) comprising majorly of food waste which account for about 50 percent of total waste generated (Curry, 2012) and dry waste (non-biodegradable) consisting of solid waste. Pham et al. (2018) established that about 84.3 percent of waste generated from hotels is organic and recyclable waste.

Much of the waste created in hotels is generated from two departments that is food and beverage and accommodation departments (Pirani & Arafat, 2014; Singh, 2014; Sharma & Chandel, 2016; Wong & Kim, 2012). Thus, is directly linked to the cost incurred in production and service delivery. Many hotels have minimal passion for reducing and/or recycling waste, believing that the practices are too costly and protracted yet these are the practices that enable reduction of cost and generation of income from waste (Omidiani & Hashemi, 2016). Operating cost is one of the dimensions of operational performance which refers to the costs sustained by hotels in their regular operations (Kimeu, 2015). It comprises food cost, labour cost, material cost, and waste management cost among others. Usually, the cost of providing accommodation and food and beverage service to guests is very high and increases more when there is wastage in the processes involved (Whiting, 2017).

Waste management practices adopted by hotels affect their operating cost. According to Kimeu (2015) the use of improper waste management practices has not only resulted in environmental degradation but most important to the hospitality industry it affects operating cost. Most hotels

mainly rely on waste collection and disposal a practice that is associated with increase in operating cost (Whiting, 2017) which can be reduced by reducing wasteful habits.

Kennedy (2013) reported that, many hotels face cost problems that arise from waste due to obstacles to effective waste management which they can overcome. He suggests that, efforts towards effective waste management requires vast amount of stakeholder cooperation, partnership and teamwork. According to Lawson (2018) effective waste management practices enable hotels to cut on material cost and reduce the cost of waste management.

According to Kenya National Bureau of Statistics (KNBS, 2014) the hotel industry has seen a tremendous growth in recent past years that is ascribed to growth in local and international tourism. However, just like any other sector of the economy the industry is facing a number of challenges among them problems associated with waste management (Irungu & Mungai, 2013). The problem may be triggered by the rapid growth of the hospitality industry that generate a lot of waste and continue to report the use of poor waste management practices that affect their operating cost.

Nakuru County is among the 47 Counties in Kenya. According to the County's Integrated Development Plan (CIDP, 2018-2022) the revival of the tourism industry in the period 2013-2017 has seen a significant growth in the County's hospitality sector. Following the categorization of hotels by the Tourism Regulatory Authority (TRA) as obtained from the CIDP the following are available in Nakuru; 40 town hotels, 10 lodges, 1 tented camp, two 2-star hotels, four 3-star hotels, three 4-star hotels and one 5-star hotel.

One of the challenges facing Nakuru County is waste management (CIDP, 2018-2022). Nath (2014) argue that the hospitality industry contributes to more than half of the municipal waste hence the challenge could be triggered by among other factors the rapid development of the County's hospitality sector that generates a lot of waste and continue to report the use of ineffective waste management practices which is linked to the challenge of increasing operating cost (Kimeu, 2015).

1.2 Statement of the Problem

The hospitality industry being a major consumer of resources generates a lot of waste. Waste management practices employed by hotels aside from environmental concerns affect their operating cost. Kimeu (2015) attributes high level of waste generation and the use of ineffective waste management practices to increase in hotel operating cost which has resulted to decrease in profitability. As a result, hotels are now striving to find effective ways to contain their costs as a means of addressing the problem of increasing operating cost.

Waste management is one of the challenges facing Nakuru County (CIDP, 2018-2022). The challenge could be caused by among other factors the rapid development of the County's hospitality sector which generate a lot of waste and continue to report the use of ineffective waste management practices. This is said to have resulted in the challenge of increasing operating cost a problem that hotels are currently battling (Irungu & Mungai, 2013; Kimeu, 2015; Kennedy, 2013).

Previous studies on waste management in Kenya investigated the general effects of hotel operations to the environment, its sustainability and green hotels (Karimi, 2014; Irungu & Mungai 2013) giving fuzzy information on waste management and operating cost. A study by Kimeu (2015) focused on waste management methods and operational productivity of hotels within Mombasa. The study recommended that subsequent research should pin down to waste management practices and each dimension of operational performance. Thus, this study focused on operating cost as one dimension.

To fill the identified gap and provide sufficient information that will help to address the problem of increasing operating cost facing hotels which is attributed to poor waste management, it was important to conduct this study. The study sought to examine the impact of waste management practices on operating cost among selected classified hotels in Nakuru County, Kenya.

1.3 Research Objectives

i. To determine effects of waste reduction strategies on operating cost among selected classified hotels in Nakuru County, Kenya.

ii. To assess effects of waste composting on operating cost among selected classified hotels in Nakuru County, Kenya.

iii. To examine how waste collection and disposal affect operating cost among selected classified hotels in Nakuru County, Kenya.

iv. To ascertain moderating impact of stakeholder cooperation on relationship between waste management practices and operating cost among selected classified hotels within Nakuru County, Kenya.

1.4 Research Hypotheses

H_{01}: There is no significant relationship between waste reduction strategies and operating cost among selected classified hotels in Nakuru County, Kenya.

H_{02}: There is no significant relationship between waste composting and operating cost among selected classified hotels in Nakuru County, Kenya.

H_{03}: There is no significant relationship between waste collection and disposal and operating cost among selected classified hotels in Nakuru County, Kenya.

H_{04}: Stakeholder cooperation has no significant moderating effect on relationship between waste management practices and operating cost among selected classified hotels in Nakuru County, Kenya.

2.1 Theoretical Review

2.1.1 Waste Management Hierarchy (WMH) Model

The model was developed by the United Nations Environment Programme (UNEP, 2011). The framework was developed with the aim of preventing and minimizing the negative effects resulting from generation and management of waste and to ensure resource efficiency. In the

context of this study, the challenge of increasing operating cost facing hotels is partly attributed to waste generation and management techniques (Kennedy, 2013; Omidian & Hashemi, 2016; Whiting, 2017). Therefore, the model guided this study in addressing the issue of waste management practices and operating cost of hotels.

The waste management hierarchy model is presented in figure 2.1

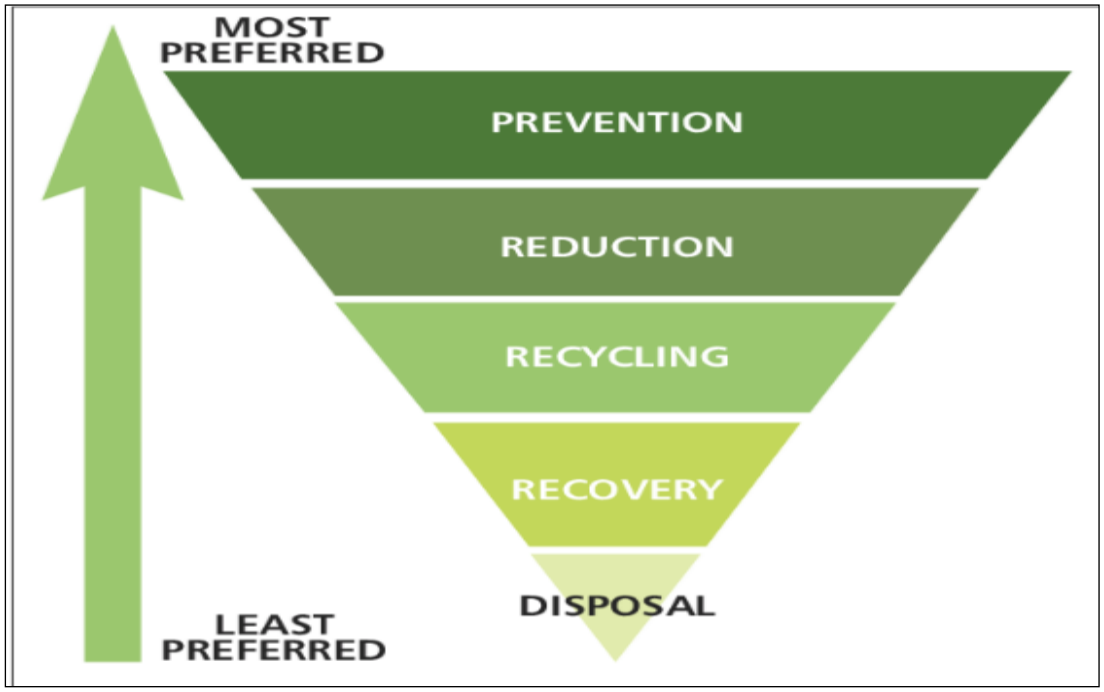

Figure 1: Waste Management Hierarchy

Source: UNEP (2011)

According to the model waste prevention and reusing are the most preferred options being placed at the top of the pyramid. The two practices are among the aspects of waste reduction which according to the model of Cumming (1997) can be achieved through reusing, purchasing with eco-intelligence, use of post-consumer recyclable products and efficient consumption in hotels. Considering the challenge of increasing operating cost facing hotels, Kimeu (2015) emphasized on the waste reduction strategies above as one of the means towards addressing the challenge.

In the model, recycling is positioned at the middle of the pyramid a level where waste composting is also captured according the directive. The positioning imply that the practices are given second priority after waste reduction. The two practices are also said to be effective in addressing the challenge of increasing operating cost facing hotels (Kennedy, 2013; Nath, 2014). However, hospitality organizations have minimal interest for recycling and composting due to lack of resources and time yet these are the practice that enable reduction of cost and generation of income from waste (Baker, 2020; Omidian & Hashemi, 2016).

Waste disposal is placed at the bottom of the pyramid, implying that it should be the last resort after all other waste management practices have been considered.

2.1.2 Resource Dependency Theory (RDT)

Resource dependency theory by Pfeffer and Salancik 1970's is based on the notion that resources are essential for success of organizations and the ease of getting and managing resources is a source of strength. Therefore, considering the challenge of increasing operating cost facing hotels that is attributed to inappropriate waste management practices, the organizations should come up with strategies to ensure optimum utilization of resources.

The theory argues that operations of an organization are influenced by resources it utilizes such as raw materials. Similarly, in this context, the inability of hotels to practice effective waste management to ensure maximum utilization of resources is attributed to the challenge of increasing operating cost (Omidian & Hashemi, 2016). This is because hotels endeavor to get resources from the external environment at a cost that increases when there is wastage in the processes involved in offering accommodation and food and beverage service (Whiting, 2017).

The theory stress on resource scarcity as one of the challenges facing organizations. As a result, firms endeavor to get resources from the external environment which come at a cost. Similarly, in the context of this study the challenge of resources is attributed to the inability of hotels to practice effective waste management practices which has resulted in the problem of increasing operating cost (Kimeu, 2015). To curb the challenge, Kennedy (2013) suggested that hotels should seek vast amount of stakeholder (investors, community, government, Suppliers, customers, employees) cooperation and partnership.

2.1.3 The Stakeholder Theory

The Stakeholder theory by Edward Freeman 1984 stresses on the interconnected relationships between a business and its customers, suppliers, employees, investors, community and others who have a stake in the organization. The theory is relevant to this study because it points out on the actors influencing the success of hotels in waste management which affect operating costs of hotels.

The Stakeholder theory argue that the success of an organization lies on its capability to carry off the interests of its stakeholders' (Freeman, 1984). Similarly, in this context, effective waste management in the hospitality industry requires partnership with the relevant stakeholders. Kennedy (2013) attributes the problem of increasing operating cost facing hotels to obstacles to effective waste management. He suggests that efforts towards effective waste management require vast amount of stakeholder cooperation.

The theory suggest that organizations should consider the interest of stakeholders when planning for waste management so as to get their support. Through this they will overcome the challenge of lack of resources required for effective waste management since most of these resources come from the stakeholders including the investors, employees, customers, suppliers, government, and community. To achieve this, hotels should always inform all stakeholders about waste management strategies set up and what they wish to achieve (Kimeu, 2015).

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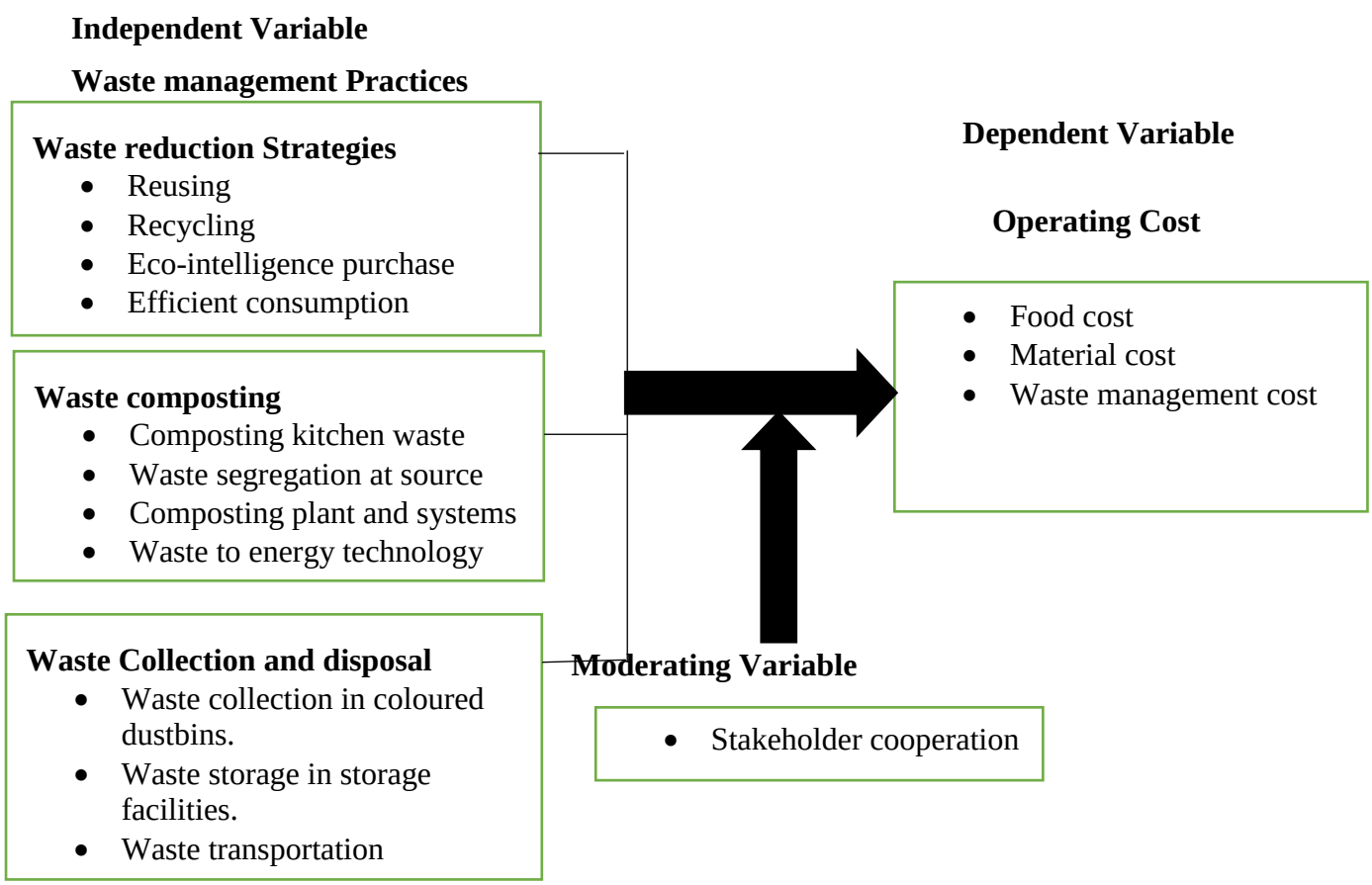
2.2 Conceptual Framework



Source: Adapted from Kimeu (2015)

2.3 Empirical Review

2.3.1 Waste Management Practices and Operating Cost

Kimeu (2015) define waste management as an overall approach to prevent waste. The researcher added that waste management practices mostly used in hotels include waste collection and disposal, waste composting and waste reduction and or recycling. Much of the waste generated by hotels come from food and beverage and accommodation department (Pirani & Arafat, 2014; Singh, 2014; Sharma & Chandel, 2016; Wong & Kim, 2012). And thus, influences the cost incurred in production and service delivery. As such, the waste management practices are said to affect operating cost of hotels (Whiting, 2017; Kennedy, 2013).

According to Kimeu (2015) operating cost is one of the dimensions of operational performance which refers to the costs incurred in regular operations of hotels. It comprises food cost, material cost, waste management cost and so forth. The waste management practices adopted by hotels are said to affect these costs. Hotels are currently battling the challenge of increasing operating cost which has led to decline in profitability (Irungu & Mungai, 2013; Kimeu, 2015;

Whiting, 2017). The problem is attributed to high level of waste generation and continuous use of ineffective waste management practices (Lawson, 2018; Omidian & Hashemi, 2016). As a result, many hotels are striving to find effective ways to contain their cost.

Kimeu (2015) argued that waste management practices used in hotels affect their operating cost. Kennedy (2013) reported that hotels face the challenge of increasing operating cost due to their continuous use of ineffective waste management practices. However, given that operating cost was not the prime focus of the research, Kimeu (2015) recommended that subsequent research should focus on waste management practices and hotel operating cost, in order to determine the nature of the effect.

Irungu and Mungai (2013) suggested that hotels can achieve cost containment through practicing effective waste management. In addition, Omidian and Hashemi (2016) articulate that although hotels consider waste reduction and or recycling, and composting as expensive and time consuming, the practices are effective in addressing problems arising from waste. However, given that the studies mentioned above did not focus on operating cost as outcome variable they give fuzzy information on the subject, which necessitated the need to conduct this research.

2.3.2 Waste Reduction Strategies and Operating Cost

Omidiani and Hashemi (2016) define waste reduction as the minimization of waste during the life cycle of a product. According to the hierarchy model of hotel waste management by Cumming (1997) hotels can achieve waste minimization through: better product design, eco-intelligence purchase, use of post-consumer recyclable products, efficient consumption to generate less waste, reusing and recycling.

In relation to the challenge of increasing operating cost, researchers emphasize on waste reduction as a means to reducing waste generation, increasing material recovery, reducing operating cost and generating income for hotels (Baker, 2020; Lawson, 2018). Waste reduction strategies such as reusing which involves using materials more than once in different functions (Omidiani & Hashemi, 2016) enables hotels to reduce waste generation which consequently reduces the cost incurred in waste management, thus cutting on operating cost. In addition, the findings of Okumus (2020) recommended waste reduction in food and beverage department as one of the means to reduce food cost which results in decrease in operating cost.

According to Baker (2020) waste reduction enables hotels to generate income from waste through practices such as recycling. The practice entails retrieving refuse as raw material for other processes. Although many hotels are unable to practice recycling due to lack of the required resources, Nath (2014) suggest that they can achieve recycling of waste by selling to recycling units to salvage value of each material and generate income. In summary, Milanez et al. (2015) found out that waste reduction and or recycling form the important waste management solutions which benefit hotels.

Despite the numerous benefits of waste reduction, many hotel operators consider the practice as expensive and time consuming (Omidian & Hashemi, 2016). As a result, they have minimal interest in implementation of waste reduction thus failing to tap on the benefits associated with

the practice. Further, the finding of Kimeu (2015) revealed that hotels have failed in prioritization of waste reduction strategies as recommended in waste hierarchy models. Pham et al. (2018) attributes the situation to lack of motivation since hoteliers may not understand the benefits associated with waste reduction in relation to operating cost. Similarly, Ball and Taleb (2010) argued that most hotels do not prioritize waste reduction due to lack of skills and knowledge of its benefits in relation to cost. This is because there is a gap in research on the aspect of waste reduction and operating cost of hotels.

2.3.3 Waste Composting and Operating Cost

Composting has been suggested as one of the waste management practices being used by hospitality organizations (Bohdanowicz, 2006; Kimeu, 2015; Vahatiitto, 2010). The practice involves breaking down of organic/biodegradable waste into compost or manure. The share of organic/compostable waste in hotels is high comprising mainly of food waste which accounts for up to 50 percent of total waste generated (Curry, 2012).

Previous research suggests that waste composting influence operating cost of hotels. According to Kimeu (2015) hotel-based composting diverts large quantity of waste produced near the source, remarkably lowering carriage cost among other costs involved in waste management. In addition, Karimi and Mungai (2014) articulated that manure generated from composting is used in hotel farm to grow agri-based products for use in the hotel and can also be sold to generate income. Implying that if successful implemented the practice aids in reduction of operating cost by reducing the cost incurred in purchasing raw materials used in food production.

Despite the benefits associated with composting in relation to operating cost, the findings of Kimeu (2015) revealed that composting is the least practiced waste management method in hotels. The finding could be attributed to among other factors lack of the required resources and cost involved (Omidian & Hashemi, 2016). However, Kennedy (2013) suggests that the challenge of resources can be curbed by developing community level small scale composting project, team work and partnership with relevant stakeholders.

2.3.4 Waste Collection and Disposal and Operating Cost

Waste collection and disposal is a common practice that many hotels rely on. Kimeu (2015) found out that waste collection and disposal is the most preferred and practiced method of waste management in hotels. According to Whiting (2017) the situation is due to the fact that hotels consider the other practices as time consuming and expensive overlooking the high cost involved in waste collection and disposal which does not only include collection charges but also the cost of lost value of materials among others.

Hornsby et al. (2017) attributes the over-reliance of hotels on waste collection and disposal to continuous problems in establishment and implementation of effective waste management practices such as reduction and or recycling, and composting. The situation is said to have contributed to the rise of the current problem of increasing operating cost facing hotels (Kennedy, 2013; Whiting, 2017). The problem results from increased waste generation and waste management cost associated with over-reliance on waste collection and disposal. As such, researchers emphasize on the use of effective waste management practices suggesting

reduction and or recycling, and compositing to enable significant saving for hotels from reduced material cost and waste management cost which in return reduces operating cost (Ball & Taleb, 2010; Vahatiitto, 2010; Whiting, 2017).

Other than then said negative effects of waste collection and disposal on operating cost of hotels, the practice is associated with environmental challenges. For instance, improper disposal of the collected waste from hospitality organizations contributes to waste problem facing countries. This is because of the high level of waste generation from the hospitality industry (Ghadban et al., 2017; Ranieri et al., 2014). According to Nath (2014) the industry contributes to about half of municipal waste. Therefore, to resolve the problems associated with waste collection and disposal among them the challenge of increasing operating cost facing hotels, researchers suggest that hotels should practice effective waste management practices (Lawson, 2018; Martin, 2012; Whiting, 2017).

2.3.5 Roles of Stakeholders in Waste Management

According to Freeman (1984) the success of an organization lies on its capability to handle the interests of its stakeholders. Similarly, implementation of effective waste management practices in hospitality organization requires vast amount of stakeholder (government, community, suppliers, investor, customers and employees) cooperation, partnership and teamwork (Kennedy, 2013).

Esaid and Ghezzaf (2015) articulated that stakeholder (governments, organizations, employees, community, among others) are the most important factors influencing waste management operations in hotels. Hornsby et al. (2016) added that good stakeholder involvement support appropriate decision that lead to better and more integrated waste management solutions. Therefore, the extent of stakeholder cooperation in waste management influences the success of hotels in waste management and may consequently affect their operating cost.

Omidian and Hashemi (2016) attribute the inability of hotels to implement effective waste management practices such as composting and recycling to lack of the required resources. The resources are provided by the relevant stakeholders. Their cooperation in provision of these resources enables hotels to practice effective waste management which is linked to decrease in operating cost and increased profitability (Baker, 2020; Lawson, 2018).

3.0 Research Methodology

This research employed a descriptive survey research design. The research was carried out in Nakuru County, Kenya. The County has had a significant growth in the hospitality sector and one of the challenges its facing is the problem of waste management (CIDP, 2018-2022). This informed the decision to carry out the study in the County. Target population of the study was the 61 hotels classified with TRA in Nakuru (CIDP 2018-2022). From the study population, a sample size of 53 classified hotels was computed using Yamane formula. Proportionate stratified random sampling technique was used to select the study sample from each stratum in the study population. The formula (sample size/population size) × stratum size was used to obtain the proportionate sample size as illustrated in table 1.

Table 1: Distribution of Strata, Target Population and Sample Size

Strata	Target population	Selected sample size
Star rated hotels	10	9
Town hotels	40	34
Lodges	10	9
Tented camps	1	1
Total	**61 classified hotels**	**53 classified hotels**

Source: Research, 2022

The study respondents comprised of the general manager, executive housekeeper and executive chef in all the selected 53 classified hotels. Thus, the study had a total of 159 respondents. Questionnaires and interview guides were used to gather data from the respondents. The questionnaires were administered to the executive housekeepers and executive chefs while the general managers were interviewed. Analysis was done for both quantitative and qualitative data. Quantitative analysis employed descriptive as well as inferential statistics. Descriptive statistics was used to determine frequency, mean, standard deviation along with percentage for objectives and variables. Inferential statistics such as regression and ANOVA were used to determine the relationship between independent variables and dependent variable and to test the hypotheses. Qualitative analysis employed content analysis technique. Qualitative results were triangulated with quantitative results from the questionnaires.

4.0 Research Findings

Out of the 53 selected hotels, 48 took part in the study representing a response rate of 90.57%. On demographic characteristics, the findings revealed that a majority 23(47.9%) of hotels studied had been in operation for a period of between 10 to 20 years. Another 20 (41.7%) of classified hotels studied had been in operation for a period of less than 10 years. The remaining 5 (10.4%) were found to have been in operation for more than 30 years. The results revealed a significant growth of the hospitality sector in the study area over the recent past years. In addition, the research found that half 24(50%) of hotels studied had between 50 to 100 rooms. It was also established that a quarter 12 (25%) of the hotels studied had between 30 to 50 rooms with another quarter 12 (50%) having less than 30 rooms. Further, the findings revealed that 28 (58.3%) of classified hotels studied were situated within towns in Nakuru County, 11 (22.9%) along lakes, 7 (14.6%) along highways with the least 2(4.2%) being located in national parks.

4.1 Descriptive Statistics

The study respondents were asked to indicate on a Likert scale of 1-5 the extent to which waste management practices are practiced in the hotel. Where: 1 represent Not at All, 2 represent

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Little Extent, 3 represent Moderate Extent, 4 represent Great Extent, and 5 represent Very Great Extent.

Table 2: Descriptive Analysis of Waste Reduction

Statements	1	2	3	4	5	M	SD
1. Reusing items such as napkins	8.3%	15.6 %	43.8 %	22.9 %	9.4 %	3.09	1.05
2. Offering linen reuse option to multiple night guests	4.2%	19.8 %	39.6 %	27.1 %	9.4%	3.18	0.99
3. Recycling or selling to recyclers	17.7 %	7.3%	44.8 %	26%	4.2%	2.92	1.10
4. Efficient consumption	8.3%	3.1%	5.2%	16.7 %	66.7 %	4.30	1.23
5. Food portioning to reduce food waste	8.3%	2.1%	3.1%	14.6 %	71.9 %	4.40	1.20
6. Use of post-consumer reusable products for example water filters	4.2%	20.8 %	22.9%	24 %	28.1 %	3.5 1	1.22

Table 2 shows that a majority of respondents reported that hotels practice reusing of items such as napkins, plastic containers et cetera (M = 3.09, SD = 1.05). With a mean 3.18 the study respondents suggested that hotels offer linen reuse option to multiple night guests. Moreover, the respondents revealed that recycling of waste is the least practiced waste reduction strategy (M = 2.92, SD = 1.10) in hotels. The table further indicated that practicing efficient consumption through proper portioning of ingredients and cleaning agents received popular support (M = 4.30, SD = 1.23) thus, it is among the most practiced waste reduction strategies in hotels. In addition, proper food portioning to reduce food waste received the most popular support (M = 4.40, SD = 1.20) thus, practiced to a very great extent in hotels. On average, the respondents pointed out that, hotels use post-consumer recyclable products (M = 3.51, SD = 1.22) such as water filters for bottled water et cetera.

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Table 3: Descriptive Analysis of Waste Composting

Statements	1	2	3	4	5	M	SD
1. Ensuring strict segregation of waste at source	8.3%	2.1%	6.3%	17.7%	65.6 %	4.30	1.21
2. Having food waste composting programs	56.3 %	8.3%	12.5 %	13.5%	9.4%	2.11	1.44
3. Practice waste to energy technology such as biogas generation	76%	2.1%	8.3%	8.3%	5.2%	1.65	1.24
4. Taking kitchen waste to community compost sites	61.5 %	11.5 %	9.4%	10.4%	7.3%	1.91	1.34

Table 3 indicates that ensuring strict segregation of waste at source received the most popular backing (M = 4.30, SD = 1.21), insinuating that it is practiced to a great extent. The table further shows that on average the respondents reported that hotels have food waste composting programs (M = 2.11, SD = 1.44). The respondents also revealed that hotels practice waste to energy technology to a lower extend (M = 1.65, SD = 1.24). Lastly, the table shows that taking waste to community compost sites received low support (M = 1.91, SD = 1.34), implying low extent of practice in classified hotels.

Table 4: Descriptive Analysis of Waste Collection and Disposal

statements	1	2	3	4	5	M	SD
1. Use of properly colored bins in operational areas	9.4%	7.3 %	4.2%	8.3%	70.8 %	4.24	1.36
2. Storing waste in facilities awaiting collection	7.3%	5.2 %	6.3%	11.5 %	69.8 %	4.31	1.24
3. Transporting waste to depositing sites	12.5 %	5.2 %	6.3%	13.5 %	62.5 %	4.08	1.43
4. Stick to pre-informed waste collection schedule	9.4%	6.3 %	5.2%	11.5 %	67.7 %	4.22	1.34

Results in table 4 show that a vast majority of respondents reported that hotels use properly coloured bins in operational areas (M = 4.24, SD = 1.36). In addition, it was observed that, storing of waste in facilities designed for waste storage awaiting collection received the most popular vote (M = 4.31, SD = 1.24), implying that it is practiced to a higher extent in hotels. A majority of respondents also denoted that hotel do transport waste to waste depositing sites (M = 4.08, SD = 1.43). Further, the table reveals that a vast majority of respondents pointed out that hotels stick to pre-informed waste collection schedule (M = 4.22, SD = 1.34).

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Table 5: Waste Management Practices Descriptive Statistics Summary

Waste Management Practices	N	Mean	standard deviation
Waste reduction	96	3.57	1.13
Waste composting	96	2.49	1.31
Waste collection & disposal	96	4.21	1.34

Table 5 shows that waste collection and disposal was found to be the most practiced waste management practice in hotels (M = 4.21, SD = 1.34), followed by waste reduction (M = 3.57, SD = 1.13) whereas waste composting comes last (M = 2.49, SD = 1.31) as the least practiced waste management practice in hotels.

Table 6: Descriptive Statistics of Stakeholder cooperation

Stakeholder	1	2	3	4	5	M	SD
1. Government	2.1%	41.7%	52.1 %	4.2%	0.0%	2.58	0.61
2. Investors	2.1%	2.1%	0.0%	14.6%	81.3%	4.71	0.77
3.Industry associations	66.7%	31.3%	2.1%	0.0%	0.0%	1.35	0.53
4. Community	2.1%	41.7%	41.7 %	14.6%	0.0%	2.69	0.75
5. Employees	2.1%	2.1%	0.0%	8.3%	87.5%	4.77	0.75
6. Customers	2.1%	18.8%	31.3 %	39.6%	8.3%	3.33	0.95
7. Suppliers	2.1%	31.3%	27.1 %	16.7%	22.9%	3.27	1.20

Table 6 shows that a majority of respondents 45(93.8%) stated that classified hotels receive government support in waste management from little to moderate extent (M = 2.58, SD = 0.61). On the contrary, a majority of the respondents 46(96%) reported that hotels receive investors cooperation in waste management from great to very great extent (M = 4.71, SD = 0.77). Further, vast majority of the respondents 47(98%) reported that hotels receive little to no cooperation in waste management from industry associations. The table also indicates that hotels get community support in waste management from little to moderate extent. In addition, the table shows that according to majority of respondents 46(96), hotels receive employee cooperation in waste management from great to very great extent (M = 4.77, SD = 0.75). Substantial number of respondents purported that, hotels receive customers cooperation in waste management ranging from little to very great extent (M = 3.33, SD = 0.95). Suppliers'

cooperation in waste management was also found to range from little to very great extent (M = 3.27, SD = 1.20).

4.2 Inferential Statistics

Regression Result of the Effect of Waste Management Practices on Operating Cost

Table 7: Multiple Regression Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
.683[a]	.467	.430	.39860

a. Predictors: (Constant), Waste reduction, waste composting, waste collection and disposal

Regression analysis results in table 7 showed that waste management practices (independent variables) which include waste reduction, waste composting and waste collection and disposal were found to influence operating cost. This is indicated by coefficient of determination (R^2) value of 0.467 which imply that 46.7% of the variations in the dependent variable (operating cost) are explained by the independent variables in the model. Thus, 53.3% of variations in operating cost are explained by other factors other than waste management practices adopted by hotels.

Table 8: ANOVA

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	6.121	3	2.040	12.842	.000[b]
Residual	6.991	44	.159		
Total	13.112	47			

ANOVA results in table 8 indicated that the overall regression model was significant since p = 0.000 is less than alpha 0.05 which is the level of significance of the test (F = 12.842, p = 0.000 < 0.05). This implies that the multiple regression model was good fit for the data. Hence, waste reduction strategies, waste composting and waste collection and disposal are jointly considered as significant predictors of operating cost.

Table 9: Regression Coefficients Analysis

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	2.205	.397		5.554	.000
Waste Reduction	-.167	.070	-.281	-2.393	.021
Waste Composting	-.161	.072	-.253	-2.240	.030
Waste Collection Disposal	.299	.082	.441	3.666	.001

T-test result in table 9 revealed that waste reduction strategies had a negative and statistically significant effect on operating cost (β_1 = -.167, p = 0.021 < 0.05). The findings also established that waste composting had a negative and statistically significant effect on operating cost (β_2 = -0.161, p = 0.030 < 0.05). Finally, waste collection and disposal was found to have a positive and statistically significant effect on operating cost (β_4 = 0.299, p = 0.001 < 0.05).

Regression coefficients in table 9 imply that a unit increase in waste reduction strategies led to a -0.167 decrease in operating cost, a unit increase in waste composting led to a -0.161 decrease in operating cost and unit increase in waste collection and disposal resulted in 0.299 increase in operating cost.

Hypothesis Testing

Regression coefficients analysis using T-test statistics (Table 9 above) determined statistical significance of each regression coefficient which provided the basis for testing the study hypotheses.

H_{01}: There is no significant relationship between waste reduction strategies and operating cost among selected classified hotels in Nakuru County, Kenya

T-test result in table 9 indicated that at 5% level of significance, waste reduction strategies had a negative and statistically significant effect on operating cost among selected classified hotels in Nakuru County, Kenya (β_1 = -0.167, p = 0.021 < 0.05). As such, the null hypothesis H_{01} was rejected and alternative hypothesis accepted, that is, there is a statistically significant relationship between waste reduction strategies and operating cost of classified hotels.

H_{02}: There is no significant relationship between waste composting and operating cost among selected classified hotels in Nakuru County, Kenya

T-test results in table 9 indicated that at 5% level of significance, waste composting had a negative and statistically significant effect on operating cost among selected classified hotels in Nakuru County, Kenya (β_2 = -0.161, p =0.030 < 0.05). As such, the null hypothesis H_{02} was rejected and alternative hypothesis accepted, that is, there is a statistically significant relationship between waste composting and operating cost of classified hotels.

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H_{03}: There is no significant relationship between waste collection and disposal and operating cost among selected classified hotels in Nakuru County, Kenya

The results in table 9 indicated that at 5 % level of significance, waste collection and disposal had a positive and statistically significant effect on operating cost among selected classified hotels in Nakuru County, Kenya (($\beta_3 = 0.299$, $p = 0.001 < 0.05$). As such, the null hypothesis H_{03} was rejected and alternative hypothesis accepted, that is, there is a statistically significant relationship between waste collection and disposal and operating cost of classified hotels.

4.2.1 Moderated Multiple Regression (MMR)

Moderated multiple regression analysis was done to determine the moderating effect of stakeholder cooperation on the relationship between waste management practices (independent variable) and operating cost (dependent variable).

Table 10: MMR Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.683[a]	.467	.430	.39860	.467	12.842	3	44	.000
2	.729[b]	.532	.488	.37791	.065	5.949	1	43	.019

MMR model summary in table 10 indicate the results of the R^2 change. The table shows that R^2 change from model 1 to model 2 was 0.065 which changed from 0.467 to 0.532 and statistically significant ($p = 0.019 < 0.05$), indicating that stakeholder cooperation was a statistically significant moderator of the relationship between waste management practices and operating cost. The value of R^2 change 0.065 implied that interaction effect accounted for 6.5% variations in operating cost. That is, stakeholder cooperation contributed to 6.5% increase on the effect of waste management practices on operating cost of hotels.

Table 11: Analysis of Variance (ANOVA)

Model	Sum of Squares	Df	Mean Square	F	Sig.
1. Regression	6.121	3	2.040	12.842	.000[b]
Residual	6.991	44	.159		
Total	13.112	47			
2. Regression	6.970	4	1.743	12.202	.000[c]
Residual	6.141	43	.143		
Total	13.112	47			

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ANOVA results in table 11 indicated that regression models 1 and 2 were significant (F = 12.842, p = 0.000 < 0.05; F = 12.202, p = 0.000<0.05) respectively. Model 2 F value of 12.202 with p = 0.000 implied that stakeholder cooperation and independent variables were good predictors of operating cost and that the overall model was statistically significant. The results implied a good fit; thus, the moderated regression model fitted the data.

Table 12: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.205	.397		5.554	.000
	X1	-.167	.070	-.281	-2.393	.021
	X2	-.161	.072	-.253	-2.240	.030
	X3	.299	.082	.441	3.666	.001
2	(Constant)	2.186	.377		5.806	.000
	X1	-.232	.071	-.389	-3.245	.002
	X2	-.171	.068	-.268	-2.499	.016
	X3	.245	.080	.361	3.050	.004
	M	.183	.075	.277	2.439	.019

T-test statistics results in table 4.23 show that the regression coefficient of moderation was statistically significant ($\beta_4 = 0.183$, $p = 0.019 < 0.05$). This result implied that stakeholder cooperation had a statistically significant moderating effect on the relationship between waste management practices (waste reduction strategies, waste composting, and waste collection) and operating cost.

H_{04}: Stakeholder cooperation has no significant moderating effect on relationship between waste management practices and operating cost among selected classified hotels in Nakuru County, Kenya.

The results in table 12 on moderation indicate that stakeholder cooperation had a positive and statistically significant moderating effect on the relationship betwixt waste management practices and operating cost ($\beta_4 = 0.183$, $p = 0.019 < 0.05$). As such, the null hypothesis H_{04} was rejected and alternative hypothesis accepted, that is, stakeholder cooperation has a statistically significant moderating effect on the relationship betwixt waste management practices and operating cost of classified hotels.

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5.0 Discussion and Conclusion

Descriptive analysis of responses revealed that waste reduction, waste composting and waste collection and disposal are the waste management practices practiced by hotels. This finding is consistent with Kimeu (2015) who found out that hotels practice waste management through waste reduction, waste composting and waste collection. Waste collection and disposal was found to be the most practiced waste management practice followed by waste reduction and waste composting respectively. This result agrees with the findings of a study conducted by Kimeu (2015) which found out that waste collection is the main waste management practice practiced by hotels followed by waste reduction and the least practiced method being waste composting. The finding is also supported by Keneddy (2013) who indicated that hotels have little interest in waste composting due to lack of the required resources.

The hierarchy model of hotel waste management practices by Cumming (1997) recommends five strategies of waste reduction including use of post-consumer recyclable products, efficient consumption to generate less waste, reusing and recycling. The finding that waste collection and disposal is the most practiced waste management practice by classified hotels imply that hotels have failed in application of the model. The finding could be attributed to lack of motivation since hoteliers may not understand the benefits associated with the recommended practices (Pham et al., 2018). In relation to the challenge of increasing operating cost, researchers support the waste reduction strategies recommended by Cumming model as having the potential to reduce operating cost and generate income for hotels (Baker, 2020; Lawson, 2018; Omidian & Hashemi, 2016). Milanez et al. (2015) added that waste reduction and or recycling are the important solutions of waste management hierarchy which benefit organizations.

Inferential analysis revealed that waste management practices used by hotels affect their operating cost. This finding is ascribed to fact that hotels incur very high cost in offering accommodation and services and the cost increase more when there is wastage in the processes involved (Whiting, 2017). Further, hotels are said to generate a lot of waste and continue to report the use of ineffective waste management practices which are associated with increase in operating cost (Omidian & Hashemi, 2016).

The finding that waste reduction is the second most practiced waste management practice in hotels concurred with Omidiani & Hashemi (2016) who stated that hotels have limited desire for waste reduction practices such as use of post-consumer recyclable products and recycling with the view that the strategies are too costly in terms of resources required. In addition, resource dependency theory articulates that resource scarcity is one of the challenges limiting the operations of organizations due to the cost required to obtain resources. Further, researchers attribute the situation to lack of facilities, skills and knowledge of the benefits of waste reduction strategies in relation to operating cost (Omidian & Hashemi, 2016; Ball & Taleb, 2010). To curb this challenge, as depicted from the stakeholder theory hotels should seek vast amount of stakeholder cooperation in order to obtain the required resources from stakeholders.

Regression coefficients analysis showed that waste reduction strategies had a negative and statistically significant effect on operating cost. The finding is attributed to the fact that effective and efficient utilization of resources achieved through waste reduction help to cut on

operating. In relation to the resource dependency theory, organizations incur high cost in obtaining resources from the external environment. As depicted from the theory, maximum utilization of resources achieved through waste reduction enable hotels to reduce operating cost. Further, Whiting (2017) added that, the cost of offering accommodation and food and beverage service increases when there is wastage in the processes involved. The researcher suggested that the cost can be reduced by practicing waste reduction as supported by the findings of this study.

In addition, the finding agrees with Okumus (2020) who suggested that hotel food cost can be reduced through waste reduction in food and beverage department. The researcher recommended possible waste reduction strategies for reducing food waste which include training of employees, use of proper equipment, better menu planning, accurate forecasting of demand and proper portioning among others. These approaches will enable hotels reduce food waste which account for up to 50 percent of total waste generated. In so doing, food cost which is one of the constituents of operating cost will reduce, thus reducing operating cost.

Waste composting was found to be the least practiced waste management practice in hotels. The findings could be attributed to the fact that hotels lack the resources required for composting. Due to this they are not able to tap on the numerous benefits of composting in relation to the challenge of increasing operating cost. As depicted from the stakeholder theory and previous research, this study suggest that hotels should seek vast amount of stakeholder cooperation in order to overcome the challenge of lack of resources. And be able to invest in and practice composting so as to tap on the benefits associated with the practice including reduction of operating cost and income generation (Kimeu, 2015; Karimi & Mungai, 2014).

Regression coefficients analysis established that waste composting had a negative and significant effect on operating cost of hotels. The finding implied that waste composting reduces operating cost of hotels significantly. In support of this, previous researchers suggested that waste composting enable significant saving for hotels from reduced material cost and waste management cost (Lawson 2018; Vahatiitto, 2010). In addition, Nath (2014) stated that hotels can achieve profitability from waste through composting of organic waste. This is possible because hotel-based composting help to divert large quantity of waste produced near the source reducing the cost incurred in waste collection and depositing (Kimeu, 2015). Further, the manure generated from composting is used in hotel farm to grow vegetables used in food production which can also be sold to generate income. Therefore, hotels should practice waste composting as one of the means towards curbing the challenge of increasing operating cost.

Waste collection and disposal was found to be the most practiced waste management practice in classified hotels. The finding agrees with the research of Kimeu (2015) which found out that waste collection was the most important waste management practice practiced by most hotels in Mombasa. The finding is also supported by whiting (2017) who stated that most hotels mostly rely on waste collection considering effective waste management practices such as waste reduction and waste composting as expensive and time consuming. The over reliance of most hotels on waste collection with little emphasis on effective waste management practices is said to have resulted in the problem of increasing operating cost (Kennedy, 2013; Whiting, 2017). The practice is associated with increased generation of waste in the processes involved in offering accommodation and food and beverage services. Due to this, hotels are unable to

ensure maximum utilization of resources which are acquired from the external environment at a high cost (RDT, 1970), which increases more when there is wastage of resources, resulting in the challenge of increasing operating cost (Omidian & Hashemi, 2016).

Regression coefficients analysis revealed that waste collection and disposal had positive and statistically significant effect on operating cost of classified hotels. The finding implied that the over-reliance of hotels on waste collection and disposal increases operating cost. This finding is attributed to the fact that practicing waste collection and disposal alone without considering effective waste management practices such as waste reduction results in increased generation of waste. This is because hotels are major consumers of resources and therefore generate a lot of waste (Omidian & Hashemi, 2016). This leads to wastage of resource which are expensive to acquire from the external environment (RDT, 1970). As a result, increased generation of waste and cost incurred in waste collection and disposal increases operating cost as uncovered in this study. The finding is supported Kimeu (2015) who associated waste collection and disposal with increase in operating cost.

In addition, considering the effects of waste collection and disposal on the environment and economy, the waste management hierarchy model places the practice at the bottom of the pyramid. Therefore, hotels should give priority to effective waste management practices among them waste reduction, composting and recycling before resorting to waste collection and disposal. This will help to curb the problem of increasing operating cost by ensuring optimum utilization of resources which reduces frequency of purchasing. Further, waste reduction and composting will help to cut on the cost of waste collection and disposal (Martin, 2012).

Descriptive statistics revealed that hotels receive stakeholder cooperation in waste management as agreed by all the interviewed managers. The highest stakeholder cooperation was found to come from employees and investors, followed by customers, suppliers, community, government and industry associations respectively. The results suggested that stakeholder cooperation play a significant role in facilitating implementation of waste management practices in hotels. The finding agrees with the stakeholder theory by Freeman (1984) which argues that the success of an organization in its endeavors' lies on the ability to take into consideration the interest of stakeholders in order to secure their cooperation. The importance of stakeholder cooperation in this context is through provision of resources required for implementation of waste management practices.

Moderated Multiple Regression (MMR) analysis revealed that stakeholder cooperation has a statistically significant moderating effect on the relationship between waste management practices and operating cost of classified hotels. The findings insinuate that stakeholder cooperation in waste management increases the impact of waste management practices on operating cost. For instance, findings on the first and second objectives of this study revealed that waste reduction and composting reduce operating cost of hotels. In this case, increase in stakeholder cooperation in the implementation of the two practices would result in further decrease in operating cost. The finding is also supported by Esaid and Ghezzaf (2015) who articulated that, stakeholders (governments, organizations, employees, community, recycling companies among others) are the most important factors influencing waste management operations in organizations. The significance of stakeholder cooperation revealed in the findings of this study is based on provision of resources required to enable hotels practice

effective waste management through practices supported by the findings of this study as being able to help curb the problem of increasing operating cost.

The findings are consonant with the stakeholder theory which point on the significance of stakeholders in ensuring success of organizations in their operations. In the context of this study, the challenge of increasing operating cost facing hotels is attributed to ineffective waste management (Omidian & Hashemi, 2016) which this study revealed to be over-reliance on waste collection and disposal. The situation results from lack of the required resources to practice effective waste management practices such as reduction, composting and recycling (Kimeu, 2015). In support of the findings of this study, Kennedy (2013) suggested that the challenge can be curbed through seeking vast amount of stakeholder cooperation. For instance, through involvement and proper consultation with stakeholders, stakeholder groups such as employees of hotels will help in implementing waste reduction strategies. The community can provide hotels with land required for composting. County governments can help in setting up of waste recycling plants where hotels can sell recyclable waste. Such arrangement involving stakeholders enable hotels to practice effective waste management practices which reduce operating cost.

Finally, in view of the discussed findings and theoretical underpinnings; this study conclude that consonant with the waste management hierarchy models hotels should prioritize waste reduction strategies: proper portioning of food; accurate demand forecasting; reusing of materials such as plastic containers, aluminum foil, carriage bags et cetera; efficient consumption of materials such as cleaning agents, ingredients, printing papers, room amenities et cetera; use of post-consumer recyclable products such as water filters for bottled water, soap dispensers for bottles soap; and having linen reuse option for multiple night guests as the first approach towards reducing operating cost. Waste composting should be given second priority after reduction. Hotels should only resort to waste collection and disposal as the last option. Further, in agreement with the stakeholder theory the study conclude that hotels should seek vast amount of stakeholder cooperation in order to overcome the challenge of resources hindering them from practicing effective waste management practices. With stakeholder cooperation hotels will be able to practice effective waste management practices that will enable them cut on operating cost and generate income from waste.

6.0 Recommendations of the Study

Recommendations for Policy

The findings of the study revealed that practicing effective waste management in hotels require cooperation with all players in waste management sector. As such, this study recommended that National Waste Management Policy Makers should enact policies that facilitate implementation of effective waste management practices such as waste reduction, recycling, and composting in hotels. The policy makers should also lobby for the required support from the relevant stakeholders such as community and local governments to develop and put in place the infrastructure required by hotels for successful implementation of effective waste management practices.

Recommendations for Practice

The findings of study revealed that waste management practices adopted by hotels affect their operating cost. Therefore, this study recommended that hotels should prioritize waste management practices that will allow them reduce on operating cost and generate income from waste, thus addressing the challenge of increasing operating cost.

Hotels should prioritize waste reduction strategies such as reusing, proper portioning, efficient consumption, better menu planning, use of proper equipment, accurate demand forecasting, selling to recyclers and using of post-consumer recyclable products among others. The strategies should be adopted in the sections where they are applicable to minimize waste generation. After waste reduction, hotels should consider composting of organic waste. They should ensure strict segregation of waste at source to facilitate composting. These practices will enable hotels to reduce operating cost and even generate income from waste.

To curb the challenge of resources which hinders hotels from practicing waste composting and reduction strategies, this study recommended that hotels should seek vast amount of stakeholder cooperation in waste management. This way, they will gain access to the required resources and be able to practice effective waste management practices with regards to addressing the challenge of increasing operating cost.

The study also recommended that hotels should avoid waste collection and disposal or only resort to the practice as the last option after considering all the other practices given that the practice was found to increase operating cost.

Stakeholder cooperation in waste management was found to influence the effect of waste management practices on operating cost. As such, the study recommended that hotels should seek vast stakeholder cooperation in waste management. To achieve this, consonant with the stakeholder theory the study recommended that hotels should consider the interest of stakeholders and involve them in planning for waste management.

Recommendations for Further Research

This study examined the influence of waste management practices on operating cost among selected classified hotels in Nakuru County, Kenya. From the findings of the study, discussion and conclusions made, this study recommended that further research should be done in the following areas:

Subsequent research should expand the scope of this study to cover other regions in the country so as to give a wider picture on the influence of waste management practices on operating cost of hotels.

In addition, future research should narrow down and look at waste management practices influence on the various dimensions of operating cost in hotels that are affected by waste management practices.

The study revealed that hotels have failed in application of waste management hierarchy models which prioritize effective waste management practices with regards to addressing the challenge of increasing operating cost. Therefore, ensuing research should focus on finding out what hinders application of waste management hierarchy models in hotels.

Considering the challenge of increasing operating cost, subsequent research should address other factors influencing operating cost of hotels, so as to enlighten the hotels on the other approaches for addressing the challenge.

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