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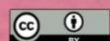
## Sustainable Practices in Outdoor Activities: Motivation, Satisfaction, and Loyalty in Northern Portugal

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**ABSTRACT:** Outdoor activities align with sustainability and environmental conservation values and have recently increased. Several studies on outdoor activities have attempted to understand the motivation, satisfaction, and loyalty of these activities. In this respect, this study aims to evaluate the link between motivation, satisfaction, and loyalty among participants of outdoor activities in the Northern Region of Portugal. To achieve this aim, a questionnaire was administered to 216 participants of outdoor activities in northern Portugal. Descriptive analysis was used to identify the sociodemographic profiles of the sample. The next step was to apply Exploratory Factor Analysis to determine two dimensions of the motivations. The final step was to define two hypotheses tested using Stepwise Multiple Regression; H<sub>1</sub>: Motivation positively influences satisfaction with outdoor activities; and H<sub>2</sub>: Motivation positively influences loyalty to outdoor activities. The third hypothesis (H<sub>3</sub>: Satisfaction positively influences loyalty to outdoor activities) was tested using Linear Multiple Regression. Two motivation factors (services/hospitality and nature services) were established in a linear correlation between these factors, satisfaction, and loyalty. The motivation scores were then used in a regression analysis with satisfaction and loyalty, revealing that the motivation factors had a significant relationship with satisfaction and loyalty, thus supporting H<sub>1</sub> and H<sub>2</sub>. As satisfaction influences loyalty in tourist destinations, a linear regression analysis was conducted to investigate the relationship between satisfaction and loyalty. The results confirmed H<sub>3</sub>, demonstrating that satisfaction is crucial in influencing tourists' intentions to return to the region, recommend it, and speak positively about the activities offered there.

**KEYWORDS:** Satisfaction and loyalty; Motivation; Outdoor activities; Sustainability; Portugal.

**RESUMO:** As atividades ao ar livre estão em sintonia com os valores da sustentabilidade e da conservação do ambiente e, a busca por estas atividades, têm vindo a aumentar recentemente. Vários estudos sobre atividades de ar livre buscam compreender a motivação, a satisfação e a lealdade dos praticantes destas atividades. Neste sentido, o objetivo deste trabalho é avaliar a relação entre a motivação, a satisfação e a lealdade dos praticantes de atividades de ar livre na Região Norte de Portugal. Para atingir este objetivo, foi aplicado um questionário a 216 praticantes de atividades de ar livre no Norte de Portugal. A análise descritiva foi utilizada para identificar o perfil sociodemográfico da amostra. O passo seguinte foi a aplicação de uma Análise Fatorial Exploratória, determinando duas dimensões das motivações. O último passo foi a definição de duas hipóteses testadas através da Regressão Múltipla *Stepwise*; H<sub>1</sub>: A motivação influencia positivamente a satisfação com as atividades de ar livre e H<sub>2</sub>: A motivação influencia positivamente a lealdade às atividades de ar livre. A terceira hipótese (H<sub>3</sub>: A satisfação influencia positivamente a lealdade às atividades de ar livre) foi testada através da aplicação de uma Regressão Múltipla Linear. Dois fatores de motivação (serviços/hospitalidade e serviços de natureza) foram estabelecidos numa correlação linear entre estes fatores e a satisfação e a lealdade. As pontuações de motivação foram depois utilizadas numa análise de regressão com a satisfação e a lealdade, revelando que os fatores de motivação têm uma relação significativa com a satisfação e a lealdade, apoiando assim as hipóteses H<sub>1</sub> e H<sub>2</sub>. Uma vez que a satisfação demonstrou influenciar a lealdade nos destinos turísticos, foi efetuada uma análise de regressão linear para investigar a relação entre

a satisfação e a lealdade. Os resultados confirmaram a hipótese H<sub>3</sub>, demonstrando que a satisfação é crucial para influenciar as intenções dos turistas de regressar à região, recomendá-la e falar positivamente sobre as atividades aí oferecidas.

**PALAVRAS-CHAVE:** Satisfação e lealdade; Motivação; Atividades ao ar livre; Sustentabilidade; Portugal.

**RESUMEN:** Las actividades al aire libre están en consonancia con los valores de sostenibilidad y conservación del medio ambiente y han experimentado un auge en los últimos tiempos. Varios estudios sobre las actividades al aire libre han intentado comprender la motivación, la satisfacción y la lealtad de quienes las practican. Teniendo esto en cuenta, el objetivo de este estudio fue evaluar la relación entre la motivación, la satisfacción y la lealtad entre los entusiastas de las actividades al aire libre en la región norte de Portugal. Para alcanzar este objetivo, se administró un cuestionario a 216 practicantes de actividades al aire libre del norte de Portugal. Se utilizó un análisis descriptivo para identificar el perfil sociodemográfico de la muestra. El siguiente paso fue aplicar un Análisis Factorial Exploratorio, determinando dos dimensiones de motivaciones. El último paso fue definir dos hipótesis comprobadas mediante Regresión Múltiple por Pasos; H<sub>1</sub>: La motivación influye positivamente en la satisfacción con las actividades al aire libre; y H<sub>2</sub>: La motivación influye positivamente en la lealtad a las actividades al aire libre. La tercera hipótesis (H<sub>3</sub>: La satisfacción influye positivamente a la lealtad a las actividades al aire libre) se comprobó aplicando una Regresión Lineal Múltiple. Se estableció una correlación lineal entre dos factores de motivación (servicios/hospitalidad y servicios de naturaleza) y la satisfacción y la lealtad. A continuación, las puntuaciones de motivación se utilizaron en un análisis de regresión con la satisfacción y la lealtad, revelando que los factores de motivación tienen una relación significativa con la satisfacción y la lealtad, apoyando así las hipótesis H<sub>1</sub> y H<sub>2</sub>. Dado que se ha demostrado que la satisfacción influye en la lealtad en los destinos turísticos, se llevó a cabo un análisis de regresión lineal para investigar la relación entre satisfacción y lealtad. Los resultados confirmaron la hipótesis H<sub>3</sub>, mostrando que la satisfacción es crucial para influir en la intención de los turistas de volver a la región, recomendarla y hablar positivamente de las actividades que allí se ofrecen.

**PALABRAS CLAVE:** Satisfacción y lealtad; Motivación; Actividades al aire libre; Sostenibilidad; Portugal.

## 1. Introduction

The increasing societal emphasis on health, sustainability, and nature-based experiences has positioned outdoor activities as a strategic component of sustainable tourism (Silva et al., 2023). In the European context, these activities align with the European Green Deal objectives by fostering low-carbon tourism models, inclusive, community well-being and nature-centred economic growth (European Commission, 2019). Specifically, in Portugal, the *Estratégia Turismo 2027* reinforces this orientation, identifying outdoor activities as strategic for diversifying tourism products and promoting environmental responsibility.

Consequently, the demand for outdoor activities has increased (Silva et al., 2021), which is aligned with sustainability principles and environmental issues (Valizadeh & Khorani, 2020). Outdoor activities can encompass activities in nature, protected areas, urban parks and rural areas (Derek et al., 2019; Ferreira et al., 2021; Farkić et al., 2025). These activities can be hard or soft (Tsaour et al., 2020; UNWTO, 2014).

Participants in outdoor activities have different motivations and preferences when choosing their destinations. Motivations can be related to self-development, natural contact, personal relationships, and rewards (Carvache-Franco et al., 2022b; Carvache-Franco et al., 2025). In addition, escapism, aesthetics, entertainment, and education are considered motivations by the participants (Radović et al., 2021). It is worth mentioning that motivation can be understood as a force that pushes people to do something (Tangeland, 2011), and studies on outdoor activities are dedicated to understanding the motivations that lead someone to choose a destination to practice the activities. Although measuring motivations is not straightforward, some measurement scales have been proposed in the literature.

In addition to motivation, other aspects of demand must be considered in the planning process of tourist destinations. The first is satisfaction, which is the relationship between what the tourist expects from the destination (pre-trip) and the post-trip experience (Chen & Chen, 2010). In other words, tourists will be

satisfied when their expectations of the destination are exceeded. However, when expectations are not met, tourists will be dissatisfied (Oviedo-García et al., 2019). Research has also focused on satisfaction in the contexts of nature-based tourism and ecotourism (Le et al., 2025; Yuliana et al., 2025). These investigations aim to assess whether visitors' experiences during tourist activities meet or surpass their expectations, thereby influencing their satisfaction level. Notably, these studies indicate that satisfaction is a pivotal factor in motivating visitors to return to destinations. Moreover, visitors who report higher levels of satisfaction are more inclined to recommend the location to others, suggesting a correlation between satisfaction and loyalty to the destination.

In this sense, loyalty is a frequently studied aspect of tourist behaviour. The intention to return and recommend the destination can measure loyalty (e.g. Carvache-Franco, Contreras-Moscol, et al., 2022; Carvache-Franco, Pérez-Orozco, et al., 2022; Qi & Cheng, 2022; Radović et al., 2021; Zhang et al., 2022; Le et al., 2025; Yuliana et al., 2025).

Studies evaluating the relationships between motivation, satisfaction, and loyalty are widespread (e.g. Carvache-Franco et al., 2022; Qi & Cheng, 2022; Radović et al., 2021) because these three aspects are fundamental to a tourist destination. It is essential to understand what motivates tourists. It is worth mentioning that satisfaction can influence loyalty; once the tourist is satisfied, it tends to indicate or return to the destination (e.g. Oviedo-García et al., 2019; Xu et al., 2021).

Based on the abovementioned concepts, this study aimed to evaluate the link between motivation, satisfaction, and loyalty among participants in outdoor activities in the Northern Region of Portugal. To this purpose, in the first step, exploratory factor analysis was performed, considering the 14 items of motivation. Subsequently, three research hypotheses were formulated and tested using Stepwise Multiple Regression, one of the most widely used statistical techniques.

The northern region of Portugal was chosen for its characteristics that favour outdoor activities such as hiking. In this region, it is possible to practice aquatic (e.g. surfing), aerial (e.g. paragliding), and terrestrial (e.g. hiking and mountaineering) activities, attracting different participant groups. It is worth emphasising that by focusing on outdoor activities, this study promotes a type of tourism that may have a lower environmental impact than other forms of mass tourism. Understanding the relationship between motivation, satisfaction, and loyalty allows tourism managers to improve the tourist experience by encouraging responsible and sustainable practices. If tourists are satisfied, they tend to return and recommend the region, which can be sustainable in the long term.

This paper is organised into six sections. This introductory section presents the purpose of the study, followed by the theoretical framework describing outdoor activities, motivation, satisfaction, and loyalty. The third section presents the study area and methods. The fifth section presents the analysis and discussion of the data. The conclusions of the study are presented in the final section of the paper.

## 2. Theoretical Framework

The demand for outdoor activities, especially those related to nature, has grown substantially owing to modern lifestyles and urbanisation, which have led people to look for alternatives to stressful lives (Beames et al., 2018). In this context, a contribution to well-being is the practice of physical activity in nature, which has positive effects on people's lives (Bácsné-Bába et al., 2021). In recent years, visitors have become increasingly interested in nature-based activities, increasing the demand for rural, nature, and outdoor tourism. (Silva et al., 2023).

In alignment with sustainability and environmental consciousness, outdoor activities can be understood as the supply and demand for a destination that matches natural, cultural, and human resources (Hao et al., 2016). Outdoor activities can be practised in land, water, and air-based places (Derek et al., 2019) and are classified as radical or soft activities (Tsaur et al., 2020). Notably, outdoor activities have been mentioned in many studies relating to tourism. However, this term can be aligned with other tourism segments such as adventure tourism, outdoor recreation, mountaineering, and ecotourism.

Motivation is a common subject in these studies, and outdoor tourism is one of the most studied aspects (e.g., Scalabrini et al., 2022; Tangeland, 2011). Motivation can be defined as the intrinsic and extrinsic factors that motivate an individual to a specific action (Dimitrios & Sterios, 2022), influencing the choice of a destination or activity (Bansal & Eiselt, 2004).

Studies on motivation explain why tourists choose a specific activity and destination. Escape, learning about nature, healthy activities, and cohesiveness were the motivations of Belize tourists, as cited by Palacio & Mc Cool (1997). Visitors' motivations for Three Kenyan National Reserves were general viewing, nature, culture, adventure, mega-fauna, escape learning and personal growth (Beh & Bruyere, 2007). A Norwegian study by Tangeland (2011) identified motivations as quality improvement, skill development, and new and social activities. Radović et al. (2021) found motivations in camping tourists in Croatian escapism, aesthetics, entertainment and education. During the COVID-19 period, Humagain and Singleton (2021) classified the motivations of outdoor recreationists to travel as enjoying nature, autonomy, physical fitness, rest, escaping personal-social-physical pressure, family and friends, novelty experience and COVID-19-built motivations. Lastly, tourists' motivations in Costa Rica were self-development, interpersonal relationships, ego-defensive function, nature, reward, personal relationships, and escape (Carvache-Franco, Pérez-Orozco et al., 2022).

Based on these studies, living new experiences, escapism and nature experiences are the primary motivations for practising outdoor activities. Therefore, these are essential points to consider in future studies relating to motivation and outdoor tourism.

Satisfaction is another critical topic related to outdoor activities (Chen et al., 2022). A classic definition is that of Pizam et al. (1978), presenting satisfaction as the result of comparing the expectations before a trip and the performance after the trip. When the experience exceeds the expectation, the tourist will have positive satisfaction; the opposite, expectation greater than the expertise, equals negative satisfaction. Satisfaction is usually measured by scales, where aspects of the destination are presented, such as accommodation, restaurants, cultural and natural offerings, tourist information, etc. (e.g., Chen et al., 2022; Deng & Pierskalla, 2018; Marasinghe et al., 2021).

Satisfaction is directly related to loyalty; once a tourist is satisfied with a destination, he tends to repeat, indicate and say positively about the experience (Radović et al., 2021). Loyalty has been widely studied and can be defined as the probability that customers reduce their experiences with other products and services and indicate these to different consumers (Özkan et al., 2019). Usually, loyalty is a measure presenting a scale to recommend an intention to return and say positive things about the destination (e.g., Chen et al., 2022; Deng & Pierskalla, 2018; Özkan et al., 2019; Radović et al., 2021). These variables relate to motivations and satisfaction with a product, a service or a destination.

The relationship between motivation, satisfaction and loyalty is recurrent in studies on outdoor activities. Qi and Cheng (2022) presented three hypotheses relating these variables and motivation positively influencing satisfaction and loyalty. Similarly, Radović et al. (2021) proposed three hypotheses, which were validated. Finally, Carvache-Franco et al. (2022) also presented substantial evidence of the relationship between motivation, satisfaction and loyalty. This research demonstrates the importance of understanding the relationship between these three essential dimensions of consumers.

Previous research consistently demonstrates that motivation has a positive influence on satisfaction and loyalty (Qi & Cheng, 2022; Radović et al., 2021; Le et al., 2025; Yuliana et al., 2025). Tourists motivated by natural experiences and quality services tend to report higher satisfaction and a greater intention to return. Based on this evidence, the following hypotheses are proposed:

H<sub>1</sub>: Motivation positively influences satisfaction with outdoor activities.

H<sub>2</sub>: Motivation positively influences loyalty to outdoor activities.

H<sub>3</sub>: Satisfaction positively influences loyalty to outdoor activities.

### 3. Study Area

Northern Portugal (Figure 1) consists of eight micro-regions known as NUTS III (*Alto Minho, Cávado, Ave, Porto Metropolitan Area, Alto Tâmega, Tâmega e Sousa, Douro* and *Terras de Trás-os-Montes*) and a total area of 21,285.86 km<sup>2</sup> (Silva et al., 2021). Regarding outdoor activities, this region presents diversity and unique natural resources such as mountains, rivers, and protected areas (e.g., *Peneda-Gerês* National Park and *Montesinho* Natural Park). These characteristics attract different activities participants. The most practised activities in this area are hiking, cycling, canoeing, mountaineering, and others. It is essential to mention that the coastal region, with its beautiful beaches, is attractive for water-based sports.

The promotion of outdoor tourism in Northern Portugal is aligned with national and regional strategies that support sustainable development. Initiatives led by Turismo do Porto e Norte de Portugal and the national

*Estratégia Turismo 2027* have emphasised outdoor and nature-based activities as key components for diversifying the tourism offer and revitalising rural territories (Turismo de Portugal, 2017).

**Figure 1**

*Study area.*



Source: Fernandes et al. (2020, p.371)

This potential points to outdoor tourism and activities as a strategic product of the entity competent for tourism in the northern region (TPNP, 2015). In this regard, it is crucial to understand participants' motivations, satisfaction, and loyalty in this region.

## 4. Methods

### 4.1. Data Collection

Considering the purpose of this study, a questionnaire was applied to tourists and participants of outdoor activities in the North of Portugal. The questionnaire, with 42 open and closed questions, was split into three parts. The first part consisted of twenty-five questions characterising the visit and the outdoor activity. The motivations were presented by fourteen items measured on a 5-point Likert Scale (1=not important to 5=extremely important).

To measure satisfaction, thirteen items on a 5-point Likert Scale (1=very unsatisfied to 5=very satisfied) were presented on the second part of the instrument. It also introduced two items to perceived value (1=very bad to 5=very good) and six to loyalty (1=definitely not to 5=definitely yes). Among the six items measuring loyalty, three corresponded to destination loyalty and three to practised activities. In this study, it was chosen to use only those items related to a group of activities and the level of importance of each motivation for selecting the North Region as a tourist destination since this is what attended the proposed aims. Cronbach's Alpha was calculated to measure the internal consistency of the motivation group of questions, and an excellent value (0.923) was obtained. The third part consisted of thirteen questions to identify the sociodemographic profile of the sample. This paper used sociodemographic data and items measuring motivation, satisfaction, and loyalty concerning outdoor activities.

The questionnaire was validated through a pre-test conducted with 100 elements from April to May 2021. Some improvements were necessary, specifically the adequacy of the qualitative measurement of the scales and regarding the issues related to loyalty. Filters were also inserted between the questions to facilitate their understanding, and after these, the questionnaire was applied using the Microsoft Forms tool between June and September 2021. This was chosen due to the pandemic period. A non-probabilistic snowball sample was used, where each respondent indicated a new respondent. A total of 236 answers were received, and after discarding 20 incomplete questionnaires, 216 valid responses were analysed.

### 4.2. Data Analysis

The sociodemographic profile of the sample was identified using descriptive analysis. Next, an Exploratory Factor Analysis (EFA) with varimax rotated principal component analysis was used to determine the dimensions of outdoor tourists' motivations. Considering the Kaiser-Meyer-Olkin (KMO), a measure of sampling adequacy, this study presents 0.912, representing an excellent value, considering the values proposed by Hair et al. (2019). Bartlett's test of sphericity ( $p$ -value<0.001) tests whether a matrix (of

correlations) is significantly different from an identity matrix and in the present study provides a probability that the correlation matrix has significant correlations among at least some of the variables in a dataset. Both information from KMO and Bartlett's sphericity test revealed that the data was adequate for EFA. All the fourteen motivation items presented eigenvalues above 0.50 and were accepted for item inclusion in dimensions. Results obtained a two-factor solution, explaining 59.5% of the total variance. The Cronbach's Alpha values of both dimensions (Dimension 1 = 0.884 and Dimension 2 = 0.878) indicated acceptable reliability (Hair et al., 2019).

In the last stage, Stepwise Multiple Regression was used to test the following hypotheses:

H<sub>1</sub>: Motivation positively influences satisfaction with outdoor activities.

H<sub>2</sub>: Motivation positively influences loyalty to outdoor activities.

It is worth noting that multiple regression is one of the most used statistical techniques to analyse the relationship between a dependent variable and multiple independent variables (Hair et al., 2018). In this study, the independent variables were considered the scores of the two dimensions of motivation extracted in the factor analysis. The dependent variables were the means of satisfaction and loyalty.

Hypothesis 3 was tested by applying a Linear Multiple Regression, determining the relationship between satisfaction and loyalty. In this case, satisfaction was considered the independent variable and loyalty was the dependent variable.

H<sub>3</sub>: Satisfaction positively influences loyalty to outdoor activities.

The following section outlines the main results obtained using the abovementioned methodology and methods.

## 5. Results and discussion

### 5.1. Sociodemographic and professional sample profile

According to the sociodemographic and professional characteristics of outdoor activities participants (Table 1), the sample of this research was made up of Portuguese (94.9%), slightly more women (51.4%) aged between 18-40 years (65.2%), single (51.4%), with higher education levels (70%) and with an average monthly income between 601€ and 2,400€ (74%). Regarding their residence area, most of them reside in the Northern region of Portugal (Porto Metropolitan Area, 24.3%; in *Tâmega e Sousa*, 16.7% and *Terras de Trás-os-Montes*, 12.1%). Concerning the outdoor activities in the residence area, most of the sample occasionally (35.5%) practice, and 20% practice 1 or 2 times a week. Walking/hiding (28.8%), running (11.7%), and cycling (9.5%) are the most practised activities.

Analysing the activities practised in the northern region and which are the target of this research (Table 1), the most practised activity is walking/hiking (32.4%), sports (6.9%), running (5.4%), cycling (4.9%), surfing (3.9%) and slide (3.9%). The practice of these different activities corroborates the region's potential for aerial, land or water-based outdoor activities. It coincides with the most practised activities in the region, as presented above in the study area.

Table 1

*Sociodemographic and professional sample profile.*

Categories	n (%)	Categories	n (%)
<i>Gender</i>		<i>Marital Status</i>	
Female	111 (51.4)	Single	111 (51.4)
Male	103 (47.7)	Married	82 (38.0)
No answer	2 (0.9)	Widow	7 (3.2)
		Divorced	16 (7.4)
<i>Age</i>		<i>Level of education</i>	
18 – 25 years	75 (35.2)	Professional	6 (2.8)
26 – 40 years	64 (30.0)	Primary	6 (2.8)
41 – 55 years	60 (28.2)	Secondary	51 (23.7)
56 years and over	14 (6.6)	University	152 (70.7)
<i>Origin</i>		<i>Monthly income</i>	
Portugal	204 (94.9)	Under 600€	12 (5.7)
Brazil	5 (2.3)	601€ - 1,200€	64 (30.2)
Nepal	1 (0.5)	1,201€ - 1,800€	54 (25.5)
Swiss	1 (0.5)	1,801€ - 2,400€	39 (18.4)
Kosovo	1 (0.5)	2,401€ - 3,000€	19 (9.0)
Angola	2 (0.9)	3,001€ or more	24 (11.3)
Pakistan	1 (0.5)		
<i>Residence Area</i>			
Porto Metropolitan area	52 (24.3)		
Tâmega e Sousa	36 (16.7)		
Terras de Trás-os-Montes	26 (12.1)		
Alto Minho	15 (7.0)		
Cávado	14 (6.5)		
Lisbon Metropolitan area	9 (4.2)		
Others	64 (35.7)		

## 5.2. Exploratory Factor Analysis

Exploratory factor analysis was performed on the 14 motivation items, revealing two dimensions (Table 2). A dimension related to Services/Hospitality accounted for 50.8% of the total variance. It included eight motivational items (accommodation, gastronomy, climate, hospitality, history and local/regional culture, touristic attractions, safety, nature/landscape). The mean value score of this dimension is 3.97 points ( $\pm 0.737$ )

The second dimension was the Nature experience, which explains 8.5% of the total variance and includes six items related to the experiences (environmental resources, new experiences, find adventure, events/festivals, tourism entertainment activities, and outdoor activities). This dimension presented 3.75 points ( $\pm 0.796$ ) as the mean of items.

**Table 2**  
*Dimensions of Outdoor Activities Demand.*

<i>Motivation items</i>	<i>Components</i>	
	<i>Services and hospitality</i>	<i>Nature experience</i>
Hospitality	0.808	
Gastronomy	0.780	
History and local/Regional culture	0.742	
Safety	0.697	
Nature/Landscape	0.671	
Touristic attractions	0.637	
Accommodation	0.571	
Climate	0.519	
Find adventure		0.844
Tourism entertainment activities		0.779
Events/Festivals		0.725
New experiences		0.689
Outdoor experiences		0.634
Environmental resources		0.573
$\bar{X}$	<b>3.97</b>	<b>3.75</b>
<i>s</i>	<b>0.737</b>	<b>0.796</b>
<b>Cronbach's Alpha</b>	<b>0.883</b>	<b>0.879</b>
<b>Eigenvalue</b>	<b>7.111</b>	<b>1.195</b>
<b>% Variance Explained</b>	<b>50.796</b>	<b>8.535</b>

Note:  $\bar{X}$  = mean; *s* = standard deviation; Bartlett's test of sphericity: 1.565.357; Extraction Method: Principal Component Analysis; Rotation Method: Varimax.

After determining the factors concerning motivation, a Pearson correlation was employed to measure the relationship between the motivation factors, satisfaction, and activity loyalty. The results (Table 3) indicate a significant and positive correlation between the motivation factors and the variables of satisfaction and loyalty. Once the correlation coefficients are positive, the results are more than +0.5, representing a high effect, as Field (2017) indicated.

**Table 3***Correlation Matrix.*

Latent Variables	$\bar{X}$	s	1	2	3	4
Motivation Factor: Service and hospitality (1)	3.97	0.737	1.000			
Motivation Factor: Nature Experience (2)	3.75	0.796	.755*	1.000		
Satisfaction (3)	3.69	0.755	.536*	.472*	1.000	
Activities loyalty (4)	4.11	0.784	.544*	.501*	.605*	1.000

Note:  $\bar{X}$  = mean; s = standard deviation; \*, Correlation is significant at the 0.05 level (2-tailed).

### 5.3. The relationship between motivations and satisfaction with outdoor activities

The two motivation factors found in the exploratory factorial analysis were included in the linear multiple regression (Table 4) analysis to determine the influence on satisfaction with outdoor activities. A stepwise regression analysis was performed (Table 5). This method has been used in similar studies (e.g., Carvache-Franco et al., 2022; Qi & Cheng, 2022; Radović et al., 2021) and is considered adequate.

**Table 4***Regression model predictors (Motivation x Satisfaction).*

Prediction criteria	Model 1	Model 2
<i>r</i>	0.419	0.497
<i>Adjusted r<sup>2</sup></i>	0.172	0.247
<i>F-ratio</i>	41.855, p-value<0.05	32.027, p-value<0.05

The results (Tables 4 and 5) indicate that the two motivation factors positively influence satisfaction with outdoor activities practised, representing 24.7% of the variance. Through the correlation coefficient, it can be said that there is a moderate correlation ( $r=0.497$ ). The F test was significant ( $p$ -value < 0.05), indicating a fundamental relationship between the motivation factors and satisfaction. In this sense, the  $H_1$  was validated; namely, the service and hospitality motivation ( $\beta=0.419$ ;  $p$ -value<0.05) and nature experience ( $\beta=0.267$ ;  $p$ -value<0.05) presented significant impacts on the satisfaction of outdoor tourism participants in the Northern Region of Portugal. It is essential to highlight that the results of the Stepwise Multiple Regression were similar to the study of Carvache-Franco and Pérez-Orozco (2022), which analysed the motivation and satisfaction with ecotourism in Costa Rica and identified the relationship between motivation and satisfaction.

**Table 5***Stepwise Multiple Regression – Model 2 (Motivation x Satisfaction).*

Independent variables	Unstandardized coefficient (B)	Standard Error	Standardized coefficients ( $\beta$ )	t-Student	p-value	Tolerance	Variance Inflation Factor (VIF)
(Constant)	3.753	0.045		83.698	<0.05		
Services and hospitality	0.301	0.045	0.419	6.749	<0.05	1.000	1.000
Nature experience	0.194	0.045	0.267	4.298	<0.05	1.000	1.000

### 5.4. The relationship between motivations and loyalty to the outdoor activities

The relationship between motivations and loyalty ( $H_2$ ) was also tested using Stepwise multiple regression (Tables 6 and 7). Model 2 indicates that motivation has a significant effect on loyalty. In terms of

independent variables, the services and hospitality ( $\beta=0.426$ ;  $p\text{-value}<0.05$ ) and nature experience ( $\beta=0.280$ ;  $p\text{-value}<0.05$ ) presented a positive effect on loyalty.

**Table 6**

*Regression model predictors (Motivation x Loyalty).*

Prediction criteria	Model 1	Model 2
<i>r</i>	0.425	0.508
<i>Adjusted r<sup>2</sup></i>	0.176	0.251
<i>F-ratio</i>	42.881, $p\text{-value}< 0.05$	33.802, $p\text{-value}< 0.05$

**Table 7**

*Stepwise Multiple Regression – Model 2 (Motivation x Loyalty).*

Independent variables	Unstandardized coefficient (B)	Standard Error	Standardized coefficients ( $\beta$ )	t-Student	p-value	Tolerance	Variance Inflation Factor (VIF)
(Constant)	4.172	0.045		91.923	<0.05		
Services and hospitality	0.312	0.045	0.426	6.882	<0.05	1.000	1.000
Nature experience	0.206	0.046	0.280	4.522	<0.05	1.000	1.000

Based on the stepwise regression analysis,  $H_2$  was validated with a 25.1% variance explained and an F test significance. Moreover, there is a moderate correlation between this model and the correlation coefficient ( $r=0.508$ ). This result is similar to that of Qi and Cheng (2022), who analysed motivation, satisfaction, and loyalty with sports apps. The results highlight previous studies showing that motivations influence loyalty to a particular destination. Carvache-Franco (2022) identified the relationship between motivation and intentions to recommend Costa Rica and the saying of positive things about destiny. Similarly, Kruger and Viljoen (2021) identified the relationship between motivation and loyalty at a wine festival.

### 5.5. The relationship between satisfaction and loyalty to the outdoor activities

In this case, a linear regression was conducted, considering satisfaction as an independent variable and loyalty as a dependent variable. As mentioned above, this relationship has been widely studied in the literature, and linear regression is one of the statistical techniques that has been applied the most (e.g., Qi & Cheng, 2022). With a total variance of 36.6% and an F test significance (Table 8), the relationship between satisfaction and loyalty is confirmed, and there is a strong positive correlation ( $r=0.605$ ).

**Table 8**

*Regression model predictors (Satisfaction x Loyalty).*

Prediction criteria	Model results
<i>r</i>	0.605
<i>Adjusted r<sup>2</sup></i>	0.366
<i>F-ratio</i>	117.403, $p\text{-value}<0.05$

The linear regression analysis validated the third hypothesis (Table 9); in other words, the independent variable (satisfaction,  $\beta=0.605$ ;  $p\text{-value}<0.05$ ) presented a positive effect on loyalty. Previous studies identified similar results as Carvache-Franco, Pérez-Orozco et al. (2022) in Costa Rica, Radović et al. (2021) in Croatia and Carrascosa-López et al. (2021) in Spain.

**Table 9**

*Linear Regression – Model 2 (Satisfaction x Loyalty).*

Independent variables	Unstandardized coefficient (B)	Standard Error	Standardized coefficients ( $\beta$ )	t-Student	p-value	Tolerance	Variance Inflation Factor (VIF)
(Constant)	1.767	0.221		7.995	< 0.05		
Satisfaction	0.636	0.059	0.605	10.835	< 0.05	1.000	1.000

## 5. Final considerations

This research aimed to analyse the relationship between motivation, satisfaction, and loyalty among participants of outdoor activities in the Northern Region of Portugal. To reach this goal, three hypotheses were set and tested by applying the regression analysis, allowing significant findings.

Firstly, two factors related to motivation were determined, and then a linear correlation between the factors and satisfaction and loyalty was determined. In the next step, the motivation factors scores were used in the regression analysis to measure satisfaction and loyalty. It was revealed that motivation, respectively, services/hospitality and nature services have a relationship with satisfaction and loyalty, which confirms hypotheses  $H_1$  and  $H_2$ . Nature service dimension as a motivation factor suggests a growing concern for the environment, which can lead to more conscious and sustainable tourism practices.

Considering that satisfaction influences loyalty in tourist destinations, a linear regression was conducted to identify the relationship between satisfaction and loyalty of outdoor activities participants in the northern region of Portugal. The results confirmed hypothesis  $H_3$ ; in other words, satisfaction is an influential factor for the region's tourists to return to practice, to indicate and to speak positively about the region's activities. The study recognises the potential of outdoor tourism for developing the analysed area, which, when well planned, can contribute to economic growth without compromising natural and cultural heritage.

A limitation to be highlighted is the number of samples. It is supposed to affirm that, in a more extensive sample, the regression results are better and provide a better explanation of the relationships between motivation, satisfaction and loyalty. In this sense, future studies are proposed to use a larger sample, which may be extended to other country regions.

Further aligned with the sample size, another limitation may be the percentage of explained variance obtained in the results of the stepwise regression analysis. However, we have opted to analyse the data, considering that similar studies presented in this paper also showed a lower explained variance than those indicated in the statistical literature.

Consistent with previous research, it is essential to understand the interplay of motivation, satisfaction, and loyalty in the strategic planning of tourist destinations and in shaping the destination image. Enhancing tourists' satisfaction beyond their expectations is vital for fostering loyalty. As a result, these satisfied visitors are more likely to return and recommend the northern region of Portugal as an ideal destination for outdoor activities.

This study makes a theoretical contribution by extending empirical evidence on the relationship between motivation, satisfaction, and loyalty in outdoor tourism, particularly in peripheral regions of Europe where such relationships have not been extensively explored. Practically, the findings offer valuable insights for policymakers and destination managers to develop sustainable tourism strategies that enhance visitor satisfaction and loyalty while preserving natural resources. Future research could broaden the sample to include other regions or employ longitudinal approaches to capture changes in motivations over time.

## Contribution

E. SCALABRINI: conceptualisation; data curation; data analysis; writing. P.O. FERNANDES: conceptualisation; data curation; data

analysis; writing.

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