Exploring adventure tourism trends through image content analysis of Instagram posts

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Abstract

Purpose – The main objective of the paper is to contribute to testing the usefulness of image content analysis in the assessment of trends in the tourism market, as well as to draw conclusions about contemporary tendencies in the adventure tourism market. **Methodology** – The image content analysis is a key methodological tool in this research, supported by comparative and cluster analysis. A detailed analysis of trends in adventure tourism is carried out through the assessment of geographical and temporal characteristics, types of adventure activities and user representation by gender. **Findings** – The results of the research indicated the significant role of developing countries as adventure tourism destinations, the absence of seasonality, the dominance of soft adventure activities and women as participants in this type of tourism. In addition, the research made it possible to identify certain new activities and conclude on the diversification of the offer, as well as the classification of activities according to the gender structure of the participants. **Implications** – The results can be useful to the creators of the offer on the adventure tourism market, but also to the tourists themselves in terms of ideas and motivation. In a theoretical sense, the paper should contribute to highlighting the prevailing views in the literature on the key features of adventure tourism.

Keywords: adventure tourism, adventure activities, image content analysis, geotag analysis, Instagram
JEL classification: Z32

Istraživanje trendova u avanturističkom turizmu putem analize sadržaja slika Instagram objava

Sažetak

Svrha – Glavni cilj ovog rada je pružanje doprinosa u oceni korisnosti analize sadržaja slika u oceni trendova na turističkom tržištu, kao i zaključivanje o savremenim tendencijama na tržištu avanturističkog turizma. **Metodologija** – Analiza sadržaja slika je ključni metodološki alat u ovom istraživanju, dopunjena komparativnom i klaster analizom. Detaljna analiza trendova u avanturističkom turizmu izvršena je kroz ocenu geografskih i vremenskih

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karakteristika, vrsta avanturističkih aktivnosti i zastupljenosti korisnika prema polu. **Rezultati** – Rezultati istraživanja ukazali su na značajnu ulogu zemalja u razvoju kao destinacija avanturističkog turizma, odsustvo sezonalnosti, dominaciju „mekih" avanturističkih aktivnosti, kao i žena kao učesnika u ovom vidu turizma. Pored toga, istraživanje je omogućilo identifikovanje određenih novih aktivnosti i zaključak o diverzifikaciji ponude, kao i klasifikaciju aktivnosti prema polnoj strukturi učesnika. **Implikacije** – Rezultati mogu biti korisni kreatorima ponude na tržištu avanturističkog turizma, ali i samim turistima u smislu ideje i motivacije. U teorijskom smislu, rad bi trebalo da doprinose podvlačenju preovlađujućih stavova u literaturi o ključnim karakteristikama avanturističkog turizma.

Ključne reči: avanturistički turizam, avanturističke aktivnosti, analiza sadržaja slika, geotag analiza, Instagram
JEL klasifikacija: Z32

1. Introduction

The changed wishes and demands of modern tourists are a chance and motivation for the development of specific forms of tourism. Adventure tourism is one of the trends in the tourism market that is supported by the changes taking place on the side of tourist demand. Adventure tourism records worldwide dynamic growth and an increased number of people year after year exercise some type of adventure activity (ATTA, 2024). Its growth and development follow certain social changes, modification of lifestyle and the desire for a personalized experience, but also the need of modern tourists to spend their time in a unique and preserved natural environment (Gross et al., 2023). Adventure tourists are particularly motivated to visit unknown or newly discovered destinations. This fact gives the possibility of successful market positioning of unestablished and less established destinations by promoting their uniqueness and attracting tourists who want rare and authentic experiences, something new and unusual. Adventure is becoming a desirable, recognizable and increasingly sought-after part of the tourism product. Understanding the travel behaviours, characteristics, choices or activity preferences of tourists can be very useful in assessing trends in the adventure tourism market (Pomfret & Bramwell, 2016). Stories and photos on social media are an important aspect of modern tourist travel (Filipović et al., 2023; Haddouche & Salomone, 2018). Their posts are potentially a significant source of information for drawing conclusions about market trends.

Images play a very important role in tourism research as a medium that allows creating perceptions about the tourist destination, but also represent a way to understand the minds of tourists (Wang et al., 2024; Xiao et al., 2020). Particularly significant for the tourism industry among social media platforms is the dominantly image-based platform Instagram, due to the visual component of travel-related content (Smith, 2021). In parallel with the increase in the number of users on Instagram, its scientific contribution registered in the relevant scientific databases is also growing (Vaz, 2023). In addition, research shows that Instagram is the most important social media platform for adventure tourism (ATTA, 2024). Taking this into account, the subject of this paper is to analyze adventure tourism on Instagram using image content and geotag analysis. Image content analysis provides a comprehensive insight into tourist preferences, can determine tourism trends and is a valuable resource for more in-depth research. The aim of this research is twofold. First, the data obtained from the analysis will be compared with the official data of the Adventure Travel Trade Association (ATTA). Second, the aim is to determine recent adventure tourism trends on Instagram, with a detailed focus on location, type, temporal and gender features of adventure activities. Location or destination, type of activity, and gender are the usual

criteria for classifying adventure activities (ATTA, 2020; ATTA, 2024). The analysis of the temporal distribution of adventure activities is important in the context of assessing the potential of alternative forms of tourism in mitigating seasonality (Garanti, 2022). The motive of this research is the assessment of the usefulness of the aforementioned analysis as a research tool, as well as the fact that there is a lack of papers that analyze adventure tourism on social media platforms, especially for the purpose of assessing global trends.

2. Background

In understanding adventure tourism, it is perhaps best to start from the fact that it is used as an umbrella concept to theoretically cover the engagement of tourists in a wide range of activities, events and services, worldwide (Rantala et al., 2018). Adventure tourism or adventure travel, as it is often called alternatively, can include numerous activities, from those that are of low level of demand and risk to those that are highly demanding, and represents a certain way of combining adventure, specific experience and excitement. Adventure tourism is seen as a positive concept and is often explored in the context of sustainability and well-being. It helps to reconnect people and nature and encourages pro-environmental behaviors (Hanna et al., 2019). Adventure tourism enhances hedonic and eudaemonic subjective well-being and improves wellness of tourists (Houge Mackenzie et al., 2023; Hung & Wu, 2021; Lötter & Welthagen, 2020). With the growing market of adventure tourism, the interest of the scientific public in looking at different aspects of this form of tourism is also growing. The review of recent literature in the field of adventure tourism leads to the conclusion that three of its four characteristics that will be the basis of empirical research in this paper (geographical and gender features and type of activity) are highly represented in research. In the context of the temporal feature, adventure tourism is viewed as a discrete product that can be a solution and response to seasonality (Higham & Hinch, 2002; Pegg et al., 2012).

When it comes to specific destination of adventure tourism, it is a form of tourism that is present all over the world, less developed countries and regions seem to be more interesting to researchers although. McKay (2016) investigates the state of adventure tourism in South Africa and points to a satisfactory level of development, but also an uneven distribution between provinces, where the advantages are used to a greater extent by those provinces that adequately manage important tourism resources. In the context of adventure tourism, he emphasizes the importance of physical landscape, as well as transportation. Tibet in Asia, for example, is described in the literature as a paradise for adventure tourists and a destination of slow adventure tourism (Chen et al., 2020). Nepal is the subject of research not only in the context of high mountain adventure tourism, but also of certain emerging activities (Mu & Nepal, 2016; Wengel, 2021). Adventure tourism in Costa Rica has been considered one of the pro-environmental forms of tourism (Hunt & Harbor, 2019). Rivers, villages and mountain national parks are, for example, explored destinations of adventure tourism in Thailand (Bott, 2015; Ritpanitchajchaval et al., 2023; Tirasattayapitak et al., 2015). This brief review of research on adventure tourism destinations and the fact that less developed countries and regions are the preferred choice of researchers emphasize the importance of adventure tourism for this type of destination. In addition, although adventure tourism does not necessarily have to be related to the natural environment, destinations characterized by a preserved environment and quality natural resources are most often described in the literature.

When it comes to the type of activity, researchers often start from the general division of adventure activities into hard and soft, and in this context they design their research. It can be easily assumed that the motivation for engaging in hard adventure activities is adrenaline and

even the desire to face a high level of risk. Research by Mason et al. (2016) shows that the natural environment plays an equally important role as a motivating factor in these activities. Relaxation, exploration and socialization have been confirmed as motivational factors for the involvement of tourists in soft adventure activities (Bichler & Peters, 2020). In some destinations, due to an increasing number of tourists, the need for softening of adventure tourism is observed (Rantala et al., 2018). In addition to the broader context and the division of adventure tourism into soft and hard, specific types of activities are often the subject of research. For example, at the beginning of the 21st century, Beedie and Hudson (2003) talk about the blurring of social boundaries between mountaineers and tourists and explain the emergence and causes of the rapid growth of mountain-based adventure tourism. Only twenty years later, mountain-based adventure tourism is considered as a factor of eudaimonic well-being and hedonism (Ritpanitchajchaval et al., 2023). Ramoa et al. (2021) investigate motorcycling in the context of participants' motivation to get involved in adventure tourism and find that the excitement of such a trip has the power to transform the trip itself into a destination. The experience of tourists and their feelings while involved in adventure activities have been investigated, for example, in the context of paragliding (Ayazlar, 2015). Welling et al. (2015) turn the research focus to a very rare topic in the adventure tourism literature such as glacier tourism and the growing popularity of glaciers as tourist sites. This certainly does not exhaust neither the list of adventure activities, nor the research that focuses on the type of activity.

The specificities of adventure tourism and adventure activities have led to the fact that research often considers the issue of gender as an important characteristic of tourists. Originating in the 1960s and 1970s, the gender theories (Kohlberg, 1966; Maccoby, 1966; Tajfel, 1969) have provided fertile ground for numerous empirical research that examines different consumers' behavior associated with gender (Palan, 2001). In one of the first papers on gender in tourism, the authors stated that women and men play distinct roles in the development and consumption of tourism, thus shaping tourism marketing, tourists' motivation and actions of hosts (Kinnaird et al., 1994). Gender is a crucial factor in human interaction and must be considered as an important aspect of tourism research (Swain, 1995). In the context of the subject of research in this paper, Gross et al. (2023) find a connection between male participants and hard adventure activities, or they empirically confirm that there is a negative interdependence between female respondents and the probability that they belong to the group of hard adventure tourists. The fact that adventure activities are easily associated with male participants is perhaps the reason why theorists more often focus on women as adventure tourists in their research. Women as adventure tourists are not only more numerous, but also seem more challenging in terms of research compared to male participants. The inclusion of women in adventure tourism means for them to take control and improve their lives by introducing a dose of adventure, which enables them to actively empower themselves (Doran, 2016). Interaction and togetherness with fellow travelers in adventure tourism results in greater satisfaction for women compared to men (Su et al., 2022). Mackenzie et al. (2020) investigated the challenges, experiences and psychological well-being of female adventure tourism guides. In addition to the above mentioned, but limited research on adventure tourism as a family choice confirms a number of benefits that family engagement in adventure activities has for all members, regardless of gender and age. This way of spending time encourages positive personal development, improves health and psychophysical abilities, contributes to family bonding, family togetherness and relationship-building (Pomfret, 2019; Pomfret & Varley, 2019).

3. Materials and methods

The image content analysis was used in the paper in order to meet the defined aim of the research. This analysis is a widely used tool in examining the preferences of various social media platforms' users on certain issues, especially when it comes to tourism, since a large number of them use this channel for travel inspiration and decision-making. In order to examine the content of adventure tourism on Instagram, the images shared by users of this social platform containing hashtag #adventuretourism were used. The first 600 images, under "top post" category on 25th July, 2024, were coded. "Top posts" were selected as these posts had the greatest response (likes, shares and/or comments). This analysis was conducted following an example of similar studies of hashtag #fitspiration (Boepple & Thompson, 2016; Tiggemann & Zaccardo, 2018) and #slowtourism (Lazarević at al., 2024; Le Busque et al., 2021) on Instagram. Images were classified according to activities using the categorization of adventure activities given by ATTA, the worldwide association that links adventure tourism destinations and organizers (Table 1).

Table 1: Categorization of adventure activities

	Type of adventure		
	Hard adventure	**Soft adventure**	
Activity	- Caving - Climbing (on mountains/ rocks/ice) - Heli-skiing - Kite surfing - Paragliding - Trekking	-Archaeological expeditions - Backpacking - Birdwatching - Camping - Canoeing - Cycling (road/paved surface) - Cycling (mountain/non-paved surface) - Eco-tourism - Environmentally sustainable activities - Fishing/flyfishing - Hiking - Horseback riding - Hunting - Kayaking	- Orienteering - Motorized sports - Rafting - Research expeditions - Safari - Sand boarding - Sailing - Scuba diving - Snorkeling - Skiing/Snowboarding - Stand-up paddle boarding - Surfing - Volunteer tourism

Source: ATTA, 2013, p. 4

In addition to the image content analysis, comparative and cluster analysis were conducted in the paper. Comparative analysis found wide application in the presentation of data obtained by the image content analysis. Cluster analysis was used to group adventure activities according to the gender structure of the participants. The ATTA report was used to compare the data obtained by analyzing the content of Instagram images and official available data on trends in adventure tourism. As regards the intention of determining recent adventure tourism trends on Instagram, a set of research questions for each of the mentioned features was formulated. The research questions are summarized in Table 2.

Table 2: Research questions aimed to evaluate adventure tourism trends on Instagram

Feature	Research questions
Geographical	What is the geographical diffusion of posted images by country? What are the main adventure tourism destinations? Is there a dominance of developed countries as adventure tourism destinations compared to developing ones?
Activity type	What are the most popular adventure tourism activities? Are soft adventure activities more popular than hard ones? Is there further diversification of adventure activities?
Gender	What is the distribution of participants in adventure tourism according to gender? Is there a dominance of female adventure tourists compared to men? Is it possible to group activities according to the gender structure of the participants?
Temporal	Are there seasonal peaks in adventure tourist activity? Is it possible to determine the seasonality of adventure tourism?

Source: Authors

Using Instagram geotag, the location of images was determinated. Further analysis included determining the month in which the image was posted and the gender of Instagram account users. Besides the female and male gender category, the analysis also included the group account category, which refers to the accounts of certain associations, organizations, communities and/or fans of adventure tourism. In addition, the participation of Instagram posts by month was also analyzed.

4. Results and discussion

By the end of July 2024, the hashtag #adventuretourism had 90.4 thousand posts, whereas hashtag #tourism has had 52.4 million posts on Instagram. All of the analyzed images had location geotag, which are shown in Table 3. Among the top ten most associated countries with adventure tourism, judging by Instagram posts, are: India, USA, Malaysia, Australia, Canada, Nepal and Peru, South Africa, New Zealand, Japan, and Spain. These results are in line with the latest ATTA's trend report, which ranks the regions of Mediterranean, North-East Asia, South America, United States, South-East Asia, Southern Africa, Canada, India/South Asia and Oceania as the most popular adventure tourism destinations (ATTA, 2024).

Table 3: Location of Instagram posts

Percentage of posts	Country
18.5%	India
11%	USA
6.33%	Malaysia
4.5%	Australia
3.33%	Canada
3.17%*	Nepal, Peru
3%	South Africa
2.83%	New Zealand
2.5%	Japan
2.17%	Spain

1.83%*	Jordan, Pakistan, Uganda
1.5%	Qatar
1.33%*	Norway, Vietnam
1.17%*	Chile, Dominican Republic, Namibia
1%*	Guatemala, Scotland
0.83%*	Columbia, Kenya, Lebanon, Mexico
0.67%*	Costa Rica, Indonesia, Lesotho, Portugal, Rwanda, Sri Lanka, Tanzania, Trinidad, UAE
0.5%*	Belize, Brazil, China, Georgia, Ireland, Kyrgyzstan, Nicaragua, North Macedonia, Philippines, Serbia, Slovenia, Turkey
**	Algeria, Bulgaria, Congo, Island, Luxembourg, Morocco, Mongolia, Montenegro, Romania, Thailand, Tunisia
***	Albania, Antarctica, Argentina, Armenia, Austria, Bahamas, Bhutan, Bolivia, Borneo, Botswana, Croatia, Ecuador, Egypt, France, Guyana, Iceland, Laos, Madagascar, Maldives, Mauritania, Micronesia, Oman, Panama, Papua New Guinea, Paraguay, Puerto Rico, Saint Vincent, Saudi Arabia, Somalia, United Kingdom, Uzbekistan, Yemen

Legend: * means percent of posts for each country; ** means two Instagram posts for each country; *** means one Instagram post for each country
Source: Authors' research

As can be seen from Table 3, adventure tourism destinations refer to both developed and developing countries. The specific characteristics of adventure tourism are its direct dependence on the environment and preserved nature. Therefore, there is a good chance that developing and less developed countries will join the adventure tourism market. Adventure tourism can be one of the key development options for these countries. The data presented in Table 3 show that half of the top ten countries were developing ones. Among developing countries, India is the one with the most Instagram posts related to adventure tourism (18.5%). By comparison, according to the Adventure Tourism Development Index (ATDI), India ranks 78th in 2020 (ATTA, 2020). Malaysia follows when it comes to Instagram posts in developing countries (124th rank according to ATDI), then Nepal and Peru with an equal share (132nd and 138th rank according to ATDI, respectively) and South Africa (195th rank according to ATDI). The results, as well as their comparison with the ATDI ranking, indicate that new destinations from developing countries have established themselves in the adventure tourism market. However, since ATDI was last calculated for 2020, it is possible that the ranking situation will be different when ATTA calculates a new, modified index for 2024, as announced (ATTA, 2023).

The most represented adventure activity in the analyzed images is hiking (Table 4). Among the other, top ten leading adventure activities are: backpacking, trekking, rafting, kayaking, motorized sports, camping, eco-tourism, safari and cycling (road/paved surface). The results of the image content analysis are in line with ATTA's research, as hiking and trekking have been the most popular activities for years, according to ATTA's recent trend reports (ATTA, 2024). Apart from these two, among the ten most popular adventure activities are also safari (4th place) and cycling (road/paved surface) (5th and 10th place, whether it is about cycling electric or ordinary bicycles on paved roads, respectively). Among the other top 10 adventure activities according to the ATTA's trend report are cycling (mountain/non-paved surface) (7th place) and birdwatching (8th place), which are also listed as key adventure activities in Instagram posts.

Table 4: Key adventure activities of images

Percentage of posts	Activity
15%	Hiking (S)
10%	Backpacking (S)
6.17%	Trekking (H)
6%	Rafting (S)
5.17%	Kayaking (S)
4.83%	Motorized sports (S)
4.5%	Camping (S)
4%*	Eco-tourism (S), Safari (S)
3.67%	Cycling (road/paved surface) (S)
3.17%	Surfing (S)
2.83%	Canoeing (S)
2.67%	*Zipline (S)*
2.33%	Environmentally sustainable activities (S)
1.83%*	Caving (H), Horseback riding (S)
1.67%	Scuba diving (S)
1.5%*	*Arctic/Glacier observation (H)*, Climbing (on mountains/rocks/ice) (H), Orienteering (S)
1.33%*	Cycling (mountain/non-paved surface) (S), Paragliding (H), *Rail Biking (S)*
1.17%*	Archaeological expeditions (S), *Jet-skiing (S)*, Sailing (S)
1%*	*Bungie jumping (S)*, Skiing (S), Stand-up paddle boarding (S)
0.83%	*Via ferrata (H)*
0.67%	*Flight seeing via helicopter (S)*
0.5%*	Birdwatching (S), Fishing/fly fishing (S), *Sled dogs riding (S)*, Snorkeling (S), *Volcano observation (S)*
**	*Ballooning (S)*, Kite surfing (H)
***	Sand boarding (S), *Tight trope walking (H)*, Volunteer tourism (S)

Legend: * means percent of posts for each activity; ** means 2 Instagram posts for each activity; *** means 1 Instagram post for each activity; S - soft activity; H - hard activity
Source: Authors' research

Furthermore, one can infer the dominance of soft adventure activities. The reason for such results may be a wider offer of soft adventure activities compared to hard ones, as well as the easier involvement of participants in soft adventure tourism. The fact that should also be taken into account is that the division of adventure activities into hard and soft is often difficult to do precisely and it is often a matter of the subjective perception of the participants. However, the ATTA classification of adventure activities is followed in the paper.

Content analysis revealed that Instagram users associate adventure tourism with new activities that are not categorized by ATTA. Among them are: zipline, arctic/glacier observation, rail biking, jet-skiing, bungie jumping, via ferrata, flight seeing via helicopter, sled dogs riding, volcano observation, ballooning (two posts) and tight trope walking (one post). This leads to the conclusion about the further development of the offer on the adventure tourism market and the diversification of activities. It is interesting to note that some of these new adventure activities are exercised by women and/or groups, not men alone, such as: zipline, arctic/glacier observation, via ferrata, flight seeing via helicopter, sled dogs riding and tight trope walking (Table 4). Also, rail biking, as a new way of sightseeing, is only present in the USA.

The next step in the image content analysis was to analyze the content by user gender, with the aim of confirming the dominance of female adventure tourists compared to men which

has been present for years. Namely, according to ATTA (2024), women are a more dominant type of adventure tourists compared to men (53% compared to 46%), and they also tend to travel alone more often than men (55% compared to 38%). The image content analysis showed that group accounts are the most numerous when it comes to the appearance of the hashtag #adventuretourism (66.17%). Among the rest, women (participation of 18%) dominate relative to men (participation of 15.83%).

Table 5 shows which adventure activities are preferred and portrayed in images by women and which by men. The adventure activity most often featured in women's account images is hiking, followed by backpacking, canoeing, kayaking and zipline. Motorized sports are the most represented adventure activity in men's account images. This is followed by hiking, backpacking, cycling (road/paved surface) and cycling (mountain/non-paved surface).

Table 5: Comparative review of the participation of men and women in adventure tourism activities

Activity	Percentage of posts	
	Female (out of 18%)	Male (out of 15.83%)
Archaeological expeditions	2.78%	/
Arctic/Glacier observation	5.56%	/
Backpacking	9.26%	9.47%
Ballooning	0.93%	/
Camping	/	2.11%
Canoeing	6.48%	3.16%
Caving	2.78%	1.05%
Climbing (on mountains/rocks/ice)	1.85%	1.05%
Cycling (road/paved surface)	1.85%	9.47%
Eco-tourism	1.85%	5.26%
Environmentally sustainable activities	4.63%	1.05%
Flight seeing via helicopter	0.93%	/
Hiking	16.67%	16.84%
Horseback riding	1.85%	2.11%
Kayaking	6.48%	3.16%
Kite surfing	0.93%	1.05%
Motorized sports	1.85%	17.89%
Cycling (mountain/non-paved surface)	0.93%	6.32%
Orienteering	0.93%	2.11%
Paragliding	0.93%	2.11%
Rafting	4.63%	1.05%
Rail Biking	/	9.47%
Safari	1.85%	3.16%
Sand boarding	0.93%	/
Skiing	0.93%	2.11%
Sled dogs riding	0.93%	/
Stand-up paddle boarding	0.93%	/
Surfing	4.63%	4.21%
Tight trope walking	0.93%	/
Trekking	4.63%	4.21%
Via ferrata	2.78%	/
Volcano observation	0.93%	1.05%
Zipline	6.48%	/

Source: Authors' research

It is interesting to emphasize that women alone participate in some adventure activities, unlike men, judging by the image content analysis, such as: archaeological expeditions, arctic/glacier observation, ballooning, flight seeing via helicopter, sand boarding, sled dogs riding, stand-up paddle boarding, tight trope walking, via ferrata, zipline. In contrast, camping is the only adventure activity exercised solely by men.

Cluster analysis was used to group the activities according to the gender structure of the participants. The intention was to single out predominantly female activities, predominantly male activities, as well as activities that are relatively equally represented as choices of both genders. In this sense, three clusters were distinguished, and the final cluster centers are shown in Table 6. The variables on the basis of which the grouping was performed are the participation of men and women in each type of activity (percentage participation).

Table 6: Final Cluster Centers

	Cluster		
	1	2	3
Female participation	95.83	6.21	49.46
Male participation	4.17	93.80	50.54

Source: Authors' research

Activities that are predominantly chosen by female participants are grouped in cluster 1. Cluster 2 contains activities that are predominantly chosen by male participants. Cluster 3 stood out as a cluster with activities that are relatively equally represented as choices by both genders. An overview of activities by clusters is shown in Table 7.

Table 7: Classification of activities according to the gender structure of the participants

Cluster	Activities
Cluster 1 (Female)	Archaeological expeditions (S), Arctic/Glacier observation (H), Ballooning (S), Caving (H), Cycling (road/paved surface) (S), Environmentally sustainable activities (S), Flight seeing via helicopter (S), Rafting (S), Sand boarding (S), riding (S), Stand-up paddle boarding (S), Tight trope walking (H), Via ferrata (H), Zipline (S)
Cluster 2 (Male)	Rail Biking (S), Camping (S), Motorized sports (S), Cycling (mountain/non-paved surface) (S)
Cluster 3 (Female/Male)	Backpacking (S), Canoeing (S), Climbing (on mountains/rocks/ice) (H), Eco-tourism (S), Hiking (S), Horseriding (S), Kayaking (S), Kite surfing (H), Orienteering (S), Paragliding (H), Safari (S), Skiing (S), Surfing (S), Trekking (H), Volcano observation (S)

Source: Authors' research

The classification of activities in Table 7 points to two conclusions. First, there is a wider range of adventure activities in which predominantly women are involved compared to those predominantly chosen by men. Second, not only are soft activities reserved for women, but they also appear as participants in numerous hard adventure activities, which is contrary to general social expectations and some theoretical findings (Gross et al., 2023). In order to confirm the statistical significance of the difference between the clusters, the Post Hoc Test was applied. The results shown in Table 8 confirm that it is justified and possible to classify the activities according to the gender structure of the participants, since there is a statistically significant difference between all three clusters.

Table 8: Post Hoc Test

Dependent Variable	(I) Cluster	(J) Cluster	Mean Difference (I-J)	Std. Error	Sig.
Female participation	1.00	2.00	89.62786(*)	6.24721	0.000
		3.00	46.37152(*)	4.09481	0.000
	2.00	1.00	-89.62786(*)	6.24721	0.000
		3.00	-43.25633(*)	6.20076	0.000
	3.00	1.00	-46.37152(*)	4.09481	0.000
		2.00	43.25633(*)	6.20076	0.000
Male participation	1.00	2.00	-89.62786(*)	6.24721	0.000
		3.00	-46.37152(*)	4.09481	0.000
	2.00	1.00	89.62786(*)	6.24721	0.000
		3.00	43.25633(*)	6.2007 6	0.000
	3.00	1.00	46.37152(*)	4.09481	0.000
		2.00	-43.25633(*)	6.20076	0.000
* The mean difference is significant at the 0.05 level					

Source: Authors' research

Finally, in order to observe peaks in adventure tourism activities and draw conclusions about the potential seasonality of adventure tourism, a temporal analysis of posted Instagram images was also performed. The distribution of posts by month is shown in Figure 1.

Figure 1: Monthly distribution of Instagram posts
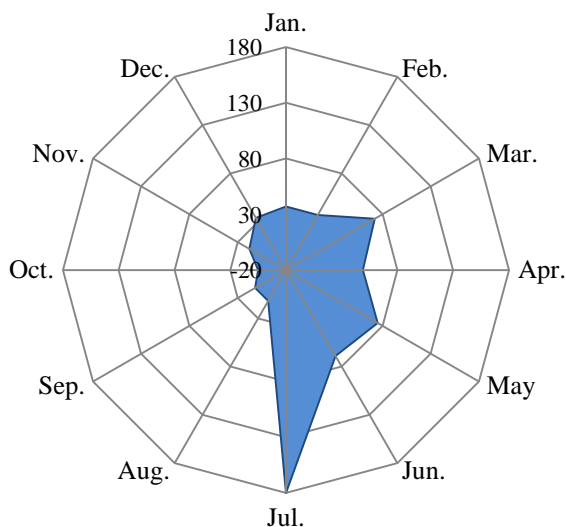
Source: Authors' research

The peak of adventure activities in July is clearly evident. This is followed by May, March and June. It is interesting that after the most dynamic July, the activity of adventure tourists on Instagram is extremely low in August. Also, more posts were recorded in December, January and February, as distinctly winter months, than in September, October or November. Based on this, it can be concluded that it cannot be claimed that adventure activities and activities of adventure tourists on Instagram are predominantly related to the summer or winter season.

5. Conclusion

Adventure tourism is a form of tourism that records dynamic growth in the number of tourists and popularity. As such, it is becoming increasingly prevalent in the posts of social media users. Adventure tourism is considered to be any type of nature-related tourist activity. Although this is the most common case, the destination of adventure activities does not necessarily have to be a natural environment. Certain types of adventure activities can also be realized in urban areas. What is important is that adventure tourism is associated with a certain type of risk, excitement, the desire to overcome one's own psychological and physical limits, although in its milder forms it can also represent a type of tourist relaxation. Therefore, there are many activities that can be classified as a part of adventure tourism, whether they are realized in nature or in urban areas, whether they are classified as hard or soft. The aim of this paper was to compare the results obtained from the analysis with the existing data on adventure tourism, as well as to draw conclusions about the trends in the adventure tourism market.

It can be concluded that the results of the research are in line with the results of the ATTA report. This conformity can be an argument that justifies the use of image content analysis in the evaluation of trends in the tourism market. When it comes to a more detailed analysis of adventure tourism trends, the results provided insights into the geographical diffusion of Instagram posts and led to the conclusion that India is the most popular adventure tourism destination on Instagram. Also, the results indicate that developing countries are significantly represented as adventure tourism destinations. Hiking is the most represented adventure activity in the analyzed images. In addition to highlighting some other highly represented activities and confirming the higher population of soft compared to hard adventure activities, the research led to the conclusion that new adventure activities are appearing, which diversifies the offer on the adventure tourism market. When it comes to the gender structure of the users, the research has confirmed the higher participation of women compared to men, which has been present for a long time. Also, activities were divided into those that are predominantly the choice of female participants, predominantly the choice of male participants and those for which there is a relatively equal interest of participants of both genders. This division made it possible to conclude that women are involved in a wider range of adventure activities, but also that, in addition to soft activities, they are also actively involved in hard activities. Although a peak in posted images is evident in July, which may be explained by the limitation of the survey, no clear seasonality of adventure activities is observed. This is in line with the view that niche tourism such as adventure tourism shows a relatively lower level of seasonality. Moreover, involving tourists in adventure activities can be a solution for seasonality.

Theoretically, the paper contributes to enriching the adventure tourism literature. Empirically, the research provides an insight into the Instagram users' preferences when it comes to adventure tourism: which adventure activities are the most popular, participation of adventure activities by month, which gender is dominant adventure tourist, as well as which countries are the most popular adventure tourism destinations. Practically, the research provides insights into new adventure activities that tourists associate with adventure tourism, which can be beneficial to all stakeholders. Nevertheless, the research has some limitations. The highest participation of images posted in July may also be a consequence of the conducted date of analysis. Also, the existence of a large number of the group category Instagram accounts distorts the results of the representation of adventure tourists between the genders. For the purpose of a more detailed analysis, future research should include, in addition to image content analysis, a survey of the Instagram account users' preferences.

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Conflict of interest

The authors declare no conflict of interest.

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