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DO ENVIRONMENTAL CONCERNS DRIVE TRAVELERS TO ADOPT MORE SUSTAINABLE HABITS?

Elmin MAMMADOV [1*], Zehra SALTIK [2]

[1] Cyprus International University, Tourism and Hotel Management, MSc, Nicosia, North Cyprus; elminmemmedov595@gmail.com (E.M.)
[2] İstanbul Bilgi University, Faculty of Applied Sciences, TourismManagement, İstanbul, Turkey; zehra.saltik@bilgi.edu.tr (Z.S.)

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Abstract: Tourism is one of the fastest-growing industries at a global scale. The rapid growth of global tourism has intensified the urgency of addressing its environmental impacts, driving researchers into searching the determinants of sustainable travel behavior. Considering the expansion of consequences of tourism movements, the current study aims to investigate the role of environmental concerns in shaping tourists' sustainable travel habits, personal environmental norms, and green product purchasing behavior. Drawing on the Theory of Planned Behavior (TPB), the research develops and tests six hypotheses to explore the interrelationships among these constructs. Data were collected through a structured survey distributed face-to-face to international tourists visiting North Cyprus, and the responses were analyzed using SPSS software. The study comes up with some significants findings. The study puts forward that tourists' environmental concerns significantly impact their green product purchasing behavior. Yet, environmental concers of tourists were found not to impact sustainable travel behavior as well as personal environmental norms. This study highlights the role of personal norms in developing sustainable travel habits and green product purchasing behaviors. These findings increase the significance of differentiating between low-barrier consumer behaviors and higher-cost, context-dependent travel practices while studying the attitude–behavior relationship.

Keywords: sustainable tourism, environmental concerns, sustainable travel habits, personal environmental norms, green product purchasing behavior

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INTRODUCTION

The global tourism industry has experienced exponential growth in recent decades, becoming a cornerstone of many economies worldwide. However, this expansion has not been without consequences, as it has also precipitated a myriad of environmental challenges. Scholars and practitioners alike have increasingly turned their attention to the critical intersection of tourism and sustainability, recognizing the urgent need to address the adverse environmental impacts generated by tourism activities (Barcellos-Paula et al., 2024). In response, sustainable tourism has emerged as a pivotal paradigm aimed at reconciling the burgeoning tourism sector's economic benefits with its ecological and social responsibilities (Higham et al., 2001). Sustainable tourism, characterized by its commitment to minimizing environmental degradation, conserving natural resources, and promoting cultural preservation, represents a multifaceted approach to responsible travel. Central to the discourse on sustainable tourism is the role of individual tourists and their environmental concerns, which serve as crucial determinants of their travel habits and behaviors.

Environmental concerns encompass a spectrum of attitudes, awareness, and apprehensions regarding environmental issues, including but not limited to climate change, pollution, and resource depletion (Minton & Rose, 1997).

The current study aim to delve deeper into the intricate dynamics among environmenal concerns, sustainable travel habbits, personal environmental norms, and green product purchasing behavior. Understanding tourists' environmental concerns is paramount for elucidating their motivations and decision-making processes in adopting sustainable travel practices. In parallel, sustainable travel habits epitomize the tangible manifestations of tourists' commitment to environmental stewardship during their travel experiences. These habits encompass a diverse array of behaviors and practices, ranging from conscientious choices in transportation modes to eco-friendly accommodation preferences and environmentally conscious activities undertaken while travelling (Barcellos-Paula et al., 2024).

Similarly, personal environmental norms constitute the internalized set of beliefs, values, and ethical principles that guide individuals' environmentally responsible behavior (Schwartz, 1977). These norms serve as a moral compass, shaping individuals' decisions and actions concerning environmental conservation and sustainability. Furthermore, sustainable consumption in tourism involves green product purchasing behavior, such as supporting local and organic food producers,

* Corresponding author

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reducing food waste, and opting for sustainable seafood options to support sustainable food systems and minimize environmental degradation (Ayad et al., 2021; Han, 2020; Nekmahmud et al., 2022).

The current study is considered significant to contribute to the burgeoning field of sustainable tourism research and its potential implications for tourism stakeholders, policymakers, and marketers. It is expected to offer invaluable insights into the underlying mechanisms driving environmentally responsible travel habbits and behaviors. Furthermore, the findings of this study hold practical implications for tourism stakeholders and policymakers seeking to promote environmentally responsible tourism practices and foster sustainable tourism development. Similar to previous related studies, this study relies on reported behaviors rather than observing actual behavior. However, this study differs from others byintegrating environmental concerns, personal environmental norms, sustainable travel habits, and green product purchasing behavior into a single explanatory framework, offering a more holistic understanding of sustainable tourism behavior.

LİTERATURE REVİEW

An Overview on Sustainable Travel Behavior and Hypotheses Developments

The object of sustainable behaviors in tourism context is "tourist". Sustainable behavior refers to consumption patterns and points to the consumers. The consumers of tourism are tourists and the concept of "sustainable behavior" within tourism context is used as "sustinable tourist behavior". Sustainable tourist behavior represents a conscious effort by travelers to align their actions with principles of sustainability, aiming to foster long-term environmental, social, and economic well-being in tourism destinations (Han, 2021; Li et al., 2023). This behavior encompasses a range of practices, from minimizing resource consumption and supporting local economies to respecting cultural heritage and promoting community engagement.

Sustainable tourist behavior involves a set of actions and decisions taken by tourists that seek to minimize negative environmental, socio-cultural, and economic impacts while maximizing benefits for the host communities and ecosystems. It encompasses a wide range of practices, such as selecting eco-friendly transportation modes, prefering environmentally certified accommodations, participating in low-impact recreational activities, purchasing green products, and supporting local communities through responsible consumption (Budeanu, 2007; Han et al., 2010; Juvan & Dolnicar, 2016). Scholars emphasize that sustainable behaviors are not only shaped by external factors (i.e. regulations, marketing, infrastructure), but also by internal factors (i.e. personal norms, environmental concerns, pro-environmental values) (Juvan & Dolnicar, 2014; Ramkissoon et al., 2013). Sustainable tourist behavior can be considered as both a raising individual moral responsibility towards the environment and a response to wider sustainability discourses in tourism field. Moreover, it constitutes a critical pathway through which the tourism sector can shift from exploitative practices to more resilient and responsible forms of development (Dolnicar et al., 2018). This behavioral orientation represents a crucial pathway to achieving the United Nations Sustainable Development Goals, aligning tourist experiences with broader global sustainability imperatives (Miller et al., 2010; Kiatkawsin & Han, 2017). Sustainable tourist behavior represents the efforts of demand side of tourism. Given that the efforts of supply side alone will not be sufficient to achieve the goals of sustainable tourism, the individual sustainable behaviors of tourists are of great importance.

While studying sustainable tourist behavior, researchers use various theories to put forward the influencing factors. One of these theories is the Theory of Planned Behavior (Ajzen, 1985). The current study also utilizes the aforementioned theory to put forward the impact of environmental concerns on tourists' sustainable travel habits, their personal environmental norms as well as green product purchasing behaviors. As being one of the most widely used theory to understand and predict human behavior accross various domains (e.g. Muna et al., 2025), this theory explains the motivational and volitional processes that help individuals translate beliefs and values into behaviors. TPB has been extensively validated in predicting pro-environmental behaviors, such as recycling, energy conservation, and sustainable travel practices (Han et al., 2010; Lam & Hsu, 2006). The TPB is especially considered appropriate for this study as it allows the incorporation of environmental concerns as antecedents, affecting habits, norms and behaviors. It offers a nuanced explanation of how psychological dispositions leads to tourist behaviors. By employing TPB, this study situates itself within a well-established theoretical tradition while extending its application to the underexplored nexus of environmental concerns, sustainable travel habits, personal norms, and green product purchasing.

While examining the factors affecting susainable attitudes and behaviors, environmental concerns come to forefront. Especially, the ever-increasing and diversified environmental issues seem to increase environmental concerns among individuals. According to studies (i.e. Gössling & Peeters, 2015), environmental concerns are likely to shape attitudes towards sustainable travel by adopting eco-friendly practices (e.g., choosing public transportation or eco-certified accommodations). Tourists who are concerned about issues such as climate change and pollution may view sustainable travel habits not only as personally beneficial but also as morally and socially desirable (Miller et al., 2010). Environmental concerns refer to the individuals' recognition of ecological issues and their emotional response to them. Empirical research substantiates that stronger environmental concerns are significantly linked with greater pro-environmental behaviors, such as purchasing eco-labelled products, recycling, and mindful consumption (Yildirim et al., 2024; Kizildag & Yildiz, 2024).

A former campus-based study in Malaysia confirmed that environmental concern influences individuals' attitudes toward anti-littering, which then drives the intention to perform that behavior (Ibrahim et al., 2021). As seen, concern contributes to the favorable evaluation (attitude), which then motivates action. Additionally, a study among international tourists visiting Turkey put forward the direct impact of environmental perception on sustainable vacation behavior (Saltik & Akova, 2024). Furthermore, emotional bonds with the environment (environmental attachment) and moral obligation were found to enhance the translation of concerns into sustainable green behaviors, especially in tourism contexts (Raza et al., 2024). Depending on the results of previous studies and in line with the theory used, the following hypotheses are proposed:

H_1: Tourists' environmental concerns significantly influence their sustainable travel habits.

H_2: Tourists' environmental concerns significantly influence their green product purchasing behavior.

H_3: Tourists' environmental concerns significantly influence their personal environmental norms.

In addition to environmental concerns, this study also aims to explore the role of personal environmental norms in shaping sustainable tourist behavior. Personal environmental norms are defined as internalized moral obligations that help act in environmentally responsible ways and play a critical role in taking specific pro-environmental actions (Schwartz, 1977; Stern et al., 1999). Tourists who feel a moral responsibility toward nature are more likely to both adopt sustainable travel habits and prefer environmentally friendly products during their trips (Barcellos-Paula et al., 2024). Recent tourism and consumer studies indicate that when individuals internalize environmental conservation, they are more likely to display favorable habits, attitudes and behaviors towards sustainable travel options.

For example, Torabi et al. (2025) demonstrated that personal norms significantly predict concrete conservation behaviors (e.g., water-saving) and operate via anticipated pride/guilt emotions, strengthening intention–behavior links in real travel contexts. Similarly, another study showed that activating or making personal norms nudges sustainable mobility decisions (Giubergia et al., 2024). In nature-based and trekking settings, personal norms reliably predict pro-environmental behaviors, often mediated by environmental awareness, which suggests that once a moral standard is internalized, awareness and action align more consistently (Chao & Zhang, 2024). Another study supports these results and puts forward that moral/personal norms explain substantial variance in residents' and tourists' pro-environmental behaviors (Huo et al., 2025). This result is in line with the idea that personal norms complement rational/volitional predictors to fulfill intention–behavior gaps.

In consumption domains, the normative determinants (subjective and personal/moral norms) and sustainability consciousness bolster green purchase intentions and behaviors (Cheng et al., 2024; Islam et al., 2024). The recent reviews of pro-environmental behavior in tourism explicitly reaffirm the central role of personal norms in explaining pro-environmental travel and purchasing behavior, underscoring their status as a "last mile" psychological lever from values/beliefs to behavior (Carvajal-Trujillo et al., 2024). Depending on the theoretical background and TPB, the hypotheses below are offered:

H_4: Tourists' personal environmental norms significantly influence their sustainable travel habits.

H_5: Tourists' personal environmental norms significantly influence their green product purchasing behavior.

The impact of green product purchasing behavior on sustainable travel habits is another focus point of this study. Experimental evidence further indicates that an initial green purchase can increase subsequent green consumption choices, even though it may not generalize to different domains (Castro Santa & Drews, 2023). Another study, conducted in tourism field, documents that tourists' green purchasing intentions at destinations co-occur with and are driven by the same attitudinal and normative antecedents that predict sustainable travel behaviors (e.g., selecting green hotels, local/organic food, waste-reduction routines) (Gulzar et al., 2024). Some other tourism-related studies similarly point out that activating and supporting eco-friendly purchases (e.g., plant-forward dining) nudge travelers towards broader sustainable habits at the destination (e.g., waste reduction, mindful choices), highlighting the role of contextual cues and habit formation (Luna-Cortes et al., 2024; Voss et al., 2024). Tourists who enact green purchasing are primed both psychologically (identity/norms) and practically (skills/cues) to carry those choices forward as repeated, sustainable travel habits (Behn et al., 2025; Gulzar et al., 2024; Luna-Cortes et al., 2024; Santa et al., 2024). Accordingly, the hypothesis below is proposed:

H_6: Tourists' green product purchasing behavior significantly influences their sustainable travel habits.

In accordance with the proposed hypotheses, the research model is illustrated in Figure 1.

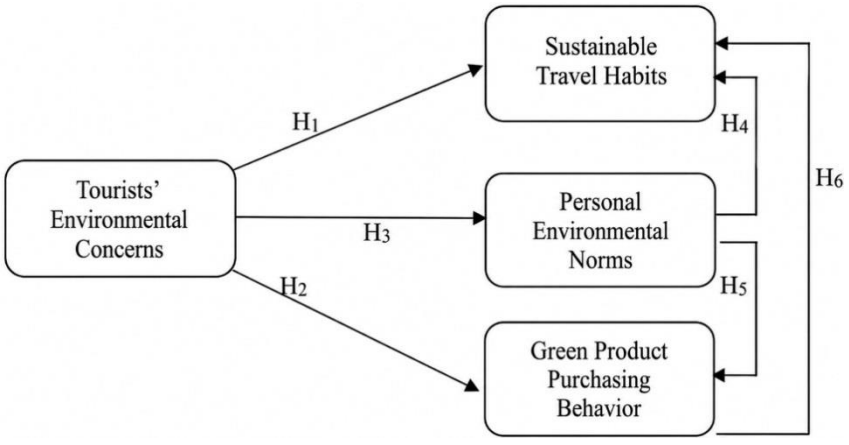

Figure 1. Research Model (Source: Authors' own work)

RESEARCH METHODOLOGY

This study adopts a quantitative research design, which entails the systematic collection and statistical analysis of numerical data to examine relationships among predefined variables (Creswell, 2014). This study is exploratory in nature and utilizes survey as data collection tool, which is widely used in social siences due to its being easy to implement, functional and scientifically accepted (Taherdoost, 2021). In the current study, environmental concern is positioned as independant variable, while sustainable travel habits, personal environmental norms and green product purchasing behavior

are placed as dependant variables. The variables are measured using structured instruments derived from previous literature. This approach reflects best practices in social science research, where validated scales ensure construct validity and measurement reliability (Hair et al., 2010). In order to measure environmental concerns, the scale developed by Minton & Rose (1997) was used. This scale captures awareness and attitudes towards environmental issues. Personal environmental norm, which is behavior-specific, is based on a measure developed by Schwartz (1977). Sustainable travel habits were measured using 9 items, which were adopted from the study by Gomes & Lopes (2023).

Finally, green product purchasing behavior was measured with 4 items, which were adopted by Higham et al. (2001). All constructs were measured using established multi-item scales, rated on a five-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree. Additionally, the survey included questions regarding demographic characteristics of the participants (i.e. gender, age, income). The population of this study consists of international tourists visiting North Cyprus, including major touristic areas such as Nicosia, Kyrenia, and Famagusta. To select participants, this study employed the convenience sampling method, a non-probability sampling technique. This approach was chosen due to its practicality and efficiency in reaching respondents who were readily available in public spaces and hotel areas. Although convenience sampling limits the generalizability of findings, it is widely accepted in exploratory and behavioral research where access to a random sample may not be feasible (Saunders et al., 2019). The sample size was determined using the standard formula for large populations (N > 100,000). To statiticians, the minimum sample size is considered 384, where the population is equal to or over 100 thousand, 1 million, or 10 million (Karagöz, 2019; Sekaran & Bougie, 2016).

Between March 2nd and May 10th, the surveys were distributed face-to-face in outdoor public spaces where tourists were present in high numbers. Additionally, cooperation was requested from hotel managers to support the data collection process. In total, 400 surveys were distributed, and 360 valid responses were collected and included in the final analysis. Each survey took approximately 10 minutes to complete. Before participation, all respondents were informed about the purpose of the study and assured that their participation was entirely voluntary. They were also told they could withdraw at any time if they felt uncomfortable. Participants were guaranteed that no personal or identifying information would be collected and that the data would be used solely for academic purposes.

DATA ANALYSİS

Preparation of data for analysis

Various preliminary procedures were carried out to make the research data suitable for statistical analysis. In this context, the questionnaire forms were systematically reviewed, and necessary controls were made to ensure data integrity. As a result of the evaluations, no questionnaires with incorrect or incomplete data were found, and therefore, all 360 questionnaires were included in the analysis process. Each statement in the questionnaire form was coded appropriately and transformed into analysis variables, and then the data were transferred to SPSS software.

One of the important steps in determining the suitability of the data for statistical analysis is the examination of normality distribution characteristics. Accordingly, univariate and multivariate normality analyses were performed. Within the scope of univariate normality, the skewness and kurtosis values of each variable were evaluated. Although there are no definite limits for these values in the literature, skewness values between -3 and +3 and kurtosis values between -10 and +10 are considered within acceptable limits. The analysis based on 360 observations determined that all 37 variables in the study were within these limits (Kline, 2009; Brown, 2015). This result shows that the data meet the normality assumption required for the analysis. The relevant kurtosis and skewness values are detailed in Appendix 1.

Data Analysis Methods

In the study, explanatory factor analysis (EFA) and multiple regression analysis were employed to analyze the data**.** EFA was conducted to explore the underlying factor structure of the measurement scales and to ensure construct validity by identifying latent dimensions within the dataset. This analysis helped determine which items clustered together, thereby verifying the theoretical structure of the variables. Following the factor analysis, multiple regression analysis was used to examine the relationships between the dependent and independent variables within the proposed conceptual model. This technique allowed for the assessment of the predictive power of the independent variables on the dependent variable, while also controlling for potential multicollinearity and ensuring the assumptions of linearity, normality, and homoscedasticity were met.

Explanatory Factor Analysis

In order to evaluate the validity of the constructs of Tourists' Environmental Concerns, Personal Environmental Norms, Sustainable Travel Habits, and Green Product Purchasing Behavior, Exploratory Factor Analysis (EFA) was applied. EFA is one of the widely preferred methods in social sciences to provide evidence of construct validity in scale development, adaptation, or use of an existing scale in a different sample (Cokluk et al., 2012). This analysis aims to reveal the basic dimensions underlying the observed variables by examining the relationships between variables.

In order to assess the applicability of EFA, some basic prerequisites were taken into consideration. First, the suitability of the data matrix for factor analysis is determined according to the correlation levels; accordingly, it is expected that there are at least 0.30 correlations between the variables. In addition, Bartlett's Test of Sphericity tests the presence of significant correlations in the data matrix; a p value less than 0.05 indicates that this condition is met. Kaiser-Meyer-Olkin (KMO) measurement was used to determine the adequacy of the sample, and a value of 0.80 and above was considered excellent, 0.70 and above was considered good, 0.60 and above was considered moderately acceptable, and below 0.50 was considered inadequate (Hair et al., 2010). The explained variance ratio was taken into consideration when determining the number of

factors. Although it is ideal to explain more than 60% of the total variance, variance ratios explained between 40% and 60% are also considered sufficient in social sciences (Cokluk et al., 2012). In addition, in order for a variable to be considered to have a significant factor loading, the relevant factor loading value must be at least ±0.40 (Tabachnick & Fidell, 2013).

Regression Analysis

Within the framework of the theoretical model developed in line with the purpose of the study, multiple linear regression analysis was performed to analyze the relationship between the dependent variable and one or more independent variables (Alpar, 2010). Some basic assumptions must be met for this analysis to provide valid and reliable results. These include a linear relationship between variables, measurement of variables on an interval or ratio scale, normal distribution, and the absence of high multicollinearity among independent variables (Field, 2013).

In this context, tourist environmental concerns, personal environmental norms, sustainable travel habits, and green product purchasing behavior were taken as independent variables, and interest factors were taken as dependent variables. Multicollinearity is the presence of high correlation between independent variables.

Pairwise correlation coefficients above 0.80 may indicate this problem (Büyüköztürk, 2014). For this reason, the correlation values between variables were examined during the analysis process. The presence of multicollinearity was evaluated with Tolerance and VIF (Variance Inflation Factor) values. Tolerance values above 0.10 and VIF values below 10 indicate no multicollinearity problem in the model (Akbulut, 2010).

FİNDİNGS

Findings Regarding the Demographic Characteristics of the Participants

Data on the demographic characteristics of the participants are presented in Table 1. When the table is analyzed, it is seen that 50.6% of the participants are female and 49.4% are male. In terms of age distribution, it was found that the highest proportion was in the 26-33 age group with 40.4%, followed by the 34-40 age group with 32%, the 18-25 age group with 15.7%, and individuals over the age of 40 with 11.9%. In terms of education level, 51.7% of the respondents had a bachelor's or associate's degree, 42.5% had a master's degree or higher, and only 5.8% had a high school or technical high school degree. In terms of monthly income level, 66.9% of the participants had an income in the range of $1,000-5,000, and low income group (16.6%) and high income group (16.6%) were equally represented.

Table 1. Demographic characteristics of participants (Source: Author's own work)

Gender	**N**	**Percent**
Female	182	50.6
Male	178	49.4
Total	360	100.0
Age	N	Percent
18-25	60	16.7
26-33	141	39.2
34-40	113	31.4
Over 40	46	12.8
Total	360	100.0
Educational Attachment	N	Percent
Middle School or Lower	1	0.3
High School or Technical School	2	6.2
College or Bachelor's Degree	188	52.2
Master's Degree or higher	148	41.1
Total	360	100.0
Monthly Income	N	Percent
Under 1.000 $	62	17.2
Between 1.000 – 5.000 $	240	66.7
Over 5.000 $	58	16.1
Total	360	100.0
Travel Frequency	N	Percent
Only Once	130	36.1
Between 2-5	164	45.6
More Than 5	66	18.3
Total	360	100.0

Findings Regarding Exploratory Factor Analysis

The AFA results of the scales used in the study are given in Table 1. Accordingly, four statements were removed from the Environmental Concern scale, which initially included 16 statements because they were below the factor loading of 0.40 (Tabachnick & Fidell, 2013). As a result, a scale consisting of 12 items was obtained (Cokluk et al., 2012). The Cronbach's Alpha value, which shows the scale's internal consistency, is 0.868. In addition, Cronbach's Alpha values show the internal consistency of each factor structure on the scale, which is above 0.70 (Hair et al., 2010). The Cronbach's alpha coefficient represents the average of the correlations obtained by splitting the scale into different halves. This coefficient

tends to increase as the number of items in the scale increases and takes a value between 0 and 1. In research, a minimum threshold of 0.60 is generally considered acceptable. One item of the Sustainable Travel Habits scale was removed because it was below the factor loading of 0.40. As a result, a scale consisting of 8 statements was obtained. The Cronbach's Alpha value, which shows the scale's internal consistency, is 0.694. The Cronbach's Alpha value of the Personal Environmental Norms scale is 0.817. Cronbach's Alpha value of the Green Product Purchasing Behavior scale is 0.714. In general, the KMO value of the scale is 0.822, which is above the recommended value of 0.70 (Hair et al., 2010). Bartlett's Test of Sphericity was used to statistically reveal the presence of significant correlations between variables in factor analysis. As a result of Bartlett's test, the significance value was determined as p=0.000<0.05.

Table 2. AFA results (Source: Author's own work)

	Tourists' Environmental Concerns	Factor Loadings	Cronbach α	Total Variance Explained
Factors	EC15	.635	0.752	22.262
	EC6	.620		
	EC12	.561		
	EC14	.541		
	EC5	.508		
	EC7	.508		
	EC11	.496		
	EC3	.491		
	EC2	.472		
	EC1	.442		
	EC13	.408		
	EC10	.408		
	Sustainable Travel Habits		0.694	31.965
	STH7	.637		
	STH8	.637		
	STH9	.628		
	STH1	.613		
	STH2	.579		
	STH6	.472		
	STH4	.463		
	Personal Environmental Norms		0.817	44.156
	PN3	.750		
	PN2	.692		
	PN4	.685		
	PN7	.677		
	PN5	.629		
	PN1	.626		
	PN6	.626		
	PN8	.620		
	Green Product Purchasing Behavior		0.714	54.061
	GPPB4	.780		
	GPPB3	.761		
	GPPB2	.713		
	GPPB1	.684		
	Total Cronbach α		0.868	
KMO 0.822 Bartlett's Test of Sphericity Bartlett (p) p= 0,000<0,05				

Findings of the multiple regression analysis: the impact of tourists' environmental concerns on sustainable travel habits, personal environmental norms, green product purchasing behavior.

In order to determine whether the model created within the scope of the research is suitable for regression analysis, it is examined whether there is a multicollinearity problem. In this context, whether there is a multicollinearity problem was examined with the help of correlation analysis. Accordingly, it was observed that the correlation coefficients of the independent variables (Table 3) ranged between 0.286 and 0.515, and it was understood that there was no multicollinearity problem for regression analysis. In addition, tolerance values greater than 0.10 and VIF (Variance Inflation Factor) values less than 10 (Table 3) indicate no multicollinearity among the independent variables.

According to the results of the correlation analysis (Table 3), there were positive and significant relationships between all the variables considered in the study. There is a moderately strong relationship between tourists' environmental concerns and their environmental norms (r = .483; p <,05). This finding indicates that environmentally conscious tourists also have a high sense of personal responsibility for protecting the environment.

Similarly, significant relationships were found between environmental concerns and green product purchasing behavior (r =.322; p <,05) and sustainable travel habits (r = .286; p <,05). The strongest relationship was observed between personal environmental norms and green product purchase behavior (r = .515; p <,05). This indicates that the environmental values internalized by individuals strengthen their sustainable consumption tendencies.

Table 3. Correlation analysis of the variables Source: Author's own work. *p<0,05

Variables	Tourists' Environmental Concerns	Sustainable Travel Habits	Personal Environmental Norms	Green Product Purchasing Behavior
Tourists' Environmental Concerns	1			
Sustainable Travel Habits	.286*	1		
Personal Environmental Norms	.483*	.432*	1	
Green Product Purchasing Behavior	.322*	.346*	.515*	1

The findings of the model established to examine the effect of Tourists' Environmental Concerns on Sustainable Travel Habits, Personal Environmental Norms, and Green Product Purchasing Behavior are presented in Table 4. According to the regression analysis, the model was found to be statistically significant as a whole (F = 38.685; p <,05). The adjusted R^2 value was calculated as .239, indicating that the independent variable explains approximately 24.6% of the total variance in the dependent variables. When examining the effects of the variables included in the model, only Personal Environmental Norms was a significant predictor (β = .403; t = 7.127; p <,001). This finding reveals that individuals' internalized environmental norms are decisive in explaining green behaviors. On the other hand, Sustainable Travel Habits (β = .082; p = .114) and Green Product Purchasing Behavior (β = .086; p = .116) were not found to have a statistically significant effect within the model. These results suggest that environmental concerns may not directly influence individuals' attitudes but exert an indirect effect through personal norms.

According to the results of the multiple linear regression analysis conducted in this study to examine the effects on personal environmental norms, the model was found statistically significant (F=91.434; p<.001). The explanatory level of the model is R^2 = .339, which indicates that the independent variables explain 33.9% of the total variance in personal environmental norms. When the independent variables are examined, it is seen that Green Product Purchasing Behavior has the most potent effect on personal environmental norms (β = .415; p <.001). This finding indicates that individuals' preference for environmentally friendly products is closely related to their internalization of environmental responsibility norms. On the other hand, the variable Sustainable Travel Habits was found to have a significant and positive effect on personal environmental norms (β = .289; p <.001). This result reveals that individuals' eco-friendly travel preferences are compatible with their environmental awareness and norms. In addition, there is no multicollinearity problem among the variables (VIF values < 2), which supports the model's reliability.

According to the simple linear regression analysis conducted to examine the effect of sustainable travel habits on personal environmental norms, the model was significant (F = 48.662; p<.001). The explanatory level of the model was calculated as R^2 = .120, and this finding shows that sustainable travel habits explain 12% of the variance in personal environmental norms. The sustainable travel habits variable shows a statistically significant and positive effect on personal environmental norms (β=.346; p<.001). This result reveals that individuals' travel preferences based on environmental values effectively shape their environmental responsibility and attitudes. Moreover, there is no risk of multicollinearity (VIF = 1.000).

Table 4. The impact of tourists' environmental concerns on sustainable travel habits, personal environmental norms, green product purchasing behavior (Source: Author's own work)

Independent Variables	Not standardized Coefficients		Standardized Coefficients *Beta*	t	P	Tolerance	VIF
	B	*Standard Error*					
Sustainable Travel Habits	.100	.063	.082	1.585	.114	.792	1.262
Personal Environmental Norms	.475	.067	.403	7.127	.000	.661	1.512
Green Product Purchasing Behavior	.166	.105	.086	1.577	.116	.716	1.397
	R=.496	R^2=.246	Adjusted R^2=.239	F=38.685	P=.001		

Table 5. The impact of personal environmental norms on sustainable travel habits and green product purchasing behavior (Source: Author's own work)

Independent Variables	Not standardized Coefficients		Standardized Coefficients *Beta*	t	P	Tolerance	VIF
	B	*Standard Error*					
Sustainable Travel Habits	.299	.048	.289	6.292	.000	.880	1.136
Green Product Purchasing Behavior	.682	.075	.415	9.054	.000	.880	1.136
	R=.582	R^2=.339	Adjusted R^2=.335	F=91.434	P=.001		

Table 6. The impact of green product purchasing behavior on sustainable travel habits (Source: Author's own work)

Independent Variables	Not standardized Coefficients		Standardized Coefficients Beta	t	P	Tolerance	VIF
	B	Standard Error					
Sustainable Travel Habits	.218	.031	.346	6.976	.000	1,000	1,000
	R=.346	R^2=.120	Adjusted R^2=.117	F=48.662	P=.001		

According to the results (Table 7), H_2 was supported, while H_1 and H_3 were rejected. These findings indicate that tourists' environmental concerns have a significant effect only on personal environmental norms. In other words, while environmental concerns strengthen individuals' internal sense of environmental responsibility, they do not directly translate into sustainable travel habits or green product purchasing behavior. This suggests that environmental concern alone may not be sufficient to drive behavioral change. Moreover, personal environmental norms significantly and positively affect

sustainable travel habits H_4 and green product purchasing behavior H_5. This shows that individuals with environmental values are more sensitive to sustainability in terms of both consumption and travel preferences. Finally, it is determined that green product purchasing behavior significantly affects sustainable travel habits, and H_6 is accepted. This result indicates that environmentally conscious purchasing behaviors may also affect sustainable preferences in other areas.

Table 7. Acceptance and Rejection Status of Hypotheses (Source: Author's own work)

Hyptheses	
H_1: Tourists' environmental concerns have a significant impact on their sustainable travel habits.	Rejected
H_2: Tourists' environmental concerns have a significant impact on their green product purchasing behavior.	Accepted
H_3: Tourists' environmental concerns have a significant impact on their personal environmental norms.	Rejected
H_4: Tourists' personal environmental norms have a significant impact on their sustainable travel habbits.	Accepted
H_5: Tourists' personal environmental norms have a significant impact on their green product purchasing behavior.	Accepted
H_6: Tourists' green product purchasing behavior has a significant impact on their sustainable travel habits.	Accepted

DISCUSSION

The current study examines if tourists' environmental concerns relate to three outcome domains (sustainable travel habits, personal environmental norms, and green product purchasing behavior) as well as how personal norms and green purchasing in turn relate to sustainable travel habits. Empirically, two hypotheses were not supported by the data: H_1 (environmental concerns→sustainable travel habits) and H_3 (environmental concerns→personal environmental norms).

The remaining hypotheses of the study were supported, referring to H_2 (environmental concerns→green product purchasing), H_4 (personal norms→sustainable travel habits), H_5 (personal norms→green product purchasing), and H_6 (green product purchasing→sustainable travel habits). The following discussion places these findings in the recent literature on the attitude–behavior gap (GSTC (Global Sustainable Tourism Council), 2024; Wut et al., 2023), norm-activation processes, as well as behavioral spillover. It also highlights the similarities and contradictions with prior studies, and finally, interprets possible mechanisms and implications for researchers and practitioners. Firstly, the non-significant impact of tourists' environmental concerns on sustainable travel habits seems to contradict the intuitive assumption that concern leads to action (Han, 2021; Su et al., 2014). However, the broader sustainable-tourism literature robustly documents an attitude/behavior (or intention/behavior) gap: positive concern or attitude frequently fails to translate into consistent, higher-cost, or context-dependent behaviors while traveling. Recent reviews (Juvan & Dolnicar, 2016; Juvan & Dolnicar, 2017) emphasize that convenience, perceived cost, social desirability, knowledge, and contextual constraints systematically weaken the link between attitude and behavior in the tourism context. These moderating and mediating forces explain why concern alone may not produce measurable changes in actual travel habits (Vieira et al.,2023; Wut et al., 2023).

Two groups of mechanism might explain the results of H_1 and H_3. The psychological barriers and/or competing goals (such as competing leisure goals, tokenism, perceived ineffectiveness,) can possibly moderate the attitude/behavior relationship; highly concerned tourists might still refrain from changing travel habits when barriers are strong. Empirical work confirms that psychological barriers reduce the strength of attitude/behavior link, particularly for high-cost behaviors (transport mode, itinerary choices) (Vieira et al., 2023). Likewise, contextual and structural constraints (i.e. time and cost pressures, lack of sustainable alternatives, inconsistent certification, poor infrastructur) (GSTC (Global Sustainable Tourism Council), 2024) can lead to the fact that even motivated tourists might not enact green habits during travel. Industry reports and recent field studies show that travelers frequently report high interest in sustainability but cite practicality, price, and availability as the limiting factors. Similarly, the impact of tourists' environmental concerns was found statistically insignificant on their personal environmental norms. Although it is assumed that attitude towards environment may activate personal norms, concern seems not being effective on personal environmental norms in this study. In hospitality/tourism contexts, some other studies also confirm that concerns towards environment does not affect the feeling of moral obligations, particularly where tourists view responsibility as collective or institutional rather than personal (Dong et al., 2024; Sorcaru et al., 2024).

Luna-Cortés et al. (2024) further nuance this by showing that automatic/habitual processes and contextual cue changes interact with environmental attitudes, promoting sustainable behaviors when it is paired with prior home practice or identity, yet, may be inert during travel. This can also explain the insignificance relation between environmental concern and personal environmental norms. In contrast to insignificance impact of environmental concerns on personal environmental norms and sustainable travel habits, this study confirmed its significant impact on green product purchasing behavior. Former studies (i.e. Gulzar et al., 2024) show a consistent positive relationship between environmental attitude (and sustainability consciousness) and green buying intentions or reported green purchases. The greater salience, visibility, and marketing of "green" options, along with price/payment mechanisms and certifications, make translation from concern to purchase more straightforward than translation to broader travel habits or moral obligations. Furthermore, the current study shows that personal norms significantly predict both sustainable travel habits and green purchasing. This aligns both with TPB and the findings of similar studies. Recent studies within tourism context also reached the same conclusion that support the current findings.

For example, studies conducted recetly in tourism and hospitality field confirmed the mediating role of personal norms between values/beliefs and both bintention and behavior in contexts such as family travel decisions or green hotel choice. These studies state that when personal norms are active, tourists are more inclined to adopt purposeful, consistent sustainable behaviors (both purchase and travel choices) (Dong et al., 2024; Sorcaru et al., 2024). Therefore, the current findings are consistent with contemporary evidences claiming hat norms drive enacted sustainable practices.

Finding a significant positive path from green product purchasing to sustainable travel habits is another invaluable finding of the study, which suggests positive behavioral spillover (purchases reinforcing other sustainable practices).

Research found that low-effort or visible green acts (purchasing local organic food, choosing certified souvenirs, staying in green-certified accommodation) can trigger self-perception processes or identity signals that increase the likelihood of wider sustainable choices during the trip (i.e. Majid et al., 2024). Depending on the current as well as former findings, it can be stated that green product purchasing behavior is a significant predictor in making sustainable decisions and developing sustainable habits. In sum, the results of this study refine a core nuance in sustainable-tourism literature: "*environmental concern matters but it rarely acts alone*". In this study concern significantly affected green purchasing (a low-barrier, visible action), but did not automatically produce personal moral obligations or direct changes in complex travel habits. Instead, personal environmental norms and green purchasing behavior emerged as the stronger drivers for sustainable travel habits. These findings stress that policy and marketing should target both structural/enabling conditions that make sustainable travel feasible and psychological levers that activate personal norms and amplify positive intentions/behviors. Empirically, the work contributes to the literature by demonstrating a specific configuration of distal (concern) and proximal (PN, green purchase) drivers that produce sustainable travel habits in reported tourist decision contexts.

CONCLUSION AND IMPLICATIONS

The current study analyzed the role of tourists' environmental concerns in shaping sustainable travel habits, personal environmental norms, and green product purchasing behaviors, as well as the effects of personal norms and green purchasing on sustainable travel habits. The findings provide a nuanced understanding of the mechanisms underlying sustainable behavior in tourism. Particularly, environmental concerns were found to significantly affect green purchasing behavior but not personal environmental norms or sustainable travel habits directly. However, personal environmental norms and green purchasing behavior emerged as stronger predictors of sustainable travel habits.

Taken together, the findings refine a key insight in the sustainable tourism literature: environmental concern alone does not guarantee sustainable travel behavior. Instead, concern acts as a distal driver, with its impact more likely to manifest through specific consumption choices or when channeled via activated personal norms. By clarifying the interplay between distal attitudes and proximal drivers, this study contributes to a more differentiated understanding of the attitude–behavior gap and highlights the importance of both psychological and contextual mechanisms in enhancing sustainable tourist practices.

In the lights of the findings, this study provides important theoretical implications. The results of the study extend existing literature by demonstrating that environmental concern does not automatically translate into travel-related norms or habits. This results higlights the significance of differentiating between low-barrier consumer behaviors and higher-cost, context-dependent travel practices while studying the attitude–behavior relationship. Furthermore, the findings highlight the role of personal norms as proximal motivational forces, transforming abstract values and concerns into enacted sustainable practices. Additionally, evidence of green purchasing predicting broader sustainable travel habits extends the literature on behavioral improvements. The findings suggest that relatively simple, visible, or market-facilitated green acts might reinforce self-perceptions and catalyze wider sustainable choices while travelling. Finally, this study indicates that barriers such as cost, convenience, and structural limitations reduces the impact of environmental concern. This calls for further research that integrates psychological drivers with contextual facorrs in models of sustainable tourist behavior.

Practically, this study suggests policymakers and destination managers to focus on strucual barriers (e.g. availability, price, accessibility of sustainable options) due to the fact that environmental concerns are alone not sufficient to develop sustainable habits. Improving infrastructure (e.g., certified accommodations, green transport options) and addressing convenience-related obstacles can lead to more feasible sustainable choices. Furthermore, the role of green product purchasing suggests that marketing campaigns emphasizing visible, credible, and easy-to-adopt sustainable products can be effective entry points for encouraging sustainability while travelling. Communicating certification labels, eco-branding, and transparent product information can enhance trust and facilitate adoption. In addition to above, tourism stakeholders can develop intervention that personalize sustainability responsibility. For example, framing messages around individual moral obligations and identity (rather than collective or institutional responsibility) may situmulate personal norms and encourage consistent sustainable choices. Based on the finding, it can also be suggested that encouraging small, low-barrier green actions during trip (e.g. choosing eco-certified souvenirs or local organic food) can built positive self-perception and change into broader sustainable travel practices. Destination managers can design sustainability pathways where tourists' initial green choices naturally lead to more comprehensive sustainable behaviors.

Finally, the results suggest that practitioners should avoid relying solely on tourists' environmental concern as a driver of sustainable behavior. Instead, efforts should prioritize enabling conditions (practical feasibility) and psychological levers (norm activation and identity reinforcement) to promote meaningful behavioral change.

The implementations of these suggestions can contribute to the environmentally sustainable tourism development and make tourism activities more environmentally responsible.

LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

Despite providing valuable insights into the relationship between environmental concern, personal norms, green purchasing, and sustainable travel habits, this study is not without limitations. Acknowledging these limitations provides an opportunity to guide future research. In the first place, the data were collected exclusively from international tourists visiting North Cyprus. While this context is valuable given the region's growing tourism industry, the findings may not be fully generalizable to other destinations with different cultural, economic, or infrastructural conditions.

Future research should replicate and extend the study in diverse geographical contexts and cultural settings to examine whether the relationships observed here hold across different tourism environments. On the other hand, the study employed

a cross-sectional design, which captures associations at a single point in time but does not allow for strong causal inference. Longitudinal or experimental designs could provide more robust evidence about the temporal ordering of environmental concern, norms, purchasing, and travel habits, and test whether green product purchasing indeed leads to lasting behavioral spillover effects. Another point is that the model focused on a limited set of psychological and behavioral variables. Although environmental concern, personal norms, and green purchasing explained significant variance in sustainable travel habits, other influential factors were not included. For instance, contextual variables such as infrastructure availability, destination-specific policies, or social influence could act as moderators or mediators in these relationships. Future research can integrate these contextual and structural variables to provide a more holistic model of sustainable tourist behavior.

More importantly, the study relied on self-reported measures, which are susceptible to social desirability bias and may overestimate sustainable behaviors. Employing mixed methods, such as combining surveys with behavioral observations, digital tracking, or experimental field interventions, would strengthen the validity of future findings (Juvan & Dolnicar, 2016; Juvan & Dolnicar, 2017; Saltık & Akova, 2024). Finally, while this study highlighted the significance of green product purchasing as a driver of sustainable travel habits, it did not differentiate between types of green purchases (e.g., food, accommodation, souvenirs). Future research could disaggregate these categories to assess whether different types of green consumption vary in their spillover potential toward broader travel practices. In sum, future studies are suggested to broaden geographical and cultural contexts, to apply longitudinal and experimental designs, to incorporate structural and social-contextual variables, to reduce reliance on self-reports through triangulated methods, and to explore the differential effects of various green purchasing behaviors. Such extensions would help refine theoretical models and provide deeper insights into how concern, norms, and behaviors jointly shape sustainable tourism practices.

Appendix 1. Information on the distribution of data (Source: Authors' work)

	N	Mean	Skewness		Kurtosis	
			Statistic	Std. Error	Statistic	Std. Error
EC1	344	4.1395	-.637	.131	2.269	.262
EC2	344	4.3314	-.970	.131	1.249	.262
EC3	344	4.3023	-.985	.131	.631	.262
EC4	344	3.3517	-.101	.131	-1.147	.262
EC5	344	4.2558	-1.181	.131	1.707	.262
EC6	344	4.2209	-.875	.131	.405	.262
EC7	344	4.1686	-.986	.131	1.531	.262
EC8	344	3.8023	-.907	.131	.634	.262
EC9	344	4.0523	-.979	.131	1.647	.262
EC10	344	4.1948	-.645	.131	.399	.262
EC11	344	4.1047	-1.176	.131	2.697	.262
EC12	344	4.1831	-1.098	.131	1.951	.262
EC13	344	4.1279	-1.025	.131	1.587	.262
EC14	344	4.2529	-.748	.131	.538	.262
EC15	344	4.3169	-1.202	.131	1.682	.262
EC16	344	3.7093	-.730	.131	-.291	.262
STH1	344	3.4651	-.411	.131	-.082	.262
STH2	344	3.5552	-.341	.131	-.513	.262
STH3	344	4.1047	-.723	.131	1.379	.262
STH4	344	4.1366	-.748	.131	.943	.262
STH5	344	4.2035	-.607	.131	.009	.262
STH6	344	4.1192	-.604	.131	.292	.262
STH7	344	3.8953	-.758	.131	-.152	.262
STH8	344	4.1395	-1.032	.131	1.901	.262
STH9	344	4.0116	-1.049	.131	1.107	.262
PN1	344	4.0640	-.509	.131	.797	.262
PN2	344	4.2180	-.878	.131	1.726	.262
PN3	344	4.2558	-.367	.131	-.401	.262
PN4	344	4.1570	-.806	.131	1.171	.262
PN5	344	4.1570	-.527	.131	.004	.262
PN6	344	4.1628	-.645	.131	.894	.262
PN7	344	4.2267	-.904	.131	1.368	,262
PN8	344	4.1366	-1.003	.131	2.050	.262
GPPB1	344	3.9390	-.932	.131	1.529	.262
GPPB2	344	4.2529	-.859	.131	1.194	.262
GPPB3	344	4.1337	-.831	.131	.800	.262
GPPB4	344	4.1802	-.982	.131	.864	.262
Valid N listwise)	344					

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