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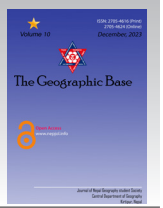

Examining the Environmental Sustainability of Tourism Enterprises in Lakeside, Pokhara

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Abstract

This research investigated the relationship between environmental contexts and tourism businesses in Lakeside, Pokhara, Nepal, from the perspectives of stakeholder theory and environmental and economic geography. Data from 150 tourism enterprises were analyzed using confirmatory factor analysis, Spearman correlation, Kruskal-Wallis test, and probit regression. The study revealed complex patterns in resource consumption, waste management choices, adoption of environmental laws, stakeholder involvement, and disaster preparedness. Larger enterprises consumed more resources, while hotels favored hybrid energy sources. Educated managers favored municipal waste collection, whereas those aware of Sustainable consumption and production often sold waste to private collectors. Newer establishments were more likely to adhere to local ecological laws. The research emphasizes the need for collaborative approaches, proactive disaster planning, and interventions to bridge the gap between

awareness and action for a sustainable and resilient tourism industry. Future research should focus on identifying barriers to sustainable practices and the impact of ecological laws on older tourism enterprises.

Introduction

The Environmental and Economic Geography (EEG) perspective provides an opportunity to evaluate the environmental aspects of business, including tourism enterprises, and develop applicable policy responses for resilient tourism. As the environmental consequences of economic activities become increasingly evident, corporate environmental responsibility (CER) has emerged as a central concern for businesses, policymakers, and society (Han et al., 2021).

This concern amplifies in the tourism industry, where ecological degradation accompanies economic growth. Geographers play a crucial role in understanding and addressing these environmental implications of tourism, focusing on aspects of regional development and environmental issues (Purnomo & Farista Aristin, 2022). EEG offers a valuable framework for examining tourism activities, resources, and environmental effects within specific locales (He et al., 2022).

Considering this, with the lens of stakeholder theory and EEG principles, this research investigated the linkage between environmental contexts and the tourism business at Lakeside in Pokhara, Nepal. It examines the ecological practices of the tourism enterprise's resource consumption patterns, waste management practices, legal compliance, and disaster resilience plans.

Conceptual Contexts

Studies on EEG and tourism industries inform the state of sustainability practices by highlighting the intricate relationship between economic activities and environmental concerns and practices. EEG emphasizes the co-evolution of the economy and the environment, focusing on green transitions and various economic processes, resources, and environmental effects (He et al., 2022). On the other hand, tourism research emphasizes balancing business interests while conserving the environment and recommends strategies such as sustainable ecotourism, ensuring the conservation of natural resources while benefiting local communities and economies (Baloch et al., 2023). Hence, these studies call for adopting integrative strategies in tourism practices, environmental conservation, and economic development, offering valuable insights for policymakers and stakeholders to design comprehensive and sustainable development strategies (Huang et al., 2023; Sun et al., 2023).

The stakeholder theory of organizational management and business ethics proposes that organizations are accountable to many stakeholders, including employees, owners, customers, communities, and regulators (Freeman, 1984). Stakeholder

theory looks at the diverse interests of stakes of organizational decision-making (Laplume et al., 2008). An application of stakeholder theory helps researchers develop an understanding of their relationships with sustainability (Harrison & Wicks, 2013). Sustainable tourism's success relies on stakeholder participation and behaviors (Queiroz, 2009). Stakeholders are crucial in implementing effective sustainability practices (Palaniveloo et al., 2020). Previous studies have also shown stakeholder theory used in disaster preparedness (Sharma et al., 2024).

Tourism stakeholders are strongly encouraged to prioritize waste sorting, recycling, and reduction. These actions are vital for fostering a healthier environment, particularly in preserving water bodies (Lumeno et al., 2022; Miller & Howell, 2019). This approach aligns with EEG's emphasis on the "location-environmental" relationship, underscoring the critical role of environmental context in tourism and the necessity of adopting strategies that safeguard the environment.

Studies have demonstrated a clear connection between the tourism sector, energy consumption, and CO2 emissions, highlighting stakeholders' significant role in safeguarding the environment while conducting tourism business (Işik et al., 2020). To mitigate the environmental impact, stakeholders should consider meeting the growing energy demands of the tourism industry by adopting alternative energy sources, such as solar power and biogas, particularly in hotels and restaurants (Khanal et al., 2021; Nocera et al., 2019). Integrating green transportation into business operations can minimize environmental impacts (Ngoc, 2022). These efforts align with the EEG's principle of greening the economy by promoting renewable resources and sustainable technologies.

Researchers have emphasized the importance of collaboration between private tourism entrepreneurs, such as hotel and restaurant owners, and government entities to foster public-private partnerships (PPPs) that benefit the environment, local communities, and the tourism industry (Deladem et al., 2020). For example, tourism enterprises in Iceland have successfully adopted a collaborative approach between the private sector and the government to manage tourism sustainably (Helgadóttir et al., 2019). Additionally, implementing local ecological laws and strategies, such as ecosystem-based adaptation and creating green jobs, can significantly contribute to environmental protection and promote resilient tourism (Pathak et al., 2021). The impact of tourism on social sustainability, the preservation of natural and cultural heritage, and the enforcement of local ecological regulations are also critical for ensuring long-term resilience (Brown et al., 2017; Nezha et al., 2021). These collaborative efforts, coupled with a strong focus on ecological laws and resilience, align with the broader

principles of ecological economics, which emphasize the co-evolution of the economy and the environment and the need to build sustainable development systems at both global and regional levels. Against this conceptual backdrop, this paper evaluates the tourism industry of Lakeside, Pokhara, Nepal, from both stakeholder and EEG perspectives.

Methods and Materials

Study Area

Tourism is a significant global economic industry in Pokhara, Nepal, expanding rapidly. It is an essential sector for economic development and poverty reduction (Khatiwada et al., 2022). The Ramsar-listed Lake Cluster of Pokhara Valley in Gandaki Province is an important area for tourism and livelihood strategies. Pokhara's economy has become overly reliant on tourism, particularly within the restaurant and hotel sectors (Sharma, 2018). However, over-dependence on a single economic sector poses a significant risk of negatively affecting the economy (Raya, 2020). In the meantime, it has been exacerbating solid waste management issues in Pokhara (Bajracharya et al., 2022).

In Pokhara, entrepreneurs and tourists increasingly recognize the importance of preserving local socio-cultural practices, which are essential for sustainable tourism development (Devkota et al., 2021). This recognition offers a glimmer of hope for the future of tourism in Pokhara. However, the city's rapid urbanization and the growing demand for ready-made goods driven by global market trends have intensified solid waste management challenges (Bajracharya et al., 2022). Compounding these issues is the widespread need for more awareness and preparedness among the local population, which poses a significant barrier to successfully implementing sustainable development practices in Pokhara (Bhandari et al., 2021).

Sampling and Data Collection

There are 5,304 hotels and restaurants in Pokhara, Nepal (Central Bureau of Statistics Nepal, 2018). However, the total number of hotels and restaurants in the lakeside area is not available, the presence of high tourist services and facilities gives an idea of the dominating presence of hotels and tourists in these areas. With an 8% margin of error, the Yamane formula determines a sample size of 152 hotels and restaurants, with 70 percent of hotels. Purposive sampling determined hotel and restaurant enterprise professionals as respondents based on their expertise and experience in the tourism sector (Henky & Sugiarto, 2021).

Hotels and restaurants are the unit of analysis for this research, and sample selection was initiated from the northwest shore of Phewa Lake and continued toward the southeast, following a linear path. This area, known for its high concentration of hotels, restaurants, and other hospitality businesses, was a strategic starting point. Using this sampling pattern, we ensured

a systematic coverage of the hospitality sector across the tourist hub of Pokhara, Lakeside area. The respondents, selected through purposive sampling, were hotel and restaurant professionals with expertise and experience in the tourism sector. It included managers, owners, and key staff members knowledgeable about their establishments' operational and environmental practices in Ward Number Six, also called Lakeside Pokhara. We used a survey questionnaire as our data collection tool.

The first part of the survey questionnaire consists of the enterprise's nature and the manager's profile. The second part includes questionnaires about enterprises' existing Sustainable Practices, including their Gas Usage, Waste Management Choice, private environment law, water usage, planned resilience against disaster, source of energy, and enterprise choice for the full authority of environmental protection.

Data Analysis

Confirmatory factor analysis (CFA) is a statistical technique used to test the construct validity of a questionnaire or scale. It examines whether the observed data fits the hypothesized factor structure (Isfarudi et al., 2022; Le et al., 2017; Sondakh et al., 2019; Sujati et al., 2020). Composite reliability (CR) is a measure of internal consistency reliability, which assesses the extent to which the items in a scale or questionnaire measure the same underlying construct. The average variance extracted (AVE) is a measure of convergent validity, which evaluates the extent to which the items in a scale or questionnaire are related to each other and measure the same construct.

A Cronbach's alpha below 0.5 is unacceptable, while values above 0.9 are considered excellent. A low alpha might stem from having few questions, leading to fewer correlations between pairs, potentially warranting item removal (Sharma, 2016). Convergent validity is confirmed when CR exceeds 0.5 (Baistaman et al., 2020; Shkeer & Awang, 2019). Convergent validity is confirmed when the AVE value exceeds 0.5 (Mehmetoglu, 2015). The study observed that the square root of each construct’s AVE value exceeded all inter-factor correlations in assessing DV, aligning with the recommendation of (Shaffer et al., 2016), as cited in (Abid et al., 2019).

Spearman correlation analysis helped investigate the relationship between two continuous variables, the association between a non-normal continuous variable and an ordinal categorical variable, and to assess the monotonic relationship between variables, considering their ranks rather than their exact values (Schober et al., 2018). The Spearman correlation calculates the correlation between gasoline usage, water usage, investment levels, and year of establishment. Equation 1 shows the monotonic relationship between two

variables, measuring the strength and direction of their association.

Equation 1 Spearman's correlation between two hazard concern

$$\rho_{\text{one hazard concern - another hazard concern}} = \frac{6\sum D^2}{N(N^2-1)},$$

where:
D = difference between paired ranks.
N = number of paired observations; and
6 = constant.

The Kruskal–Walli's test compares the distribution of a continuous variable across three or more independent groups to determine if any significant differences exist among the groups without assuming specific distributional shapes or equal variances (Imran et al., 2018). It is a nonparametric, reliable, and valid statistical tool for detecting differences in the Median between groups (Feir-Walsh & Toothaker, 1974).

Equation 2 represents differences across multiple groups or categories of energy sources. The test examines whether there are significant variations in the source of energy based on several factors, including Enterprise nature (1 if hotel), Enterprise Investment (USD), Enterprise establishment (yrs.), Manager (1=Owner), Manager Education (1 = Undergraduate), Manager sustainable tourism (ST) Awareness (1=Yes), and Manager sustainable consumption and production (SCP) Awareness (1=Yes).

The test calculates the H statistic, which is a nonparametric measure of variance, by summing the squared values of the sum of ranks for each group (Ri) and adjusting for the number of observations in each group (ni) and the total number of observations (N). This statistic helps determine whether there are statistically significant differences in source of energy among the different groups. The larger the H statistic, the more evidence there is for group differences.

Equation 2 Kruskal–Walli's test equation for the source of energy

$$H = \frac{12}{N(n+1)} \sum_{i-1}^{k} \frac{R_j^2}{n_1} - 3\,(N\,+\,1),$$

where:

H = Kruskal–Wallis test statistic for source of energy
N = total number of observations.
R_i = sum of the ranks for group *i*; and
n_i = number of observations in group *i*.

The descriptive analysis involved frequency and percentage calculations for straightforward comparisons between categories. Equation 3 $P(Y_i = 1)$ is a probit regression model that predicts probabilities related to categorical variables. $P\ (Y_{1i} = 1)$ to $P\ (Y_{4i} = 1)$ are a series of probit regression models used to indicate the probabilities of different outcomes.

For the likelihood of adopting Sustainable Waste Management (SWM), 0 if Collected by the Municipality; 1 if sold to garbage contractors); For the enterprise having environmental laws, 0 if yes; 1 if no; For enterprise demand on

authority to the private sector, 0 if Full authority; 1 if Partial authority; and For enterprise having post-disaster resilience Equation 3 Probit regression equation measures, 0 if yes; 1 if no. Probit uses a binary variable; it cannot be normal.

$$P(Y_{ki} = 1) = \emptyset(\beta_0 + \beta_1 Enterprise\ type + \beta_2 Enterprise\ investment\ size + \beta_3 Enterprise\ establishment\ (yrs) + \beta_4 ManagerType + \beta_5 Manager\ Education\ level + \beta_6 Manager\ ST\ Awareness + \beta_7 Manager\ SCP\ Awareness + \epsilon_i)$$

Where:

$P(Y_{1i} = 1)$ = probability of selling garbage to contractors.

$P(Y_{2i} = 1)$ = probability of the having private environmental laws.

$P(Y_{3i} = 1)$ = probability choice for demanding the full environmental protection.

$P(Y_{4i} = 1)$ = probability of having own planned resilience against disaster.

Results and Discussion

Table 1 presents data on 150 enterprises, delineating key characteristics within the sample. It reveals that 30.7% of the enterprises are restaurants, while 69.3% are hotels. Investment sizes are divided into "Below Median" (49.3%) and "Above Median" (50.7%), the median being NPR10000000/$75168.81. 62.7% of enterprises were established before the median year of 2016 accounting for and 37.3% were established after. Operation managers primarily consist of "Executive Employees" (57.3%) compared to "Owners" (42.7%). Education levels vary, with 17.4% having school-level education, 32.2% holding undergraduate degrees, and 50.3% possessing graduate or higher qualifications. Additionally, most managers exhibit awareness of sustainability (73.2%) and supply chain and procurement matters (75.7%).

Table 1: Enterprises Profile

Enterprise Profile (n = 150)	Classification	%
Enterprise Type	Restaurant	30.7
	Hotel	69.3
Enterprise Investment size	Below Median (NPR10000000/$75168.81)	49.3
	Above Median (NPR10000000/$75168.81)	50.7
Year of establishment	Below Median Year 2016	62.7
	Above Median Year 2016	37.3
Operation Manager type	Executive Employee	57.3
	Owner	42.7
Manager Education	School Level	17.4
	Undergraduate	32.2
	Graduate and above	50.3
Manager Awareness of ST	No	26.8
	Yes	73.2
Manager Awareness of SC&P	No	24.3
	Yes	75.7

Source: Survey Data from Hotel and Restaurant enterprises, Pokhara, Nepal (2021)

Table 2 provides information on the results of a Confirmatory Factor Analysis (CFA) for latent constructed as Sustainable practices. The factor loadings are relatively high, and the squared factor loadings are above 0.5 for most variables, indicating good convergent validity. The composite reliability is high at 0.9, which suggests strong internal consistency. The AVE is also acceptable at 0.6. Furthermore, the AVE (√AVE) square root exceeds 0.7 for most variables, confirming convergent validity. Therefore, the table indicates that the "Sustainable practices" construct demonstrates reliability and convergent validity.

Table 2: Reliability and Validity Using CFA Analysis with SPSS

Construction	Variable	λ	$\lambda 2$	1 - $\lambda 2$	CR	AVE	√AVE	CV
Sustainable practices	Gas Usage	0.8	0.6	0.4	0.9	0.6	0.8	Yes
	Waste Management Choice	0.7	0.5	0.5				
	Private environment law	0.6	0.4	0.6				
	Water Usage	0.8	0.7	0.3				
	Planned resilience against disaster	0.7	0.5	0.5				
	Source of Energy	0.9	0.7	0.3				
	Enterprise choice for the full authority of environmental protection	0.6	0.3	0.7				
	Sum	5.1	3.7	3.3				

Source: Survey Data from Hotel and Restaurant enterprises, Pokhara, Nepal (2021)

Resource Consumption

Table 3 outlines water, gasoline, and electricity usage trends across various enterprise types, investment sizes, establishment years, manager types, education levels, and awareness of Sustainable Tourism (ST) and Sustainable Consumption and Production (SCP) in 2018 and 2019. Hotels consistently exhibit higher water usage than restaurants, widening the gap from 25% to 31% from 2018 to 2019. Conversely, restaurants display higher gasoline usage, maintaining a 6% difference in 2018 and a 5% difference in 2019 compared to hotels. Regarding electricity consumption, there is a notable gap in hybrid energy adoption in hotels, indicating 132% times higher.

Table 3: Resource Consumption in Hotels and Restaurant Enterprise of Pokhara

		Water usage (ltr)$_a$		Gasoline usage (ltr)$_b$		Source of electricity	
		2018	2019	2018	2019	National Grid %	Hybrid %
Enterprise Type	Restaurant	77,675	73,667	3,161	3,178	63	37
	Hotel	97,222	97,225	2,969	3,020	14	86
Enterprise Investment size	Below Median ($75168.81)	1,23,243	1,26,522	4031	3908	32	69
	Above Median ($75168.81)	1,47,535	1,56,542	4906	5208	27	73
Enterprise Year of establishment	Established before the median year 2016	1,31,890	1,39,516	4564	4640	27	73
	Established after median year 2016)	1,42,000	1,46,100	4288	4332	33	67
Operation Manager type	Employee	99,288	97,972	3,387	3,347	28	72
	Owner	77,792	76,532	2,537	2,713	31	69
Manager Education	High School	79,619	78,857	2,036	2,007	15	85
	Undergraduate	83,000	80,538	2,668	2,846	46	54
	Graduate	100,508	99,897	3,609	3,596	24	76
Manager Awareness of ST	No	86,333	86,088	3,153	2,921	28	72
	Yes	92,793	91,238	2,999	3,141	30	70
Manager Awareness of SCP	No	79,964	77,767	3,339	3,013	31	69
	Yes	94,054	93,500	2,956	3,112	28	72

a. Monthly Average water usage (liters per month) for the years 2018, 2019, and 2020
b. Monthly Average gasoline usage (liters per month) for the years 2018, 2019, and 2020
Source: Survey Data from Hotel and Restaurant Enterprises, Pokhara, Nepal (2021)

Findings from Table 4 show the nature of tourism enterprise resource consumption. Enterprise investment size positively affects gasoline and water usage. Enterprise manager type (owner and employee) negatively correlates with water usage; employee-managed enterprises use more water than owner-managed hotels. A positive correlation exists between enterprise manager education and gasoline and water usage. Similarly, the results found that enterprise managers' awareness of sustainable consumption and production (SCP) positively correlates with water usage. There is a statistically significant difference between how hotels and restaurants utilize the national grid and solar power. It means that hotels or restaurants (or both) are more likely to use one type of power source than the other; hotels use both the national grid and solar power, whereas most restaurants rely on the national grid only.

Table 4: Enterprise Resource Consumption Nature Using Spearman Correlation and Kruskal Wallis

		Gasoline usage$_a$	Water usage$_b$	Electricity Source
Enterprise Type (for h test n = 147)	Restaurant	- 0.071 (0.4)	- 0.157 (0.065)	**0.000*** **
	Hotel	n = 142	n = 138	
Enterprise Investment size		**0.188*** (0.057) n = 103	**0.406*** ** (0.000) n = 101	0.113 (0.254) n = 103
Enterprise Establishment (yrs.)		0.08 (0.355) n = 137	0.054 (0.530) n = 133	- 0.053 (0.531) n = 142
Enterprise Manager (for h test n = 147)	Owner	- 0.11 (0.192)	**- 0.281**** (0.001)	0.641
	Employee	n = 142	n = 138	
Manager Education (for h test n = 146)	School level	**0.172*** (0.041) n = 141	**0.214*** (0.012) n = 137	0.652
	Undergraduate			
	Graduate			
Manager Awareness of ST (for h test n = 146)	No	0.024 (0.779)	0.085 (0.326)	0.842
	Yes	n = 141	n = 137	
Manager Awareness of SCP (for h test n = 145)	No	0.003 (0.971)	**0.172*** (0.046)	0.713
	Yes	n = 140	n = 136	

Note: a. Monthly Average water usage (liters per month) for the years 2018, 2019, and 2020 b. Monthly Average gasoline usage (liters per month) for the years 2018, 2019, and 2020 Red font - Kruskal Wallis's p-value; Blue font - Spearman correlation (p-Values are enclosed in parentheses)

** indicates $p < 0.01$; * indicates $p < 0.05$

Source: Survey Data from Hotel and Restaurant Enterprises, Pokhara, Nepal (2021)

Waste Management Choices

Descriptive enterprise's result of solid waste management choices shows that 46.7% of the respondents reported that the Municipality collects their solid waste. In contrast, a more significant % of enterprises, accounting for 53.3%, stated that they opt to "sell to garbage contractors" for their solid waste management. Probit analysis results presented in Table 5 show a Manager Education (1 = university and above) variable coefficient of -0.321753, indicating that higher levels of education (i.e., University and above) impact solid waste management compared to individuals with a school-level education. It suggests that the likelihood of solid waste sold to garbage contractors decreases as education increases. The marginal effect on Pr (y=1) is -0.1129, implying that for each unit increase in education level, the probability of solid waste sold to garbage contractors decreases by 0.1129, p-value < 0.05.

The coefficient for the variable manager awareness of SCP is 1.079561, suggesting that tourism enterprise managers who know SCP are likelier to sell their solid waste to garbage contractors rather than rely on the Municipality for waste collection. The marginal effect on Pr(y=1) is 0.3787, which implies enterprise managers with an awareness of 0.3787 have a higher probability of selling their solid waste to garbage contractors, p < 0.10.

Table 5: Probit Regression Results of Factors Influencing Solid Waste Management Choice in Enterprise

Variable	Coefficient	Marginal Effects on Pr ($\boldsymbol{y}$ = 1)	p - value
Enterprise (1 if hotel)	0.133317	0.0468	0.5946
Enterprise Investment (USD)	-0.072335	-0.0254	0.5968
Enterprise establishment (yrs.)	-0.023931	-0.0084	0.1178
Manager (1=Owner)	0.073512	0.0258	0.7495
Manager Education (1 = University and above)	-0.321753	-0.1129	0.0382**
Manager ST Awareness (1=Yes)	0.008078	0.0028	0.9884
Manager SCP Awareness (1=Yes)	1.079561	0.3787	0.0611*
Constant	47.833674		0.1207

Dependent Variable: Solid Waste Management (0 if Collected by Municipality; 1 if sold to garbage contractors); n = 141; Wald χ^2 statistic = 19.2, (8), p - value = 0.014; AIC: 189.88

*Sig at 10%, **sig at 5% Source: Survey Data from Hotel and Restaurant Enterprises, Pokhara, Nepal (2021)

Enterprise with Private Environmental Law

Descriptive statistics on the availability of enterprise's ecological laws for environmental protection in tourism enterprises. 45.3% of tourism enterprises reported having local ecological laws, and 52.7% reported not having such laws. The Probit regression analysis presented in Table 4 examines the factors affecting the availability of local ecological laws. The coefficient for this variable is 0.05163. The marginal effect on the probability (Pr) of local ecological laws being available is 0.0175, which means that for every unit increase in the establishment year, the probability of local ecological laws being available increases by 0.0175, p-value < 0.01. This finding suggests that newer establishments are more likely to prioritize and implement local ecological laws, reflecting a growing awareness and commitment to environmental sustainability. For awareness of sustainable tourism, the coefficient for this variable is -1.17479. The marginal effect on the probability (Pr) of local ecological laws being available is -0.3989. Suppose there is awareness of sustainable tourism (coded as 1); the likelihood of local environmental laws being available decreases by 0.3989, p-value = 0.05. It suggests that when managers of enterprises are aware of sustainable tourism practices, the probability of having local ecological laws in place decreases.

Table 6: Probit Regression Results of Factors Influencing the Enterprise to Hold Private Environment Law

Variable	Coefficient	Marginal Effect on Pr ($\boldsymbol{y}$=1)	p - value
Enterprise (1 if hotel)	0.20551	0.0698	0.42752
Enterprise Investment (USD)	-0.12344	-0.0419	0.38018
Enterprise establishment (yrs.)	0.05163	0.0175	0.002**
Manager (1=Owner)	-0.33558	-0.114	0.156
Manager Education (1 = University and above)	0.15363	0.0522	0.32825
Manager ST Awareness (1=Yes)	-1.17479	-0.3989	0.05**
Manager SCP Awareness (1=Yes)	0.18834	0.064	0.76005
Constant	-103.06108		0.00246
Dependent Variable: Availability of private environmental laws (0 if yes; 1 if no); n = 138; Wald χ^2 statistic = 21.9, (8), p - value = 0.005; AIC: 180.92			

*Sig at 10%, **sig at 5% Source: Survey Data from Hotel and Restaurant Enterprises, Pokhara, Nepal (2021)

Stakeholder Involvement and Authority

Descriptive statistics show that most enterprises that did not support (88.6%) are willing to get full authority for environmental protection in the tourism industry. A smaller proportion of enterprises (11.4%) advocated that tourism enterprises should have full environmental protection authority. The Probit regression analysis from Table 6.9 shows that none of the specific factors of the Enterprise, such as size, industry, or location, had a statistically significant impact on the Enterprise's demand for Full Authority to protect the environment. Findings promote a collaborative approach between the government and private sector through public-private partnerships (PPPs).

Table 7: Probit regression results of factors influencing enterprise choice for the full authority of the environmental protection

Variable	Coefficient	Marginal Effect on Pr (***y***=1)	*p* - value
Enterprise (1 if hotel)	0.07455	0.0138	0.816
Enterprise Investment (USD)	0.05981	0.011	0.736
Enterprise establishment (yrs.)	-0.00225	-0.0004	0.904
Manager (1=Owner)	-0.33444	-0.0617	0.254
Manager Education (1 = University and above)	-0.22399	-0.0414	0.279
Manager ST Awareness (1=Yes)	0.0074	0.0014	0.991
Manager SCP Awareness (1=Yes)	0.48872	0.0902	0.473
Constant	5.67132		0.88

Dependent Variable: Authority to the private sector (0 if Full authority; 1 if Partial authority); n = 139; Wald χ^2 statistic = 71.3, (8), p - value = 0.000; AIC: 110.57

Source: Survey Data from Hotel and Restaurant Enterprises, Pokhara, Nepal (2021)

Environmental Disaster Preparedness

Descriptive statistics show that 9.3% of hotels and restaurants have implemented proactive strategies, and 86.0% have not adopted such measures, suggesting a potential vulnerability to the impact of disasters. Table 8 presents the results of a Probit regression analysis that examines the factors affecting the availability of planned resilience in a sample of 134 cases. The dependent variable is coded as 0 if planned resilience is available and 1 if not. The analysis shows that investment size (NPR) has a statistically significant adverse effect on the probability of having planned resilience, with a coefficient of -0.64773 and a p-value of 0.005***, suggesting that as investment

size increases, the likelihood of having planned resilience decreases.

Table 8 Probit regression results of factors influencing enterprise to have own planned resilience against disaster

Variable	Coefficient	Marginal Effect on Pr (y=1)	p - value
Enterprise (1 if hotel)	0.09867	0.0156	0.7873
Enterprise Investment (USD)	-0.64773	-0.1023	0.005***
Enterprise establishment (yrs.)	0.01405	0.0022	0.4847
Manager (1=Owner)	-0.14854	-0.0235	0.6485
Manager Education (1 = University and above)	-0.09637	-0.0152	0.6737
Manager ST Awareness (1=Yes)	-0.37228	-0.0588	0.6483
Manager SCP Awareness (1=Yes)	0.06681	0.0106	0.936
Constant	-25.14106		0.5347

Dependent Variable: Available of planned resilience (0 if yes; 1 if no); n = 134; Wald χ^2 statistic = 60.5, (8), p - value = 0.000; AIC: 93.22

*** indicates $p < 0.01$ Source: Survey Data from Hotel and Restaurant Enterprises, Pokhara, Nepal (2021)

Higher investment enterprises consume more resources like gasoline and water. This finding corroborates previous studies highlighting the resource-intensive nature of larger establishments in the tourism sector (Tirado et al., 2019). Enterprises managed by employees tend to use more water than under the owner's operations. This aligns with previous research from the Muga River basin, Mediterranean area, highlighting the impact of enterprise management type and their practices on resource consumption (Bagur et al., 2020). This observation underscores the influence of management practices on sustainability efforts, emphasizing the need for responsible resource management regardless of ownership structure. The study also uncovers contrasting energy consumption patterns between hotels and restaurants. Previous findings suggest Hotels demonstrate a greater inclination towards adopting hybrid energy sources, aligning with the growing trend of eco-friendly practices in the hospitality industry (Dani et al., 2021).

Enterprise managers with higher education levels and awareness of SCP paradoxically oversaw enterprises with increased resource consumption. This suggests a potential disconnect between theoretical understanding and practical

implementation and contradicts previous research from Turkey, highlighting socio-economic barriers to sustainability in developing country tourism industries (Tosun, 2001).

Enterprises with educated managers tend to utilize municipal garbage services, suggesting a preference for compliance and established waste management systems. On the other hand, enterprises with managers aware of SCP principles often opt to sell garbage to private collectors, potentially driven by economic incentives or a desire for specialized waste handling. This finding underscores the multifaceted nature of waste management decisions and the interplay of various factors, including education, economic considerations, and sustainability awareness (Wilson et al., 2022). Both choices validate sustainable practices. Engaging with municipal services for waste disposal is advocated as a cost-effective and dependable solution, eliminating the need for negotiations with private collectors and fostering sustainable tourism (Wilson et al., 2022). Private collectors often employ more specialized and efficient waste management practices, such as informal recycling networks, which can enhance efficiency, innovation, and sustainability compared to traditional municipal services (Wilson et al., 2006). It aligns with the circular economy principles, emphasizing minimizing waste and maximizing resource efficiency in sustainable business practices (Kirchherr et al., 2017).

The study further reveals a positive association between the establishment year of tourism enterprises and the presence of local ecological laws. This observation reflects the evolving landscape of sustainability standards and the increasing influence of industry certifications and associations promoting sustainable tourism, including Green Key Global, LEED (Leadership in Energy and Environmental Design), Biosphere Reserve Certification, and Fairtrade Tourism (Könnölä et al., 2020). It suggests that newer enterprises are more likely to align with ecological regulations, signifying a growing commitment to environmental responsibility within the industry that supports the EEG framework. Hotel and restaurant enterprises with managers aware of ST negatively impact the availability of ecological laws in the enterprise. This finding contrasts with the previous study's focus on the BCorp model's efforts to balance economic, social, and environmental imperatives, emphasizing internal tensions within sustainable business models (Stubbs, 2019).

Larger enterprises with higher investment sizes may be less likely to have planned resilience against disasters. This observation challenges the traditional notion that larger firms possess more resources to manage risks and highlights the potential vulnerabilities of larger establishments in the face of unforeseen events. Business size impacts the recovery speed of micro

and small tourism businesses in the face of compound disasters, suggesting that larger companies may struggle more with resilience (Nguyen et al., 2022). It emphasizes the need for proactive disaster preparedness and resilience planning across all enterprise sizes.

This research contributes to stakeholder theory and environmental-economic geography (EEG) by elucidating the complex dynamics of stakeholder interests in sustainable tourism and providing empirical evidence of the co-evolution of economic activities and environmental contexts. It challenges assumptions about enterprise resilience and sustainability adherence, highlighting vulnerabilities of larger establishments and the knowledge-action gap in ecological compliance. These findings advance a more nuanced understanding of stakeholder behavior and the interplay between economic development and environmental protection in tourism contexts. Managerial implications derived from this study include the need for tailored waste management strategies based on enterprise characteristics, targeted interventions for renewable energy adoption (particularly in restaurants), proactive resilience planning for larger enterprises, and an emphasis on multi-stakeholder engagement in sustainable tourism development. These insights offer practical guidance for managers seeking to balance economic viability with environmental responsibility in the tourism sector.

Conclusion

This research offers valuable insights into the complexities of sustainable tourism development in the context of Lakeside, Pokhara. The findings contribute to both stakeholder theory and environmental and economic geography by highlighting the dynamic interplay of stakeholder interests, environmental contexts, and economic activities. The study emphasizes the need for collaborative approaches, proactive disaster preparedness, restaurant business eligibility for climate finance investment, and interventions that bridge the gap between awareness and action to achieve a more sustainable and resilient tourism industry.

Integrating environmental economic geography (EEG) and stakeholder theory provides a comprehensive framework for understanding the relationship between economic activities, environmental factors, and sustainable practices in the tourism industry. Future research should investigate the barriers preventing the practical implementation of sustainable practices despite high managerial awareness and assess the impact of emerging ecological laws and standards on older tourism enterprises and their adaptation strategies.

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