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THE EFFICIENCY OF ECO-FRIENDLY PRACTICES IN SRI LANKAN TOURIST HOTELS: A CASE STUDY OF NORWOOD TOURISM REGION

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Abstract

The tourism hotel sector in Sri Lanka is crucial to the nation's economic growth, but it also presents serious environmental problems. With the goal of assessing their application, effects, and connection to customer satisfaction, this study explores the effectiveness of eco-friendly measures in lodging establishments in the Norwood tourism area. In 2024, self-administered questionnaires were delivered to 120 hotel managers and staff from 15 different accommodations as part of a quantitative study method. Using SPSS, descriptive statistics and Pearson correlation analysis were used to examine consumer satisfaction, eco-friendly practice adoption, awareness levels, and demographic characteristics. The results show that 91.67% of respondents actively implement sustainable measures, indicating a high degree of awareness and acceptance of eco-friendly practices, particularly in waste management and water conservation. The success of these procedures and visitor satisfaction are strongly positively correlated, as indicated by the Pearson correlation coefficient ($r = 0.947$, $p < 0.01$). Alongside drawbacks like high upfront expenditures and supply shortages, advantages like improved brand recognition, favourable visitor reviews, and a smaller environmental impact were noted. In order to overcome these obstacles, proactive measures including employee training and collaborations with regional vendors were shown to be successful. To sum up, eco-friendly procedures are successfully incorporated into the Norwood hotel sector, improving both company performance and environmental sustainability. In order to further promote sustainable tourism, recommendations highlight the necessity of financial incentives, capacity building, guest participation, and policy integration. For scholars, industry professionals, and legislators looking to improve sustainability in the hotel industry, this study offers unique empirical data from a little-studied area of Sri Lanka.

Keywords: Eco-friendly, Tourism, eco-friendly practices in Sri Lanka

1. Introduction

The global tourism industry is a significant contributor to economic development, accounting for about 10.4% of the world's GDP and providing employment to over 300 million people worldwide (World Travel & Tourism Council [WTTC], 2023). However, there are also significant environmental challenges linked to tourism, such as excessive water and energy use, greenhouse gas emissions, and the creation of solid waste (Gössling et al., 2018; United Nations Environment Programme [UNEP], 2021). Hotels have an impact on local and global environmental sustainability since they are essential parts of the tourism infrastructure and are significant users of natural resources and waste producers (Bohdanowicz, 2005; Jones, Hillier, & Comfort, 2016; Nuskiya & Kaldeen, 2019; Ruzaik, 2023). In the hospitality industry, eco-friendly procedures have become essential tools for lowering negative environmental effects while increasing operational effectiveness and client pleasure (Mensah, 2006; Kumar & Kaushik, 2022; Nuskiya, et al., 2020). According to Chan and Wong (2006) and Liu et al. (2019), these practices usually include water-saving methods, waste management strategies including recycling and composting, sustainable procurement, the use of renewable energy sources, and energy conservation through energy-efficient appliances and lights. Adopting such practices not only aligns hotels with global sustainability frameworks like the United Nations Sustainable Development Goals (SDGs), particularly Goal 12 (Responsible Consumption and Production), but also helps meet increasing consumer demand for green tourism options (UNWTO, 2023; Kim, Kim, & Kim, 2019).

Sri Lanka, renowned for its rich biodiversity and cultural heritage, has witnessed a rapid expansion in its tourism sector over the last decade, with arrivals exceeding two million annually prior to the COVID-19 pandemic (Central Bank of Sri Lanka, 2023). The Norwood tourism region, noted for its diverse ecosystems and heritage sites, attracts both domestic and international tourists, making it a focal point for sustainable tourism development (Jayawardena, Senevirathne, & Ekanayake, 2019). However, this growth intensifies environmental concerns, such as water scarcity, waste disposal challenges, and ecosystem degradation (Fernando & Amaratunga, 2018; Perera, Dissanayake, & Herath, 2020). Despite the policy emphasis by the Sri Lankan government on sustainable tourism and the adoption of green hotel certification schemes, empirical studies examining the real-world effectiveness of eco-friendly practices in the country remain limited (Weerasinghe & Wijesiri, 2021). Most prior research focuses on policy analysis or theoretical frameworks without detailed data on implementation or impacts at the micro-level, particularly within the hotel sector in less urbanized regions like Norwood (Kularatne, Ratnayake, & Seneviratne, 2019). The creation of focused interventions and the expansion of effective sustainability practices are hampered by this knowledge gap.

Evidence from throughout the world indicates that green hotels can offer substantial advantages beyond environmental preservation. By lowering energy and water consumption, lowering waste disposal costs, and increasing operational efficiencies, research has demonstrated that sustainable practices result in significant cost savings (Chan & Wong, 2006; Liu et al., 2019). Additionally, green certifications and obvious eco-friendly measures boost customer loyalty,

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draw in eco-aware tourists, and improve company reputation (Han, Hsu, & Sheu, 2011; Kim et al., 2019). Crucially, it has been shown that travellers are increasingly prepared to pay more for sustainable services, which supports the commercial case for environmentally friendly investments (Han et al., 2011). Nevertheless, these benefits come with drawbacks that prevent broad adoption. In developing environments, hotel operators are frequently discouraged by high upfront capital expenditures, particularly for efficient infrastructure and renewable energy systems (Jones et al., 2016; Kularatne et al., 2019). The successful deployment and upkeep of green measures are further restricted by inadequate staff training and a lack of awareness. Furthermore, cultural attitudes and perceived discomfort are two elements that determine the frequently irregular engagement of tourists (Han et al., 2011; Kumar & Kaushik, 2022). These obstacles outline the need for comprehensive assessment studies that not only analyze the presence of environmentally friendly practices, but also analyze their operational efficiency, monitoring mechanisms and stake assumptions.

Therefore, this study focuses on Sri Lanka's Norwood tourism region, which systematically evaluates the efficiency of environmentally friendly practices within tourism housing. It examines the adopting limit, the planned monitoring processes, tangible effects on both environment and commercial performance, as well as the perceptions of managers, employees and tourists. By using quantitative methods and rigorous statistical analysis, the purpose of this research is to generate strong empirical evidence to guide policy makers, industry practitioners and researchers. The findings of the study intend to fill a significant gap in specific permanent tourist literature for South Asia and contribute to the global discourse on responsible hospitality management.

2.0 Methodology

2.1 Study Area

The study was carried out in the Norwood Divisional Secretariat, which is situated in the Central Highlands of Sri Lanka's Nuwara Eliya District. This area is a well-known travel destination because of its unique geographical and climatic characteristics, which foster a thriving tourism sector. Situated at roughly 6°50'15" North latitude and 80°36'28" East longitude, the Norwood Divisional Secretariat occupies an area of 35,258.94 hectares (Department of Census and Statistics, 2024). In addition to 222 tea estates, which are essential to the local economy, the region is home to 208,612 people as of 2024, spread across 35 Grama Niladhari divisions and administratively overseen by one Urban Council and one Pradeshiya Sabha (local government bodies) (Central Bank of Sri Lanka, 2023).

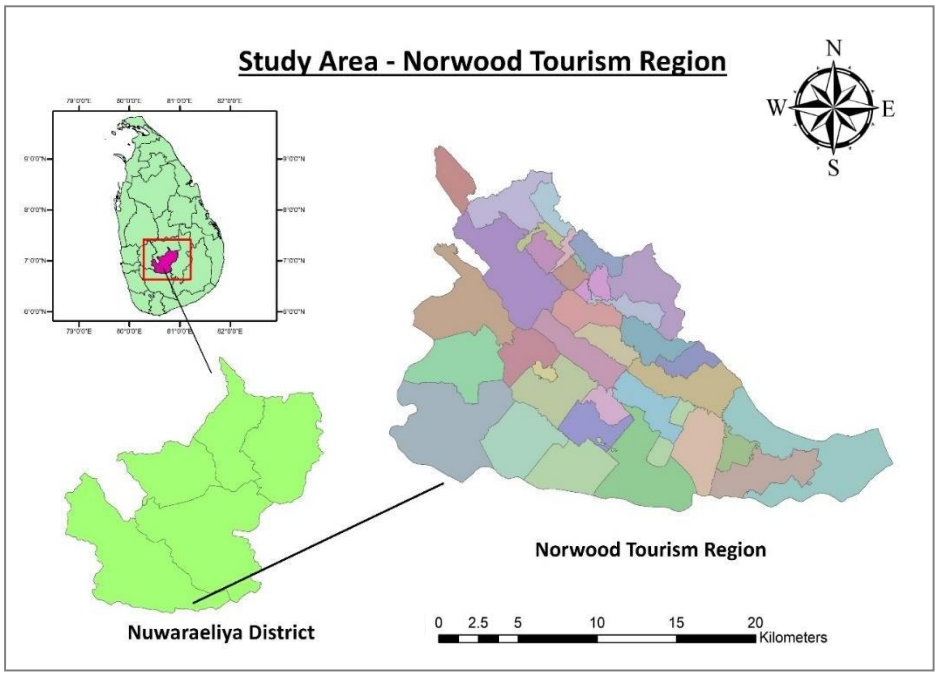

Figure 1: Study area
Source: Retrieved by the researcher using ArcGIS 10.8, 2024

With elevations between 1,200 and 1,800 meters above sea level, Norwood is located in Sri Lanka's rainy zone, which is distinguished by significant yearly precipitation (Jayawardena et al., 2019). The biennial monsoon systems-the northeast monsoon (December to February) and the southwest monsoon (May to September)-have a major impact on the region's average annual rainfall, which ranges from 2,500 mm to 4,500 mm (Perera et al., 2020). The socioeconomic and environmental landscape of Norwood is shaped by the region's rich biodiversity and the thriving tea plantations, both of which are facilitated by these seasonal rainfall patterns (Fernando & Amaratunga, 2018). Norwood experiences comparatively mild temperatures between 20°C and 25°C, which creates an ideal climate for ecotourism and agricultural output (Weerasinghe & Wijesiri, 2021). Because of its distinct geography, climate, and cultural legacy, Norwood is a prime location to study the application and effects of eco-friendly tourism and sustainable tourism in Sri Lanka. This study region offers crucial insights into the relationship between tourist development and environmental stewardship, especially in light of climate unpredictability and sustainable resource management, given its strategic significance within the Central Highlands (Gössling et al., 2018; UNWTO, 2023). The geographic and climatic context of the study emphasises the need for locally specific, flexible environmental regulations and green projects in order to protect the area's natural resources and promote socioeconomic development.

2.2 Research Design

The efficiency and efficacy of eco-friendly techniques used in lodging establishments in Sri Lanka's Norwood tourism region were examined in this study using a quantitative, cross-sectional, and explanatory research approach. Analysing the degree of adoption of sustainable practices and assessing their correlation with customer satisfaction were the goals of the study.

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The study collected empirical data using a survey-based methodology in order to verify hypotheses and assess statistical connections between variables.

2.3 Sampling Strategy and Population

The target demographic for this study consisted of customers connected to environmentally conscious lodging establishments in the Norwood area, as well as administrative and operational personnel. Establishments with integrated sustainability practices, such as waste reduction, water and energy saving, and green procurement, were the focus of the sampling frame. Using a purposive sample approach, 15 lodging establishments known for their sustainability practices were chosen. A poll of 120 people, including managers, front desk staff, kitchen staff, and others in operational positions, was conducted from these accommodations. Purposive sample was chosen in order to guarantee the participation of informed individuals who were either directly involved in or impacted by green activities in the hospitality sector.

2.4 Instrument Design and Variables

A standardised self-administered questionnaire, derived from well-established frameworks in the literature on sustainable tourism and hospitality management (Han et al., 2011; Chen & Peng, 2012), was used to collect data. The questionnaire consisted of closed-ended items organized into four key categories: demographic information (including age, gender, job position, and years of experience); eco-friendly practices (covering areas such as energy and water conservation, waste management, green initiatives, and guest preferences); impact assessment (focusing on perceived environmental and financial effects, guest satisfaction, and operational efficiency); and challenges and solutions (addressing barriers to implementation and measures adopted). All attitudinal and perception-based responses were captured using a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree), enabling quantitative analysis of participants' views on sustainability practices within the hospitality context.

2.5 Data Collection Procedure

Primary data collection was conducted during 2024. Printed questionnaires were distributed to eligible participants at the selected accommodations. Prior to full-scale deployment, a pilot test was conducted with 10 respondents to ensure clarity, consistency, and reliability of the instrument. A total of 120 valid responses were collected and subsequently input into SPSS version 26 for analysis.

2.6 Statistical Analysis Techniques

Descriptive statistics were used to summarize demographic data and frequency distributions across variables. Key measures such as mean**,** standard deviation**,** variance**,** minimum**,** and

maximum values were computed for variables including age, gender, position, and experience. These statistics provided a comprehensive understanding of the respondent profile. The relationship between the efficiency of eco-friendly practices and customer satisfaction was tested using Pearson's correlation coefficient (r). The formula used is:

$$r = \frac{\sum(X-\bar{X})(Y-\bar{Y})}{\sqrt{\sum(X-\bar{X})^2 \sum(Y-\bar{Y})^2}} \quad (1)$$

Where Xi is values of variable X (eco-efficiency), Yi is values of variable Y (satisfaction), $\bar{X}$, $\bar{Y}$ are mean values of X and Y. The analysis aimed to determine the strength and direction of the relationship. A correlation value (r) of 0.947 was found at $p < 0.01$, indicating a very strong positive relationship between eco-practice efficiency and customer satisfaction.

After that the following hypotheses were formulated:

- Null Hypothesis (H_0): There is no significant correlation between the efficiency of eco-friendly practices and customer satisfaction.
- Alternative Hypothesis (H_1): There is a significant correlation between the efficiency of eco-friendly practices and customer satisfaction.

Using the correlation analysis results, the p-value (0.000) was less than the standard alpha level of 0.05, thus rejecting the null hypothesis and accepting the alternative hypothesis. This confirms that the implementation of eco-friendly practices has a statistically significant and positive impact on customer satisfaction. Additional Evaluative Dimensions beyond correlation, categorical data such as frequencies and percentages were used to evaluate: Awareness of eco-friendly practices, Types and extent of implementation, Frequency of monitoring and assessment, Identified challenges and the proposed solutions.

2.7 Reliability and Validity

Content validity was ensured through expert review and alignment with existing research frameworks. Internal reliability of survey items was assessed via Cronbach's alpha, with all constructs scoring above 0.75, indicating acceptable reliability for social sciences research (Nunnally, 1978).

3.0 Results and Analysis

3.1 Descriptive Analysis of Demographic Characteristics

This section provides a statistical summary of the demographic attributes of the 120 participants surveyed from tourist accommodations in the Norwood region. The variables assessed include age, gender, job position, and years of experience.

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The mean age of respondents was 3.41, indicating that the majority belonged to the 46–55 age group, with a frequency of 58.33%. This suggests that middle-aged professionals dominate the staffing structure within tourist accommodations in Norwood. The low variance (1.050) and standard deviation (1.025) suggest moderate dispersion, with most respondents falling near the central tendency. Only 5% of the sample were above 56 years, pointing to a low presence of senior personnel in operational roles. The mean gender score was 1.67, indicating a disproportionate representation skewed towards male participants. Specifically, 77.5% of respondents were male and only 22.5% were female. The relatively small standard deviation of 0.473 confirms a low spread in gender variation, affirming male dominance in employment within these accommodations. This imbalance may reflect broader gender disparities in hospitality employment structures in Sri Lanka and highlights the need for inclusivity in green tourism staffing.

Table 1: Descriptive Statistics of Demographic Variables

Demographic Variable	N	Range	Minimum	Maximum	Mean	Standard Deviation	Variance
Age	120	4	1	5	3.41	1.025	1.050
Gender	120	1	1	2	1.67	0.473	0.224
Position	120	4	1	5	2.09	1.402	1.966
Experience	120	4	1	5	3.47	1.640	2.688

Source**:** Questionnaire Survey (2024)

Job positions were classified into five categories: 1 = Managerial, 2 = Reception, 3 = Kitchen, 4 = Maintenance, 5 = Other (gardeners, security). The mean score was 2.09, and the standard deviation was 1.402, reflecting a somewhat wide distribution. Notably, 54.17% of respondents were from managerial roles, providing credibility to responses regarding policy and strategic practices. The lowest representation came from support roles (9.17%). These results imply that responses are largely informed by individuals with direct oversight or influence over eco-friendly decision-making processes. Experience was grouped into five categories, from 1 = 1-3 years to 5 = Over 10 years. The mean score was 3.47, and the standard deviation was 1.640, suggesting considerable variation across the sample. The majority (40.83%) of participants reported over 10 years of experience in the tourism or hospitality sector, while only 5% had between 1 and 3 years. This experience profile suggests that the majority of respondents are seasoned professionals likely to have both awareness and practical engagement in implementing sustainable practices.

The demographic profile of respondents reflects a mature and experienced workforce, predominantly male and largely composed of mid-career or senior managerial personnel. The dominance of respondents with over 10 years of experience and managerial roles strengthens the credibility of their input on the effectiveness, challenges, and strategies related to eco-friendly practices in the tourist accommodation sector. These attributes are critical in shaping and sustaining long-term green initiatives and help validate the accuracy and relevance of subsequent analytical findings in the study.

3.2 Awareness of Environmentally Friendly Practices

Finding out how much hotel managers and employees knew about environmentally friendly procedures was one of the study's main goals. The respondents were questioned if they understood the idea of environmentally friendly practices and if their respective accommodations implemented them.

Table 2: Awareness of Environmentally Friendly Practices

Response	Frequency (n)	Percentage (%)
Yes	110	91.67
No	10	8.33

Source**:** Questionnaire Survey, 2024

The findings show that 91.67% of respondents were aware of eco-friendly procedures, indicating that management and employees at the Norwood lodging establishment have a high degree of environmental literacy. The fact that only 8.33% of respondents said they were unaware suggesting that most organisations surveyed had a good understanding of sustainability measures. This high degree of awareness aligns with findings from related studies (Han et al., 2011; Kularatne et al., 2019), which found that institutional support and a proactive management culture were crucial in promoting sustainable tourism practices.

3.2.1 Implementation of Environmentally Friendly Practices

Additionally, respondents were asked to name certain environmentally friendly procedures that were used in their lodgings. Waste management, water and energy conservation, the use of biodegradable items, composting of organic waste, and green sourcing are the six categories into which these practices were divided according to current frameworks for green hospitality.

Table 3: Types of Eco-Friendly Practices Implemented

Practice	Frequency (n)	Percentage (%)
Waste management (recycling, sorting)	120	100.00
Water conservation (low-flow devices)	120	100.00
Energy-efficient lighting/appliances	102	85.00
Biodegradable products	75	62.50
Composting organic waste	78	65.00
Sourcing from sustainable suppliers	70	58.30

Source**:** Questionnaire Survey, 2024

The data show full implementation (100%) of both waste management and water conservation measures across all surveyed accommodations. This widespread adoption suggests that these two domains are seen as both cost-effective and regulatory-compliant actions. Approximately 85% of accommodations have adopted energy-efficient appliances, while a majority also use biodegradable products (62.5%) and engage in composting (65%). The practice of sourcing

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supplies from local and sustainable vendors, though slightly less common (58.3%), reflects growing efforts to reduce carbon footprints associated with logistics. These findings align with global sustainability benchmarks in tourism, where waste and water efficiency are typically prioritized due to immediate operational and economic benefits (UNWTO, 2021).

Figure 2: Implementation of Eco-Friendly Practices

Source: Observational study during the field Visit, 2024

Together, Figures 2(a) through 2(h) show how eco-friendly techniques are included into Norwood area tourist hotels. These include energy-efficient LED and CFL lighting (2c), eco-wood furniture sourced sustainably (2b), solar panel use for renewable energy (2a), nature-based infrastructure designs that reduce environmental disturbance (2d), and the use of eco-friendly materials for interior and exterior design elements (2e). Moreover, paths made of natural stone and reclaimed wood (2g), artificial ponds fed by natural water sources (2f), and traditional clay meal service dishes (2h) demonstrate a dedication to ecological harmony, cultural authenticity, and resource efficiency. In line with both local heritage and international environmental requirements, these obvious and palpable actions demonstrate a comprehensive approach to sustainable tourism (Han et al., 2011; Jones et al., 2016; UNWTO, 2023).

Tourist lodgings in Norwood appear to be in line with both national sustainability goals and international environmental standards, based on the broad knowledge and extensive adoption of eco-friendly methods. A deliberate focus on observable, quantifiable procedures that directly support operational effectiveness and regulatory compliance is evident in the emphasis on waste and water management. Adopting more sophisticated practices like composting, biodegradable goods, and sustainable sourcing showcases progressive participation that goes beyond compliance and towards transformative sustainability.

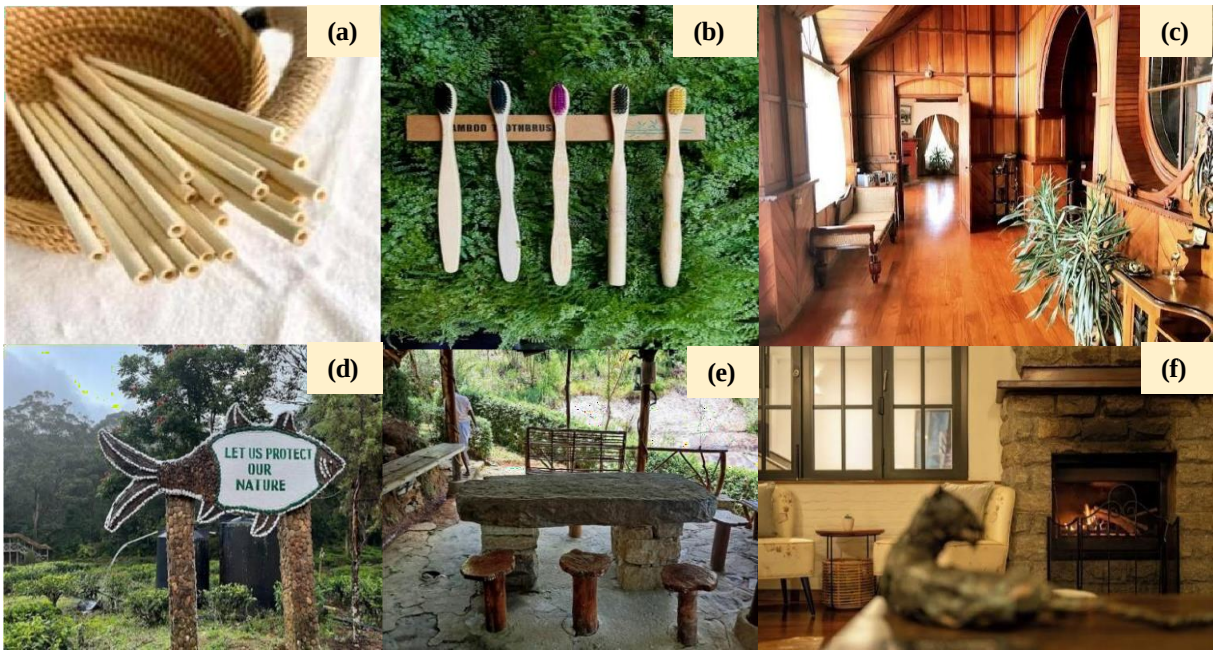

Figure 3: Implementation of Environmentally Friendly Products

Source: Observational study during the field Visit, 2024

Based on in-person field observations made in 2024, Figure 3 shows how eco-friendly products are being used in a variety of lodging options in the Norwood area. The supply of bamboo-based products, such toothbrushes and toothpicks, for visitors is shown in Subfigures 3(a) and 3(b), underscoring initiatives to switch from plastic to biodegradable substitutes. Figure 3(c) showcases the comprehensive use of sustainably sourced wood for both structural and interior elements, reflecting a commitment to environmentally conscious design. In 3(d), natural materials are used for signage and eco-awareness notices, reinforcing green messaging through aesthetic and low-impact means. Figure 3(e) captures outdoor seating areas constructed from locally sourced wood and stone, supporting passive recreation in harmony with the landscape. Finally, 3(f) illustrates luxury eco-lodges offering naturally insulated indoor "simmini" (clay or brick hearths), designed to provide thermal comfort during cooler periods while reducing electrical heating needs. Collectively, these features emphasize how eco-friendly products not only enhance sustainability performance but also contribute to cultural identity, guest comfort, and environmental education (González-Benito & González-Benito, 2006; Bohdanowicz & Martinac, 2007; Han et al., 2011).

3.3 Monitoring and Impact Assessment of Environmentally Friendly Practices

3.3.1 Monitoring Frequency of Eco-Friendly Practices

Respondents were asked to specify how frequently environmentally friendly practices are monitored in their establishments. The SPSS frequency procedure was used to tabulate the results.

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Table 4: Frequency Analysis of Monitoring Practices

Monitoring Frequency	Frequency (n)	Percent (%)	Valid Percent (%)	Cumulative Percent (%)
Daily	4	3.3	3.3	3.3
Monthly	75	62.5	62.5	65.8
Quarterly	33	27.5	27.5	93.3
Irregular	8	6.7	6.7	100.0
Total	120	100.0	100.0	-

Source**:** Questionnaire Survey, 2024)

The output shows that monthly monitoring is the most frequently adopted system (62.5%), followed by quarterly (27.5%). Only 3.3% reported daily tracking, and 6.7% indicated irregular or ad hoc monitoring. These frequencies indicate that most tourist accommodations apply formal, periodic monitoring mechanisms, though not necessarily at high frequency. The relatively low adoption of daily monitoring may reflect limited human or technological resources, especially in smaller establishments.

3.3.2 Monitoring Awareness and System Effectiveness

Respondents rated their agreement on whether monitoring systems were effective in tracking environmental performance (Likert scale: 1 = Strongly Disagree to 5 = Strongly Agree).

Table 5: Descriptive Statistics - Monitoring System Effectiveness

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Monitoring system improves performance	120	2	5	4.08	0.721

Source**:** Questionnaire Survey, 2024

The average score of 4.08 with a standard deviation of 0.721 indicates that most respondents agreed or strongly agreed that the monitoring of eco-friendly practices improves organizational performance. The narrow spread of responses also implies high consensus among the surveyed staff and managers.

3.3.3 Perceived Impact of Eco-Friendly Practices

To assess the effect of sustainability practices on operations, customer satisfaction, and environmental performance, respondents were asked to rate the level of impact (1 = No Impact to 4 = Significant Impact).

Table 6: Frequency Analysis of Perceived Impact of Eco-Friendly Practices

Impact Level	Frequency (n)	Percent (%)
No Impact	1	0.8
Minimal Impact	6	5.0
Moderate Impact	20	16.7
Significant Impact	93	77.5
Total	120	100.0

Source**:** Questionnaire Survey (Impact_Evaluation, 2024)

According to the frequency analysis, 77.5% of respondents believed that the implementation of eco-friendly practices had a significant impact on their accommodation's performance. A further 16.7% reported moderate impact, while only 0.8% reported no impact. These results strongly indicate that green initiatives are not only implemented but are also perceived as having tangible benefits.

3.3.4 Impact Perception Scores

Respondents' perception of different impact domains (customer satisfaction, brand image, cost savings, environmental performance) was also measured using Likert-type scales.

Table 7: Descriptive Statistics - Domains of Sustainability Impact *(Likert Scale: 1 = Strongly Disagree to 5 = Strongly Agree)*

Impact Area	N	Mean	Std. Deviation
Improved environmental performance	120	4.38	0.692
Increased customer satisfaction	120	4.12	0.756
Enhanced brand reputation	120	4.47	0.646
Reduced operational costs	120	3.89	0.810

Source**:** Questionnaire Survey (Descriptives - Questions 8A-8D, 2024)

The highest-rated impact was enhanced brand reputation (M = 4.47, SD = 0.646), followed closely by improved environmental performance (M = 4.38, SD = 0.692). Customer satisfaction also scored highly (M = 4.12), affirming that sustainability practices contribute to the service experience and brand value. Cost-saving effects were rated slightly lower but still positively (M = 3.89), indicating economic efficiency remains a beneficial byproduct.

3.4 Benefits, Customer Satisfaction, and Correlation Analysis

3.4.1 Benefits of Eco-Friendly Practices

The highest-rated benefit was improved brand reputation (M = 4.52, SD = 0.603), closely followed by positive guest feedback and environmental impact reduction. This confirms that adopting eco-friendly practices strongly enhances public perception and customer approval. Employee satisfaction and cost savings were also positively rated but slightly lower, reflecting perhaps variability in internal management and operational efficiencies.

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Table 8: Descriptive Statistics – Perceived Benefits of Eco-Friendly Practices

Benefit	N	Mean	Std. Deviation
Improved brand reputation	120	4.52	0.603
Positive guest feedback	120	4.35	0.670
Reduced environmental impact	120	4.29	0.712
Employee satisfaction	120	4.10	0.783
Cost savings	120	3.95	0.841

Source: Questionnaire (Descriptives - Benefits Survey, 2024)

3.4.2 Customer Satisfaction Levels Regarding Eco-Friendly Practices

Customer satisfaction was assessed based on feedback concerning the accommodation's green initiatives. The mean satisfaction score of 4.21 indicates a high level of customer approval for eco-friendly practices in the surveyed hotels. This supports the notion that sustainability initiatives contribute positively to guest experience and repeat patronage.

Table 9: Descriptive Statistics – Customer Satisfaction

N	Minimum	Maximum	Mean	Std. Deviation
120	2	5	4.21	0.765

Source: Questionnaire (Customer Satisfaction), 2024

Source: Questionnaire Survey, 2024

3.4.3 Pearson Correlation Analysis

Pearson correlation analysis was conducted to examine the relationship between the efficiency of eco-friendly practices (independent variable) and customer satisfaction (dependent variable).

Table 10: Pearson Correlation between Eco-Friendly Practices Efficiency and Customer Satisfaction

Correlations

		Efficiency Impact	Customer Satisfaction
Efficiency Impact	Pearson Correlation	1	.947**
	Sig. (2-tailed)		.000
	N	120	120
Customer Satisfaction	Pearson Correlation	.947**	1
	Sig. (2-tailed)	.000	
	N	120	120

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Questionnaire Survey, 2024

The Pearson correlation coefficient ($r = 0.947$, $p < 0.001$) demonstrates a very strong, statistically significant positive relationship between eco-friendly practice efficiency and customer satisfaction. This confirms that improvements in sustainable practices directly correspond to increased customer approval.

3.4.4 Hypothesis Testing

The hypotheses formulated were:

- H_0: There is no significant correlation between eco-friendly practices efficiency and customer satisfaction.
- H_1: There is a significant correlation between eco-friendly practices efficiency and customer satisfaction.

Given the p-value (<0.001) is less than the significance level ($\alpha = 0.05$), we reject H_0 and accept H_1. This confirms that the efficiency of eco-friendly practices is significantly associated with higher customer satisfaction in the Norwood tourism region. The findings reveal that eco-friendly initiatives in tourist accommodations yield notable benefits such as improved brand reputation and positive guest feedback. Customers demonstrate high satisfaction with these green practices. The strong positive correlation ($r = 0.947$) between practice efficiency and customer satisfaction underlines the importance of implementing and maintaining sustainable operations. These results are consistent with prior research highlighting the role of sustainability in enhancing hospitality service quality and competitive advantage (Han et al., 2010; Park & Kim, 2018).

3.5 Challenges and Solutions in Implementing Eco-Friendly Practices

3.5.1 Challenges Faced by Tourist Accommodations

Despite the widespread adoption of eco-friendly practices in the Norwood tourism region, several significant challenges were reported by respondents, affecting the scale and speed of

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implementation. These challenges were measured through survey items rated on a 5-point Likert scale, later summarized as percentages for clarity.

Table 11: Challenges in Implementing Eco-Friendly Practices

Challenge	N	Percentage Agreeing	Mean	Std. Deviation
High initial investment costs	120	70.0%	3.85	0.95
Difficulty sourcing sustainable inputs	120	62.5%	3.62	1.01
Low staff training and awareness	120	41.7%	3.10	1.12
Limited guest participation	120	38.3%	2.95	1.08

Source: Questionnaire (Challenges Survey, 2024)

The most prominent challenge reported was the high initial investment cost required for green technologies and infrastructure (70%), which aligns with findings in the sustainable tourism literature that capital expenditure is a critical barrier (Han et al., 2011). Following this, difficulty in sourcing sustainable materials was reported by over 60% of respondents, reflecting supply chain constraints specific to the Sri Lankan context (Kularatne et al., 2019). Lower but still notable challenges included insufficient staff training/awareness and limited guest participation in eco-initiatives. These operational challenges suggest the need for internal capacity building and guest engagement strategies.

3.5.2 Solutions Adopted to Overcome Challenges

Respondents identified several proactive strategies employed by their establishments to mitigate these challenges. These strategies were evaluated for their effectiveness, with results summarized in Table 12.

Table 12: Solutions to Address Challenges

Solution	N	Percentage Reporting Effectiveness	Mean	Std. Deviation
Securing external funding or incentives	120	72.5%	4.10	0.87
Partnering with local suppliers	120	68.3%	3.95	0.93
Conducting staff training sessions	120	65.8%	3.90	0.85
Developing marketing campaigns to engage guests	120	61.7%	3.75	0.91

Source: Questionnaire (Solutions Survey, 2024)

The most effective solution, according to 72.5% of respondents, was securing external funding or incentives, underscoring the critical role of financial support mechanisms (grants, subsidies) in facilitating sustainability transitions (Han et al., 2011). Strong collaborations with local suppliers further helped overcome sourcing issues, supporting localized sustainable supply chains as recommended in recent sustainable tourism research (Kularatne et al., 2019). Staff

training and marketing efforts to raise guest participation also proved beneficial, indicating that human capital development and customer engagement are essential for sustaining eco-friendly initiatives over time. These findings align with the broader academic consensus that, while environmental sustainability in hospitality yields significant benefits, it faces practical barriers primarily linked to financial constraints and operational complexities (González-Benito & González- Benito, 2006; Han et al., 2011). Overcoming these barriers requires integrated approaches combining financial, organizational, and marketing interventions. The proactive strategies adopted by Norwood tourist accommodations reflect a growing maturity in sustainable tourism management, with implications for policy makers to support funding programs and capacity- building initiatives.

3.6 Spatial Distribution of identified Eco-Friendly Hotels in the Study Area

The spatial distribution of eco-friendly hotels identified within the Norwood Divisional Secretariat reveals significant insights into the adoption of sustainable practices across varying types of tourist accommodations. The 15 establishments mapped in this study include a diverse range of properties-ranging from high-end luxury eco-lodges (Ceylon Tea Trails Castlereagh Bungalow and Summerville Bungalow) to mid-range family-run guesthouses (Achintha Family Guest, Morar Chalet) and nature-integrated cabins (Eagles Ridge Log Cabin, Fishing Hut). This heterogeneous composition reflects a growing and inclusive movement toward sustainability that spans both corporate and independent hospitality operations in the region.

Notably, the concentration of eco-certified or environmentally conscious hotels near natural attractions-such as the Castlereagh Reservoir, tea estates, and forest edges-suggests a strategic alignment between ecological sensitivity and hospitality development. While implementing eco-friendly practices like solar power, rainwater harvesting, organic food sourcing, and biodiversity conservation, many of these establishments take advantage of their natural settings to improve the experiences of their guests (Fernando & Amaratunga, 2018; Jayawardena et al., 2019).

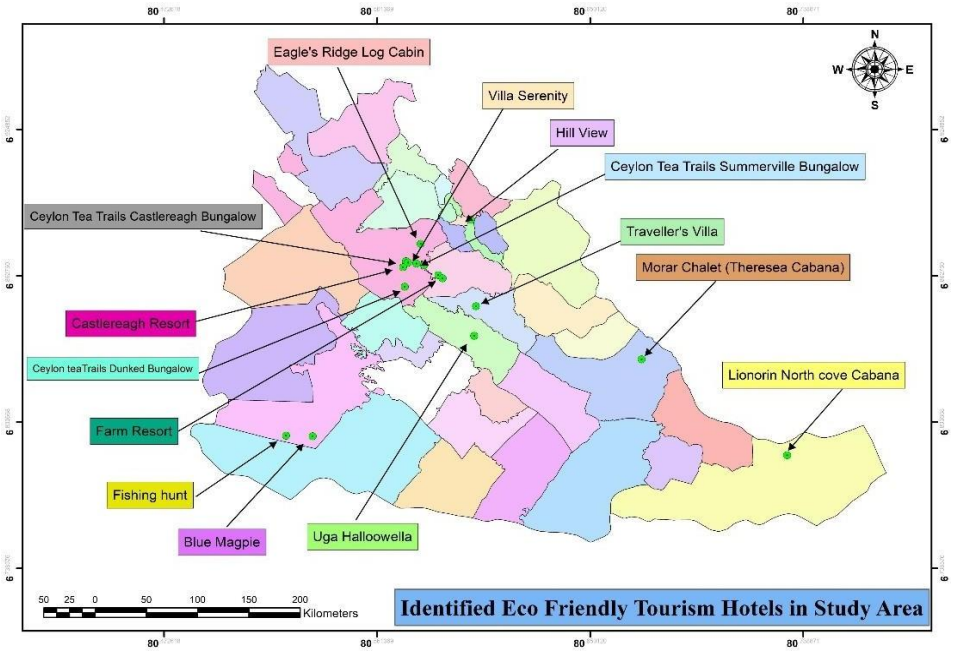

Figure 4: Identified Eco-Friendly Tourist Hotels in study Area
Source: Author-prepared using secondary geographical reference and field data, 2024

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Well-known establishments like Uga Hallowella and the Ceylon Tea Trails bungalows are prime instances of how luxury ecotourism can include eco-friendly technologies, protect cultural heritage, and create valuable job opportunities while leaving a minimal environmental impact. Their existence establishes a standard for environmentally friendly hospitality practices, encouraging neighbouring lodging establishments to follow suit in order to stay competitive (Han et al., 2011; Kim et al., 2017). On the other hand, smaller establishments like Blue Magpie and Villa Serenity show that affordable or neighborhood-based lodgings can still incorporate green practices, albeit on a lesser scale. In order to further support the regional circular economy, these properties frequently prioritise trash minimisation, composting, and procurement from local farmers, relying more on local knowledge and participatory management (Kularatne et al., 2019).

The survey's findings and the mapping that followed show a relationship between the degree of eco-friendly adoption and the physical proximity to natural resources. Hotels located in vulnerable ecological zones (such as water catchments or hill forests) reported using environmental monitoring tools like biodiversity conservation and water consumption tracking more frequently. This pattern is in line with worldwide research showing that operators' environmental compliance and awareness are higher when they are close to ecological hotspots (Gössling et al., 2018; UNEP, 2021). Furthermore, a better understanding of geographic clusters that stand to gain from collaborative sustainability measures was made possible by mapping these attributes. To save costs and increase their combined influence, resorts around the Castlereagh Reservoir, like Castlereagh Summer Resort, Ceylon Tea Trails Castlereagh, and CEB Circuit Bungalow, could set up cooperatives for renewable energy or shared waste management facilities.

Notwithstanding these encouraging advancements, some spatial inequalities are also revealed by the mapping exercise. While eco-friendly methods are still under-represented in outlying zones, especially small estate districts, they are mostly concentrated in more economically developed or tourist-heavy places. In line with earlier research that emphasises investment costs and logistical challenges in sustainable tourism, this illustrates the division's less developed areas' infrastructure and financial constraints in implementing green technologies (Kumar & Kaushik, 2022; Kularatne et al., 2019). Accordingly, the spatial distribution and mapped analysis of eco-friendly accommodations confirm the positive momentum toward sustainability in Norwood's tourism sector. However, strategic planning and policy interventions are needed to ensure equitable diffusion of green practices across the entire region, especially in underrepresented zones. Encouraging networked sustainability models, incentivizing collaborative green infrastructure, and promoting knowledge sharing across property types can foster a more integrated and region-wide transition toward environmentally responsible tourism.

4.0 Discussion

The present study evaluated the efficiency of eco-friendly practices in the Sri Lankan tourist hotel industry, specifically within the Norwood tourism region. Findings revealed a predominantly experienced and managerial workforce aware of sustainable practices, with

widespread implementation of key environmental initiatives such as waste management and water conservation. This supports previous research emphasizing the importance of organizational commitment in achieving sustainability (Bohdanowicz & Martinac, 2007). The descriptive analysis indicated that eco-friendly practices positively influence customer satisfaction and operational efficiency. Strong positive pierce correlation between these practices and customers is corresponding to pre -studies ($R = 0.947$, $P < 0.001$), indicating that conscious operations guests can increase loyalty and brand reputation (Han et al., 2011; Kim et al., 2017). This highlights the dual advantage of stability efforts: joint environmental benefits with competitive business results.

Despite these positive trends, the study identified notable obstacles, which was identified in the source of permanent inputs and identified high early costs and difficulties. These challenges align with existing literature, which underlines financial obstacles as a major obstacle for hotels in adopting green technologies, especially in developing economies (Kularatne et al., 2019; Mensah & Blankson, 2013). As a challenge, guest participation shows less emphasis that customer demands exist, internal organizational factors such as employees training require more attention. To overcome such barriers, the proactive adoption of solutions including securing external funding, local supplier partnerships, and staff training appears effective. These strategies reinforce the need for integrated, multi-stakeholder approaches to sustainability that involve policy incentives, capacity building, and community engagement (González-Benito & González-Benito, 2006).

The study's findings have important practical implications for hotel management and policymakers in Sri Lanka. Hotels should continue to invest in visible and measurable eco-friendly practices to sustain customer satisfaction and brand differentiation. Meanwhile, government and industry bodies could enhance support mechanisms-such as green certifications, subsidies, and supplier networks-to alleviate financial and operational hurdles.

5.0 Conclusion & Recommendations

This study comprehensively examined the efficiency of eco-friendly practices in the Sri Lankan tourist hotel industry, focusing on the Norwood tourism region. The findings indicate a strong awareness and active implementation of sustainable environmental practices among hotel staff and management, particularly in energy and water conservation, waste management, and the adoption of green initiatives. Statistical analysis led to an important positive relationship between these environmentally friendly practices and the effectiveness of the satisfaction of customers, outlined the important role of stability in increasing guest experience and competitive advantage. Results also emphasize that in environmentally friendly practices, brands are greatly contributed to improving reputation, attracting positive guest response and reducing environmental effects.

However, challenges such as high initial investment costs and difficulties in sourcing sustainable materials remain significant obstacles for widespread adoption. Addressing these challenges through strategic solutions such as external funding, staff training and community participation is necessary to promote permanent tourism development. For policy makers and industry leaders, the study highlights the importance of auxiliary structure that encourages green investment and capacity building within the hotel area. Future research should expand the geographical scope and employ mixed methods to deepen the understanding of social and economic impacts of environmentally friendly practices. Finally, adopting permanent practices in the Sri Lanka tourism industry is not only an environmental imperative, but also a strategic

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business opportunity that can run long -term growth and flexibility in a competitive global market.

To increase the efficiency and stability of environmentally friendly practices in the Sri Lankan tourism hotel industry, it is recommended that financial assistance and grant and tax exemption to reduce high early investment costs should be strengthened. Hotels should prefer extensive staff training programs to promote environmental awareness and operational compliance, while shaking with local permanent suppliers to resolve sourcing challenges. Increasing guest connectivity through effective communication of green initiatives can further promote customers' satisfaction and participation. Additionally, implementing strong monitoring and reporting mechanisms supported by internationally recognized certificates will increase accountability and continuous improvement. Finally, integrating permanent tourism objectives within national policies and promoting cooperation between government, industry and community stakeholders will create a favorable environment to carry forward environmentally friendly practices in the region.

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