

## Green practices in the Hospitality Industry: Sustainable practices of Categorized Hotels

Mrs. Bhargavi Sangaraju<sup>1</sup>, Dr.T.Lokeswara Rao<sup>2</sup> and Dr. Lomte Daulatrao M<sup>3</sup>

1. Ph.D. Scholar, School of Management Studies, GIET University, Gunupur
2. Associate Professor, School of Management Studies, GIET University, Gunupur
3. Faculty Member, Indian Culinary Institute, Tirupati, AP

**Abstract:** *The hospitality business is a significant contributor to the production of organic waste. The hotel sector produces a substantial quantity of garbage, encompassing food waste, paper goods, and plastics. This trash frequently gets deposited in landfills, where it might undergo decomposition for several centuries, so emitting greenhouse gases and exacerbating environmental deterioration. The hospitality business is facing growing scrutiny about its waste management policies, as customers are becoming increasingly ecologically conscious. Hotels and restaurants that have inadequate waste management systems are at risk of harming their brand and losing customers. Inadequate waste management procedures can also result in financial repercussions for enterprises in the hospitality sector, such as elevated expenses for garbage disposal and potential penalties for failure to adhere to local standards. The purpose of the environmental management framework is to protect the ecological well-being of our planet to future generations. This study employs two types of sources of data. The fundamental data is gathered by a survey distributed to hotel staff. The objective of the investigation is to analyze and comprehend the endeavors undertaken by hotel management to mitigate their ecological footprint. The collected data was analyzed using statistical techniques and procedures, such as factor analysis.*

**Keywords:** *Environmental Management, Hospitality Industry, Sustainable Practices, Factor Analysis, SPSS*

### Introduction

The hospitality business is a prominent global sector that offers exceptionally lavish services to its clientele. In order to boost their business, the sub-departments (Food production, Food and Beverage Front office, Housekeeping) are working on many elements to improve guest pleasure. However, this will result in increased consumption of water, food, energy, and chemicals. The Hospitality sector employs several green techniques to ensure environmental sustainability, allowing the natural ecosystem to thrive and fulfill the demands of both current and future generations. Undoubtedly, the hotel industry exerts significant strain on the surroundings and requires a substantial amount of natural resources. Implementing green practices such as reducing plastic usage, minimizing water wastage, adopting energy-efficient lighting, utilizing eco-friendly cleaning products, promoting local organic food, implementing effective waste management, and practicing linen reuse can effectively mitigate various forms of environmental pollution. Providing comprehensive training to employees on environmentally-friendly practices

and promoting their active participation in such activities can enhance corporate operations by conserving energy, minimizing water usage, optimizing waste management, and contributing to environmental preservation.

### Literature Review

In their empirical study titled "Impact on the environment on the hotel client happiness in the Southeast Asian region: A study utilizing internet booking site reviews," Cuicui Ding, Qingran Guo, the Alam Rehman, along with Muhammad Zeeshan (2022) examined the influence of the environment on customer satisfaction in hotels across Southeast Asian countries. This analysis was based on reviews posted on online booking sites. The technique of logistic regression is utilized to derive the estimations. The empirical findings demonstrate that the environment has a substantial impact on customer happiness. This implies that visitors are more likely to enhance their satisfaction by selecting destinations that offer a favorable environment.

In her study titled "Environmental sustainable practices in hotels in Chennai," R. Sangeeta (2020) examined the adoption and execution of eco-friendly measures aimed at conserving the planet's resources and effectively catering to environmentally conscious consumers. The results demonstrated that the seven rental properties were actively implementing and adhering to environmental sustainability standards and are driven to consistently pursue further enhancement. This study is essential for comparing the existing and future sustainability growth of the county's hospitality industry with other regions worldwide.

### Methodology

This study employs a quantitative research approach through the use of a survey methodology. Selected staff members of hotels in Tirupati were administered a constructed questionnaire consisting of 6 items to assess their ratings on aspects connected to the environment.

### Attendees

The study was carried out in hotels located in Tirupati, Andhra Pradesh. The participants have received a survey via a Google spreadsheet, distributed to each college individually. Of the total 210 hotel employees, only 115 individuals submitted the fully filled form.

Data collection refers to the process of gathering and recording information or data from various sources.

Data was gathered by the administration of a questionnaire consisting of a series of questions and statements aimed at assessing challenges related to mathematics. The questionnaire consists of nineteen items, and respondents provide their comments on a 5-point Likert scale (refer to Table 1). The rating scale ranges from 1 (strongly disagree) to 5 (strongly agree), with 2 representing disagreement, 3 representing neutrality, and 4 representing agreement.

**Table 1: Environment Management in Hospitality Industry**

S.No	Key aspects of environment management
1	Use of integrated energy-saving technology
2	Recycling of waste food in the Hotel
3	Cut down on water and energy consumption
4	Buy local, go organic, and cut down on meat and dairy
5	Reducing the usage of plastics in hotels
6	Encourage green transport options

### Objective of the study

1. To analyze the major aspects of environment management in hospitality industry."
2. To achieve the previously indicated goal, factor analysis is employed
3. To extract the maximum amount of shared variance between variables.

### Test "Factor Analysis"

The Bartlett's Test across Sphericity is a statistical test used to determine if the variances of different variables in a dataset are equal.

Prior to doing factor analysis, the Bartlett Test of Sphericity & the Kaiser Meyers Olkin (KMO) Test were utilized to assess the suitability of the sample data for factor analysis. The  $\chi^2$  statistic from Bartlett's Test indicates a strong correlation between expectation and perception of service and customer satisfaction. The associated P values are 0.000. All of the KMO values exceed 0.9. This suggests that the collection of data is appropriate for factor analysis.

Table-1.1

"KMO and Bartlett's Test"	
"Kaiser-Meyer-Olkin Measure of Sampling Adequacy".	.599
"Bartlett's Test of Sphericity"	903.396
	15
"Sig."	.000

Based on the data in the table, it can be determined that there is a significant correlation between the variables. This is indicated by the KMO Statistics value of .599 and the rejection of the null hypothesis for Bartlett's test, as the P-Value is .000. Factor analysis is able to be utilized.

“Communalities: Initial Vs Extraction”

“Communalities”	“Initial”	“Extraction”
Use of integrated energy-saving technology	1.000	.420
Recycling of waste food in the Hotel	1.000	.563
Cut down on water and energy consumption	1.000	.776
Buy local, go organic, and cut down on meat and dairy	1.000	.197
Reducing the usage of plastics in hotels	1.000	.726
Encourage green transport options	1.000	.842

Extraction: The extraction communalities, in contrast, yield the ultimate communalities, which are typically lower than the initial communalities of 1.0. These ultimate communalities reflect the proportion of variability in the variable that is explained by the factors with Eigen values greater than 1.0. The variable is eligible for removal from the component analysis if its extraction communalities are below .40. The factors with extraction values of .420 and .197, specifically the initial and final factors, need to be deleted. Essentially, this variable does not significantly contribute to the advancement of factor analysis. Eliminating such low extraction cooperation will significantly enhance the factor analysis answer.

“KMO and Bartlett’s Test”

“Kaiser-Meyer-Olkin Measure of Sampling Adequacy”.		.597
“Bartlett’s Test of Sphericity”	“Approx. Chi-Square”	782.100
	“df”	6
	“Sig.”	0.000

After the removal of the fourth and fifth factors, which have extraction values of .420 and .197, respectively. The strength of the link among variables is deemed strong, as evidenced by the KMO Statistics value of .730 and the rejection of the null hypothesis for Bartlett’s test, indicated by a P-Value of .000. Factor analysis is able to be utilized.

“Communalities: Initial Vs Extraction”

“Communalities”	“Initial”	“Extraction”
Recycling of waste food in the Hotel	1.000	.709
Cut down on water and energy consumption	1.000	.813
Reducing the usage of plastics in hotels	1.000	.887
Encourage green transport options	1.000	.855

Extraction: The extraction communalities, in contrast, yield the ultimate communalities, which are typically lower than the initial communalities of 1.0. They reflect the proportion of variability in the variable that is explained by the factors with Eigen values exceeding 1.0. The variable is eligible for removal from the component analysis if its extraction communalities are below .40. There are no elements that need to be deleted.

“Total Variance”

“Component”	“Total Variance”								
	“Initial Eigenvalues”			“Extraction Sums of Squared Loadings”			“Rotation Sums of Squared Loadings”		
	“Total”	“% of Variance”	“Cumulative %”	“Total”	“% of Variance”	“Cumulative %”	“Total”	“% of Variance”	“Cumulative %”
1	2.150	53.753	53.753	2.150	53.753	53.753	2.006	50.159	50.159
2	1.115	27.864	81.617	1.115	27.864	81.617	1.258	31.458	81.617
3	.482	12.039	93.656						
4	.254	6.344	100.000						

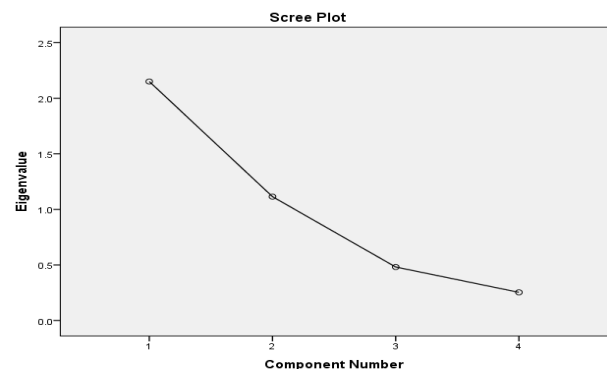
“Source : Survey Data”  
“Extraction Method: Principal Component Analysis”

Optimal total of parts to retain

Several criteria have been proposed to determine the appropriate number of components to maintain in a factor analysis approach. Two of the more widely favored options are:

1. The criterion based on the latent roots (eigenvalues).

The 2. Scree test is a statistical method used to determine the number of factors or components to retain in a factor analysis.



The Scree Test displays the eigenvalues plotted against the amount of components, indicating their significance in the extraction process. The magnitude of consecutive eigenvalues exhibits a rapid decrease and subsequently approaches a

plateau. Preserve all eigenvalues (and hence their components) during the steep decline before to the initial one on the line when they begin to stabilize. Analyze the scree plot. Given that the scree plot starts at factor 3, it may be concluded that the three-factor approach adequately represents the data, according to the scree plot criterion.

**Factor Rotation**

Rotation, in technical terms, refers to the process of tilting the axis of each component towards the right. This is done to enhance the association or affinity of variables with a single factor, therefore reducing their scattered connections to other factors. Therefore, by rotating the axes of the original factors to a different orientation, it can help make the analysis of the factors easier.

**Rotated Component Matrix**

"Rotated Component Matrix"	
Recycling of waste food in the Hotel	.924
Cut down on water and energy consumption	.901
Reducing the usage of plastics in hotels	.940
Encourage green transport options	.610

Extraction Method: Principal Component Analysis.  
 Rotation Method: Varimax with Kaiser Normalization.

Varimax employs a technique to streamline factor loadings by compelling them to approach values close to 0 or 1. Varimax is a reliable and straightforward method that usually improves the understandability of factors, making it the most widely used orthogonal rotation technique. The Rotated Component Mesh in the table above displays the "rotated factor the loadings", which represent the magnitudes of the vertical projections or the correlations between the variables and the new factors. When a variable exhibits a high correlation, the loading value is close to 1 or, for instance, larger than 0.5. We depend on this factor to facilitate our interpretation and comprehension of the component. These aspects or components represent the four distinct dimensions that a client evaluates when assessing their level of happiness or discontent, each with varying degrees of importance. The aforementioned factor analysis results.

**Final Solution of Factor**

Dimensions	C1	C2
	Recycling and cut down	Reduce usage and Encourage green transport
Recycling of waste food in the Hotel	Reducing the usage of plastics in hotels	
Cut down on water and energy consumption	Encourage green transport options	
Eigen Values	2.150	1.115
Variance %	53.753	27.864
Cumulative	53.753	81.617

Based on the provided table, it is evident that there are 4 characteristics that play a significant role in the selection of a bank.

C1 = Recycling & reduction

C2 = Minimize consumption and promote eco-friendly transportation

The primary factor is recycling, which results in a reduction of 53.753%. The second aspect involves a reduction in usage and the promotion of green transportation, resulting in a decrease of 27.864%.

**Summary of Factor Analysis**

The research clearly indicates that two out of the six factors provided were eliminated. Among the four components, one significant factor has been established, as described earlier.

**References**

1. Cuicui Ding, Qingran Guo, Alam Rehman and Muhammad Zeeshan (2022), Impact of environment on hotel customer satisfaction in Southeast Asia: A study of online booking site reviews , Environmental Economics and Management, a section of the journal Frontiers in Environmental Science, PUBLISHED 29 August 2022 DOI 10.3389/fenvs.2022.978070
2. R.Sangeeta (2020). Environmental sustainability practices for hotels in Chennai", Malaya Journal of Matematik, Vol. S, No. 2, 1740-1745,

3. E.E. Bader (2005), Sustainable hotel business practices, *Journal of Retail & Leisure Property*, 5(1), 70-77.
4. J. Butler (2008), The compelling hard case for green hotel development, *Cornell Hospitality Quarterly*, 49(3) 234-244.
5. C. Dickson, Promoting sustainable event practice (2010): The role of professional associations, *International Journal of Hospitality Management*, 29(2) 236-244.
6. H.J. Dunn (1995), S.C., Environmentally responsible logistics systems, *International Journal of Physical Distribution & Logistics Management*, 25(2) 20-38.