

RESEARCH ARTICLE

Available Online at <http://www.aer-journal.info>

Adoption of Water Conservation Practices in Hospitality Establishments in Nakuru County, Kenya

R. W. Nthiga

*Department of Hotel and Hospitality Management, Moi University – Kenya;
ritawairimu@gmail.com*

Abstract

Water conservation emerged in response to concerns on environmental degradation. In addition to environmental reasons, hospitality establishments have adopted water conservation practices for economic and social reasons. The purpose of this paper was to examine the adoption of water conservation practices in selected hospitality establishments in Nakuru County, Kenya. The study employed a cross-sectional descriptive research design. The respondents comprised of 120 managers from 15 selected four-star rated hospitality establishments. Census sampling was used to select all four-star hospitality establishments while purposive sampling was used to identify the managers who participated in the study. Data collection instruments comprised of questionnaires for departmental managers, interviews schedules for operations managers and observational checklists to corroborate the data. Reliability of instruments was tested using Cronbach's Alpha resulting to a value of 0.766. The study employed descriptive statistics, independent sample t-test and factor analysis in analyzing the data. Repair of leakages was found to be most adopted water conservation practice. Factor analysis results showed that water conservation practices can be measured using three components such as installation practices, maintenance practices and substitution practices.

Key Words: Adoption, Environment, Hospitality, Water Conservation Practices

INTRODUCTION

Globally, the term environment has become one of the most frequently used words in a multitude of industries as a result of concerns for its degradation (Kim and Yoon, 2010). Environmental degradation is the destruction or deterioration of the planet (USAID, 2001) such as deforestation, water pollution, improper waste disposal, air pollution, and global warming (Ustad, 2010). Until the 1990s, environmental degradation concerns were focused on the manufacturing industries which caused direct impact of the environment through their effluents and discharges (Kirk, 1995; Lorente *et al.*, 2001). However, over time industries including the hospitality industry have recognized their negative impacts and are adopting practices to

save and protect the environment (Elkington and Knight, 1992; Lorente *et al.*, 2001).

The practices adopted in the hospitality establishments to effectively reduce the impacts on the environment have been referred to as Environmental Management Practices (EMPs) (Bohdanowicz, 2006; Kirk, 1995; Park, 2009; Ustad, 2010). The main EMPs adopted worldwide in hospitality establishments include water conservation, energy conservation and waste management practices (Bohdanowicz, 2006; Kirk, 1995; Park, 2009; Ustad, 2010). These EMPs have mainly been adopted since hospitality establishments consume large amounts of water and energy in the daily operations and as a result, large amounts of waste are expelled. These in turn affect the natural

environment in which the establishments are developed and operate (Bohdanowicz, 2006; Ustad, 2010).

The main reason for the adoption of EMPs by hospitality establishments has been to reduce negative impacts on the environment. In Kenya, there are many attractive sites such as landscapes, beaches, national parks, cultural diversity, historical sites and diverse geographical views. The tourism attraction sites are found in different counties like Nairobi, Nakuru, Narok and Mombasa among others (Kenya Tourism Board, 2010). Nakuru County being a tourism destination was the study area because it has sites like Lake Nakuru National Park, Lake Naivasha, Hell's Gate National Park and Menengai Crater (Kenya Tourism Board, 2010). Furthermore the County continues to experience widespread environmental degradation due to economic activities, population growth and the expansion of industries with no exception of hospitality establishments (Gichui, 2007; Nyasani, 2009). Hospitality establishments are believed to contribute to the degradation of the environment due to high consumption of natural resources and waste production (Ustad, 2010). It is however not clear which environmental management practices have initiated by the establishments hence the need for the study.

The Concept of Environmental Management Practices (EMPs)

The term environment means the physical surrounding and everything around a person, animal, or plant which they live in or operate in (USAID, 2001). It is vital to conserve and protect the environment from degradation for the survival of both the present and future generations (USAID, 2001). However, environment is being degraded at a fast rate which is raising consciousness among organizations to protect it from further degradation (UN, 2008). Environmental degradation being a real issue, diverse organizations actively engaged in measures to save and protect the environment (UNEP, 2005). Initially, manufacturing organization were considered to degrade the environment

as they had direct negative impact on the environment but over time, all industries are actively engaging in protecting the environment with no exclusion of the hospitality industry (Kirk, 1998).

Environmental conservation by the hospitality industry began in form of initiatives by various associations and activities licensed by International Hotel Environmental Initiative (IHEI) in the 1990s (Bohdanowicz, 2005). The initiative of IHEI provided hotels with action guidelines to help them respond to environmental issues (IHEL, 1996). In addition, with the publishing of Agenda 21 for the Travel and Tourism industry, individual businesses and the hospitality industry were encouraged to adopt the codes of conduct, promoting sustainable Travel and Tourism best practices (Slaon *et al.*, 2010). Over time, voluntary guidelines and examples of the best practices have been established in the hospitality industry in addition to the introduction of eco-labels and certification procedures (Slaon *et al.*, 2010). More and more hospitality establishments are now becoming more sustainable as they embark on a wide range of EMPs designed to reduce the negative impact on the environment (Bohdanowicz, 2005; Slaon *et al.*, 2010).

According to Cooper (1998), EMPs are the practices introduced by an organization for reducing, eliminating, and ideally, preventing negative environmental impacts arising from its undertaking on the environment. The EMPs mainly adopted by the hospitality industry are water conservation practices, energy conservation practices and waste management practices. This paper focuses on water conservation practices.

Water Conservation Practices

According to Cunningham *et al.* (2005), water is important for nearly every human endeavor perhaps more than any other natural resource. Globally, there is intense pressure on water due to its high demand in the form of household consumption, agriculture, manufacturing, leisure, development of tourism and other purposes. In addition, water is never free even if it comes from a

connected sewerage system, a well or reverse osmosis plant. Water is always associated with different costs such as energy costs (to heat and pump water), equipment depreciation costs, maintenance, wastewater treatment costs among other costs (USAID, 2001). The high demand of water worldwide and the increasing costs associated with water has led to concerns for environmental quality and water conservation practices in all organizations (Ustad, 2010).

In hospitality establishments, water has been described as one of the major natural resources needed for various activities involving laundry, food production, bathroom and other outdoors facilities (Bohdanowicz, 2006). Due to the wide usage of water in the daily operations of hospitality establishments and Kenya being a water scarce nation, its supply should be constant and adequate otherwise, if the water is not controlled and monitored water shortage is likely to occur (Park, 2009; Kasim, 2007; Kirk, 1996). Therefore hospitality establishments need to reduce the water consumption through adoption of water conservation practices (WCPs).

Hospitality establishments worldwide have adopted various WCPs (Ayuso, 2006; Bohdanowicz, 2006; Kirk, 1995; Tzschentke *et al.*, 2008). Among the WCPs adopted is the re-use of linen program which is practiced in hospitality establishments in most countries (Marriott International, 2007; Bohdanowicz, 2006; Erdogan and Baris, 2007; Mensah, 2006; Sarova Hotels, 2012; Serena Hotels, 2010). Hospitality establishments encourage guests to re-use linen and towels during their stay by dropping them on the floor if they feel they should be changed (Sarova, 2012). The re-use of linen program saves not only water and energy, but also reduces the use of detergents, and thereby reduces wastewater (Bohdanowicz, 2006; Brodsky, 2005; Erdogan & Baris, 2007; Mensah, 2006).

In addition to re-use of linen, installation of low-flow faucets and showerheads in hospitality establishments have been implemented to reduce water consumption

(Bohdanowicz, 2006; Iwanowski & Rushmore, 1994). The low-water faucets and showerheads have attracted much attention as some of the most efficient water saving measures (Bohdanowicz, 2006; Iwanowski and Rushmore, 1994) since these practices can be implemented through a relatively low level of modification and financial investment. Other WCPs adopted by the hospitality establishments include; regularly fixing water leaks; using water-efficient equipment; placing water meters in guestrooms to track usage; adopting water saving campaigns and training staff on water conservation practices; using treated wastewater in garden irrigation among others (Bohdanowicz, 2006; Hanna, 2008; Kasim, 2007; Park, 2009; Ustad, 2010).

Apart from high water consumption in the hospitality establishments for various activities, water contamination is also a major problem affecting water (Ustad, 2010). The amount of water consumed by hospitality establishments is more than the normal household consumption, thus larger consumption means a larger quantity of contaminated water will be released in the environment, thus polluting the water bodies and harming the environment (Kasim, 2007; Kirk, 1996). Waste water management is therefore an important activity for hospitality establishments to address in order to minimize environmental impacts and also a measure of WCPs (Ustad, 2010).

However, hospitality establishments are important to any economy, Kenya included. There is a raising awareness of firms to be responsible towards the environment and the community in which they operate. The hospitality establishments consequently need to be involved in the social and environmental impacts among which most relevant ones are water consumption, waste management and energy consumption. This study tested the research hypothesis that there is no significant difference on water conservation practices adopted between lodges (hospitality establishments located in parks) and hotels located within town centre.

MATERIALS AND METHODS

The study adopted a cross-sectional descriptive research design to provide a picture of a situation as it naturally happens (Burns and Grove, 2009; Mugenda and Mugenda, 2003). The study was conducted in Nakuru County, Kenya using 15 four-star rated hospitality establishments wherein 120 managers, eight from each establishment, formed the sample size. Specifically, the managers selected were from different departments namely; operations, front office, housekeeping, food and beverage, engineering and maintenance, human resource, security and manager in accounts department. The study employed census sampling to select all four-star hospitality establishments in Nakuru County while purposive sampling was used to select the managers. Samples were drawn from the target population 120 managers. Primary data information was collected using questionnaires and observation checklists. The questionnaires were administered to the managers of the seven core departments who were perceived to provide information on the environmental management practices. Observation checklists were used to gather data on the physical observable characteristics of water usage among others. Cronbach's Alpha Coefficient was used to determine the extent of reliability of the items in the questionnaire. Each of the constructs was found to yield a value higher than the recommended limit of 0.7. The results showed that the indicators used to measure the variables were reliable in explaining each of the variables under study because they were all above the 0.7 threshold. Data was summarized using descriptive statistics. Independent sample t-test was used to compare the means of the water conservation practices and the type of hospitality establishment that is lodge and hotel.

RESULTS AND DISCUSSION

A total of 120 questionnaires were distributed but only 95 questionnaires were completely filled in and retrieved back attaining a response rate 79.1% which was adequate representation of the target population.

Cronbach's Alpha was used to test reliability of the questionnaire of which a value of 0.766 was attained.

Descriptive Statistics

From the findings, presented in Table 1, majority of the respondents re-use bed sheets linen (51%) which is contrary to reuse towels wherein majority (64%) do not reuse. This implies that customers could be more comfortable reusing sheets than towels maybe due to the fact that towels are used by the individual and dirt could be more visible than for bed sheets. With regard to installation of low flow faucets in the toilet that reduce the volume of water usage, most (51%) of the hotels seemed to have adopted the practice. On the other hand, majority (68%) of the establishments have installed low flow shower head systems. Rainwater which can greatly reduce water usage recorded a low percentage of 13.7% as using rain water against 86.3% who do not use rainwater. However the little use of rain water could be attributed to the fact that the rain is seasonal and hence may not be relied upon.

With reference to use of brooms and mops to clean floors rather than hosepipes, 62.1% of the respondents were in agreement with this practice. With regard to installed pushup taps to reduce on water consumption 49.5% agreed which could imply that a slight majority have embraced push up taps as a practice in water conservation. With regard to motion sensitive taps installed 65.3% indicated that they use this technology to ensure that customers use only the water that they need hence preventing running water when not being used. From the findings, 73.7% revealed that their establishments have created water saving awareness among employees which could imply that they sensitize their staff on water saving practices by creating awareness on the need to save on the usage of water in order to reduce costs. On the other hand 26.3% revealed that their organizations are yet to adapt the water training programs aimed at sensitizing the employees on the saving of water usage within their organizations.

Repair on water leakage to reduce on water wastage was acknowledged by 87.4% of the respondents as being practiced in their operations to reduce high water bills. At the same time, establishments engage employees in environmental awareness campaigns and education as 81.1% agreed. Majority (85%) of the respondents indicated that establishments identified water wasters in order to conserve water. Pertaining to engaging in waterless car wash, majority (72.6%) affirmed that less water is used in washing of the cars. As regard to establishments training employees to be conscious on water usage 78.9% of the study participants agreed while a minority of 21.1% disagreed that their establishments engage in this practice. Table 1 presents a summary of the responses in terms of frequency, percentage, mean and standard deviation of each of the water conservation practices. For the water taps installed in the

hospitality establishments the researcher observed that they were different water taps installed. The taps varied according to when the establishments were built. Majority of the hospitality establishments which have been in operations for at least five years and above have old taps unlike newly built hospitality establishments that have either push up taps or press taps which exerts a lot of pressure thus reducing the amount of water used. Water saving tap in use at a hospitality establishment was mainly in the kitchen and toilets. The presence of low flash systems in some of the hospitality establishments was confirmed. Shower heads were fixed in low systems for water conservation. All hospitality establishments controlled running of water taps to conserve water. However employees left taps open which running water mainly due to their being busy and gave little time and patience to ensure taps were closed.

Table 1. Descriptive Statistics on Water Conservation Practices

Items of water conservation practices	YES		NO		STATISTICS	
	FQ	%age	FQ	%age	M	SD
Reuse of bed sheets	45	51.1	43	48.9	1.49	.503
Reuse of towels	34	35.8	61	64.2	1.64	.482
Installation of low flow faucets in the toilet	43	51.1	39	48.9	1.60	.635
Installation of low flow shower head systems	65	68.4	30	31.6	1.32	.467
Using rainfall water to flush toilets	13	13.7	82	86.3	1.86	.346
Use of brooms and mops to clean floors rather than hosepipes	59	62.1	36	37.9	1.38	.488
Installation of push up taps	47	49.5	48	50.5	1.51	.503
Installation of motion sensitive taps	62	65.3	33	34.7	1.35	.479
Creating awareness of water saving among employees	70	73.7	25	26.3	1.26	.443
Repairs of water leakages	83	87.4	12	12.6	1.13	.334
Engaging employees in environmental awareness	77	81.1	18	18.9	1.19	.394
Identifying water wasters	81	85.3	14	14.7	1.15	.356
Engaging in waterless car wash procedure	26	27.4	69	72.6	1.73	.448
Train employees to be conscious on water use	75	78.9	20	21.1	1.21	.410

Independent Sample t-test

An independent sample t-test was conducted to compare type of hospitality establishment and water conservation practices. As shown on tables 2a and b, there was no significant difference in the scores for lodge (M=1.00 - 1.315, SD=0.000 - .477) and hotel (M=1.15-2.00, SD=0.033-0.057). Based on the mean of both lodge and hotel establishment,

establishments seem to differ in adoption of water conservation practices especially as pertains to repairs of water leakages. In terms of type of hotel differences, both the lodge and hotel respondents considered the water conservation practices under study as important in achieving reduction of water use except for repairs of leakages. This could imply that type of hospitality establishment

difference does not contribute to water conservation practices. The most important attribute was repairs of water leakages. Table 2b shows the results of the independent sample t-test conditions $t(93) = 1.867 - 29.19$, $p=0.000 - 0.065$. Repairs of water leakages $pvalue=0.065$. These results suggest

that type of hospitality establishment does not determine adoption of water conservation practices. On the other hand, repair of water leakages is a crucial practice on the type of establishment when conserving water $p=0.065$ which is <0.05 .

Table 2a. Type of Establishment Group Statistics

	Type of Establishment	N	Mean	Std. Deviation	Std. Error Mean
Reuse bed sheets	Lodge	19	1.0000	.00000	.00000
	Hotel	76	1.6053	.49204	.05644
Reuse towels	Lodge	19	1.0000	.00000	.00000
	Hotel	76	1.8026	.40066	.04596
Installation of low flow faucets in the toilet	Lodge	19	1.0000	.00000	.00000
	Hotel	76	1.5921	.49471	.05675
Installation of low flow shower head systems	Lodge	19	1.0000	.00000	.00000
	Hotel	76	1.3947	.49204	.05644
Using rain water to flush toilets	Lodge	19	1.3158	.47757	.10956
	Hotel	76	2.0000	.00000	.00000
Use of brooms and mops to clean floors rather than hosepipes	Lodge	19	1.0000	.00000	.00000
	Hotel	76	1.4737	.50262	.05766
Installation of push up taps	Lodge	19	1.0000	.00000	.00000
	Hotel	76	1.6316	.48558	.05570
Installation of motion sensitive taps	Lodge	19	1.0000	.00000	.00000
	Hotel	76	1.4342	.49895	.05723
Creating awareness of water saving among employees	Lodge	19	1.0000	.00000	.00000
	Hotel	76	1.3289	.47295	.05425
Repairs of water leakages	Lodge	19	1.0000	.00000	.00000
	Hotel	76	1.1579	.36707	.04211
Engaging employees in environmental awareness	Lodge	19	1.0000	.00000	.00000
	Hotel	76	1.2368	.42797	.04909
Identifying water wasters	Lodge	19	1.0000	.00000	.00000
	Hotel	76	1.1842	.39023	.04476
Engaging in waterless car wash procedure	Lodge	19	1.0000	.00000	.00000
	Hotel	76	1.9079	.29110	.03339
Train employees to be conscious on water use	Lodge	19	1.0000	.00000	.00000
	Hotel	76	1.2632	.44327	.05085

Table 2b. Type of Establishment and Adoption of Water Conservation Practices
Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	T	Df	Sig. (2-tailed)
Reuse bed sheets	EVA	401.062	.000	-5.340	93	.000
	EVNA			-10.724	75.000	.000
Reuse towels	EVA	32.172	.000	-8.697	93	.000
	EVNA			-17.464	75.000	.000
Installation of low flow faucets in the toilet	EVA	529.531	.000	-5.196	93	.000
	EVNA			-10.434	75.000	.000
Installation of low flow shower head systems	EVA	401.063	.000	-3.483	93	.001
	EVNA			-6.994	75.000	.000
Using rain water to flush toilets	EVA	473.731	.000	-12.696	93	.000
	EVNA			-6.245	18.000	.000
Use of brooms and mops to clean floors rather than hosepipes	EVA	6696.000	.000	-4.091	93	.000
	EVNA			-8.216	75.000	.000
Installation of push up taps	EVA	249.984	.000	-5.647	93	.000
	EVNA			-11.339	75.000	.000
Installation of motion sensitive taps	EVA	1055.736	.000	-3.778	93	.000
	EVNA			-7.587	75.000	.000
Creating awareness of water saving among employees	EVA	140.325	.000	-3.020	93	.003
	EVNA			-6.063	75.000	.000
Repairs of water leakages	EVA	21.131	.000	-1.867	93	.065
	EVNA			-3.750	75.000	.000
Engaging employees in environmental awareness	EVA	48.546	.000	-2.403	93	.018
	EVNA			-4.825	75.000	.000
Identifying water wasters	EVA	28.029	.000	-2.049	93	.043
	EVNA			-4.115	75.000	.000
Engaging in waterless car wash procedure	EVA	9.348	.003	-13.540	93	.000
	EVNA			-27.190	75.000	.000
Train employees to be conscious on water use	EVA	64.296	.000	-2.577	93	.012
	EVNA			-5.175	75.000	.000

KEY: EVA (Equal Variances Assumed), EVNA (Equal Variances Not Assumed)

Exploratory Factor Analysis of Water Conservation Practices

Exploratory factor analysis was done to reduce water conservation practices to measurable variables. As shown on table 3, KMO measure of sampling accuracy of 0.904 was found, which is within the acceptable

minimum 0.5 measure of sampling accuracy. Bartlett's Test of Sphericity yielded a value of 1905.870 at a significance level of 0.05 which implied that the adequacy test of correlation matrix and the findings were satisfactory for the study.

Table 3. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.904
Approx. Chi-Square		1905.870
Bartlett's Test of Sphericity	Df	91
	Sig.	.000

Eigen values were obtained after the indicators for water conservation practices were analyzed. Using the criteria of picking

those indicators whose eigen values are greater than one, only three components were obtained. Installation practices was 35.95%,

maintenance practices was 32.40% and substitution practices 18.01%. The three components cumulatively had a variance of 86.37% hence those excluded accounted for 13.63%. This means that the indicators measuring water conservation practices could be adequately represented by three variables as shown on table 4.

Table 4. Total Variance Explained

Component Practices	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1. Installations	8.756	62.542	62.542	5.034	35.957	35.957
2. Maintenance	2.260	16.140	78.682	4.536	32.403	68.361
3. Substitution	1.077	7.692	86.375	2.522	18.014	86.375

Extraction Method: Principal Component Analysis.

As shown on table 5, a rotated component matrix has three factors after Varimax rotation method with Kaiser Normalization was carried out. The three components explain the variables on water conservation practices after the principal component analysis was done. The rotation converged in three iterations.

Table 5. Rotated Component Matrix^a

	Component		
	Installations Practices	Maintenance Practices	Substitution Practices
Installation of low flow faucets in the toilet	.859		
Reuse bedsheets	.853		
Use of brooms and mops to clean floors rather than hosepipes	.832		
Installation of push up taps	.823		
Installation of motion sensitive taps	.797		
Installation of low flow shower head systems	.731		
Identifying water wasters		.920	
Engaging employees in environmental awareness		.892	
Repairs of water leakages		.892	
Train employees to be conscious on water use		.852	
Creating awareness of water saving among employees		.708	
Using rain water to flush toilets			.852
Engaging in waterless car wash procedure			.848
Reuse towels			.725

Extraction Method: Principal Component Analysis.
 Rotation Method: Varimax with Kaiser Normalization.
 a. Rotation converged in 6 iterations.

CONCLUSION

The study findings established that most of the water conservation practices were adopted by hospitality establishments in Nakuru County in one way or the other. However it is clear that other practices are adopted more than others for instance reuse of bed sheets is acceptable whereas reuse of towels is less practiced. Use of technology such as motion sensing taps have not been fully adopted

possibly because of cost of installation unlike manual pushup taps which seem to have been adopted. Sensitizing employees on water conservation practices seem to be effective especially through creating awareness and by way of training. Many establishments seem to be aware of the need to adopt water conservation practices and have adopted the same. The most common water conservation practice was repairing of leakages and

identification of water wasters. However, harvesting rainwater which would otherwise been a cheap practice does not seem to be practiced. The perception that use of untreated water could also contribute to many establishments not adapting use of rainwater and sinking of boreholes with their preference being on using municipal council water that is perceived to be safe for cooking and drinking.

The results of the independent sample t-test show that repair of leakages was the most water conservation practice adopted by both hotels and lodges. On the other hand, the factor analysis results reduced the water conservation practices to three components namely installations, maintenance and substitution practices. Installations considers placement of devices or methods that can aid in water conservation such as use of brooms and mops, fixing low flow flush toilets, pushup taps, motion sensitive taps among others. Maintenance practices considers ways in which the establishment attempts to use its resources to sustain and encourage an environment where the people involved participate in conservation practices through training, sensitizing and creating awareness. Finally, substitution practices which attempts to encourage replacement or adoption of alternative ways of conserving water such as use of rain water and waterless car wash procedures. Consequently water conservation practices can be measured using the three indicators, installations, maintenance and substitution practices.

REFERENCES

- Ayuso, S. (2006). Adoption of voluntary environmental tools for sustainable tourism: Analyzing the experience of Spanish hotels. *Environmental Management*, 13, 207- 220.
- Bohdanowicz, P. (2005). European hoteliers' environmental attitudes: greening the business. *Cornell Hotel and Restaurant Administration Quarterly*.
- Bohdanowicz, P. (2006). Environmental awareness and initiatives in the Swedish and Polish hotel industries survey results. *International Journal of Hospitality Management*.
- Brodsky, S. (2005). Water conservation crucial to energy savings. *Hotel & Motel Management*, July 18.
- Chan, W. W. and Lam, J. (2001). Environmental accounting of municipal solid waste originating from rooms and restaurants in the Hong Kong hotel industry. *Journal of Hospitality and Tourism Research*, Vol. 25 No. 4, pp. 371-85.
- Cooper, I. (1998). *Emerging issues in environmental management*, in Alexander, K. (Ed.), *Facility Management: Theory and Practice*, Spon Press, London, pp. 111-9.
- Elkington, J. and Knight, P (1992). *The Green Business Guide*, Gollancz, London, 1992.
- Erdogan, N. and Baris, E. (2007). Environmental protection programs and conservation practices of hotels in Ankara, Turkey. *Tourism Management*, 28, 604-614.
- Hair, J., Black, C., Babin, B. and Anderson, R. (2005). *Multivariate Data Analysis* (6th ed.). India: Prentice Hall.
- Hanna, E. (2008). Greening the guestroom. *Hotel & Motel Management*. 223 (9), 28.
- Iwanowski, K. and Rushmore, C. (1994). Introducing the eco-friendly hotel. *Cornell Hotel and Restaurant Administration Quarterly*, 35 (1), 34-38.
- International Hotels and Restaurant Association (IHRA) and United Nations Environment Project (UNEP) (1996). *Environmental good practice in hotels: Case studies*. Paris: UNEP.
- Kasim, A. (2007). Towards a Wider Adoption of Environmental Responsibility in the Hotel Sector. *International Journal of Hospitality & Tourism Administration*, 8 (2), 25-49.
- Kim, S. and Yoon, J. (2010). Tourism Sciences Society of Korea: Environmental Management of Korean Hotels. *International Journal of Tourism Sciences*, Volume 10, Number 2, pp. 55-83, 2010 Tourism Sciences Society of Korea.
- Kirk, D. (1995). Environmental management in hotels. *International Journal of Contemporary Hospitality*.
- Kirk, D. (1996). *Environmental Management for Hotels*. Oxford: Butterworth-Heinemann Ltd.
- Kirk, D. (1998). Attitudes to environmental management held by a group of hotel managers in Edinburgh. *International Journal of Hospitality Management*, 17, 33-47.
- Lorente, C. J., Jimenez, B. J. and Alvarez-Gil, M. R. (2001). *Stakeholders' environmental influence*. An empirical analysis in the Spanish hotel industry.
- Marriott International (2007). *Marriott helps "Clean up the world"*. Retrieved from <http://www.marriott.com/news/detail.mi?marrArticle=160342> accessed 23/4/2013

- Mensah, I. (2006). Environmental management practices among hotels in the greater Accra region. *International Journal of Hospitality Management*, Vol. 25 No. 3, pp. 414-31.
- Mugenda, M. O. and Mugenda, A.G (2003). *Research methods: Quantitative and Qualitative approaches*. Nairobi: Acts Press.
- Nyasani, I. B. (2009). Kenya experience on the urban health issues final report on the urban heart pilot testing project.
- Park, J. (2009). The relationship between top Managers environmental attitudes and environmental management in hotel companies. Virginia Polytechnic institute and State University, Virginia.
- Serena Group (2010). Serena awarded best for environmental conservation, <http://www.serenahotels.co.ke>
- Slaon, P., Legrand, W. and Chen J. S. (2004). Factors influencing German hoteliers' attitudes towards environmental management. *Advances in Hospitality and Leisure*, 1: 179-188, 2004.
- Tzschentke, N., Kirk, D. and Lynch, P. (2008). Going green: Decisional factors in small hospitality operations. *International Journal of Hospitality Management*, 27(1), 126–133.
- USAID (2001). *Environmental Audits for Sustainable Tourism Project (EAST)* in collaboration with OAS-USAID
- Ustad. B. H. (2010). *The Adoption and Implementation of Environmental Management Systems in New Zealand Hotels: The Managers' Perspective*. Unpublished Master of Science dissertation, Auckland University of Technology.
- UNEP (United Nations Environment Programme) (1995) *Environmental codes of conduct for tourism*, UNEP Industry and Environment Technical Report no. 29, UNEP, Paris.