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Proceedings of the 5th International Conference on Tourism Research

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19-20 May 2022

Edited by
Prof. Cândida Silva, Prof. Mónica Oliveira
and Prof. Susana Silva

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The School of Hospitality and Tourism (ESHT)
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Preface

These proceedings represent the work of contributors to the 5th International Conference on Tourism Research (ICTR 2022), hosted by The School of Hospitality and Tourism, of Polytechnic Institute of Porto, Portugal on 19-20 May 2022. The Conference Co-Chairs are Prof. Cândida Silva, and Prof. Mónica Oliveira and the Programme Chair is Prof. Susana Silva, all from School of Hospitality and Tourism of Polytechnic Institute of Porto (ESHT/P.PORTO), Portugal.

ICTR is a well-established event on the academic research calendar and now in its 5th year the key aim remains the opportunity for participants to share ideas and meet the people who hold them. The scope of papers will ensure an interesting two days. The subjects covered illustrate the wide range of topics that fall into this important and ever-growing area of research.

The opening keynote presentation is given Dr. Luís Araújo, President of Turismo de Portugal on the topic of *Tourism: Time to act.* The second day of the conference will open with an address by Professor Marianna Sigala, University of Piraeus, Greece, who will talk about *Advertising Tourism During COVID-19: Marketization of compassion or re-setting tourism*.

With an initial submission of 128 abstracts, after the double blind, peer review process there are 57 Academic research papers, 7 PhD research papers, 3 Masters Research papers and 5 work-in-progress papers published in these Conference Proceedings. These papers represent research from Austria; Bulgaria; Canada; China; Cyprus; Czech; Finland; Greece; Ireland; Italy; Japan; Peru; Poland; Portugal; Romania; Slovakia; South Africa; Spain; Switzerland; Turkey; UAE; UK; USA; Vietnam.

We hope you enjoy the conference.

Prof. Cândida Silva, Prof. Mónica Oliveira and Prof. Susana Silva

The School of Hospitality and Tourism, of Polytechnic Institute of Porto
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Adventure Sports and Nature-Based Tourism: Assessment of Canyoning Spots in the Northern Region of Portugal

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Abstract: The growing demand for natural areas and outdoor activities in the last decade, even more noticeable in the COVID-19 worldwide pandemic situation, has led to the intensification and diversification of nature-based tourism supply in many regions, including the provision of adventure recreation activities, such as canyoning. However, and despite the increasing interest of companies, destinations, and academia in this specific type of activity, there is limited information on resources, practice conditions, and assessments based on specific, objective criteria. This information is critical for a more competitive development and positioning of regions for this activity, and to meet tourists' increasingly demanding expectations. Therefore, this paper aims at building upon the identified research gap, by characterizing and evaluating the existing conditions for canyoning activity in the North Region of Portugal, This evaluation of twenty-seven canyoning spots. was done based on an assessment matrix, comprised of specific criteria, grounded on the literature review and semi-structured interviews with companies' owners/managers and experts. The study concludes that the activity is evolving in the region and there is still potential for development, due to morphological, favourable conditions. Moreover, the region offers different spots, often inserted in protected areas, with unique landscapes and natural diversity, which is attractive for tourism. The presentation of an assessment matrix (that allows the characterization and evaluation of canyoning spots on a systematic approach in different geographic contexts) makes this study a contribution to the literature on nature-based, adventure tourism and recreation activities.

Keywords: assessment matrix, adventure tourism, nature tourism, canyoning, Portugal

1. Introduction

Active and sports tourism-related activities, particularly those associated with the natural environment are increasingly valued by tourists, which contributed to the growth of supply and has led to the expansion and diversification of nature and adventure tourism (Martins et al., 2021; Silva & Almeida, 2013). Canyoning, a water and mountain sport is one of the activities that has seen such a growing interest (Brandão, Marques, Pereira, Coelho, & Quaresma, 2018). It consists in descending steep the descent of steeply sloping watercourses, using abseiling, jumps rappelling, jumps, dexterity or toboggans to overcome the obstacles. While it allows the discovery of landscapes, it combines some techniques associated with mountaineering, speleology mountaineering, speleology and also wild water, with a recreational component, which can be practised can be practised by highly qualified and experienced sportspeople, as well as by beginners (Silva & Almeida, 2013).

An effective planning based on a systematic identifcation and assessment of natural resources is critical for the potential development of this type of nature-based activities, namely at a regional level (Alaeddinoglu & Can, 2011; Priskin, 2001). In this context, diagnosis matrices are useful to organise and structure information in multiple settings and represent methodologies that can be applied to a diversity of territories. This information is critical for a more competitive development of this kind of activity,as well as for regions' positioning, and to meet tourists' increasingly demanding expectations (Silva, Rachão, & Correia, 2021).

However, and despite this recognition, research on specific assessment tools is limited (Priskin, 2001), including in the specific context of Portugal (Turismo de Portugal, 2017), where outdoor tourism is a strategical asset of the Portuguese economy (Travel BI, 2018). Therefore, this paper aims at building upon the identified research gap, by characterizing and evaluating canyoning activity in the North Region of Portugal, based on an assessment matrix aiming at evaluating the conditions offered by canyoning spots, developped within a broader research project, which presents an overall outdoor tourism assessment matrix (OTAM).

After this introductory section, the paper follows with the literature review section discussing canyoning as an outdoor activity, the necessary conditions for its practice and the relevance of assessing the quality of identified spots, for the acknowledgement and positionong of territories as tourism destinations. The characteristics of the region for the practice of canyoning and the methodology employed to collect and analyse the data are

presented in the third section. Results will be presented in the fourth section and discussed in the final part of the paper. The paper ends with the main conclusions and discussion of practical implications.

2. Literature review

The adventure recreational sport of 'canyoning', practised in a natural environment, is also seen as multidisciplinary escapist sport (Moreira & Santos, 2010). It has received increasd attention in the last years from academics and practicioners (Brandão, et al., 2018), including by canyoning associations and also tourism-related companies (Hardiman & Burgin, 2011). Canyoning, which can be practised both at high technical dlevel, as well as by beginners (Silva & Almeida, 2013), involves a combination of hiking, rappelling, swimming and rock climbing, with participants following the course of rivers,waterfalls, water-filled slots between sheer rock walls and other natural obstacles through deep, narrow gorges (often <1 m wide) (Hardiman & Burgin, 2010a, 2011). The natural environment where canyoning takes place offers a unique experience of natural beauty and excitement (Hardiman & Burgin, 2010a). Moreover, people are increasingly choosing leisure, recreation and tourism-related activities on rivers and on their banks (Moreira & Santos, 2010). As a result, this type of recreation activities is increasingly being promoted for different reasons, including health, nature appreciation, educational, and remote locations exploration. Psychological, sociological, and physical well-being benefits are often aknowledged as associated to its practice, particularly relevant for groups with special needs, such as the youth or people with disabilities (Hardiman & Burgin, 2010b).

Beyond the recognised benefits, there is also an increasing concern regarding environmental and social impacts of canyoning, which may occur as a result of soil erosion, rock damage, littering, destruction of vegetation, water and air pollution, and crowding or disturbance of other visitors, impactng on local residents wellbeing but also on the quality of visitors' experience (Hardiman & Burgin, 2010b, 2010a). Moreover, this adventure sport involves an increased risk resulting essentially from human factors (Sarmento et al., 2021) and also from the fact that this is a sport that takes place in striking natural environments, with a diversity of obstacles and risks, some of which related to sudden changes in the flow of rivers, or falls resulting from the very irregular and slippery terrain (Silva & Almeida, 2013). These specific geomorphological conditions of canyons reveal steepest and deepest slopes, made up of hard rocks like granite, quartz; schist and basalt that are usually cliffs, relatively abundant waterfalls and fairly deep natural pools, all of which form natural obstacles (Moreira & Santos, 2010). The combination of environmental and human factors (the latter being the result of operational, physical, emotional and cognitive Man's actions) reinforces potential situations for accidents (Brandão, et al., 2018).These risks can be minimized by a preventive approach to risk management, critical to the identification of appropriate procedures to ensure the safety of practitioners (Silva & Almeida, 2013).

The practice of canyoning in remote areas influnces the lack of information in terms of quantification of the scale and growth of the activity, for example, regarding the number of practicioners and trends (Hardiman & Burgin, 2011). Thus, for an effective planning, a systematic identifcation and assessment of natural resources is critical for the potential development of this type of nature-based activities, namely at a regional scale (Alaeddinoglu & Can, 2011; Priskin, 2001). In this context, resource inventories including assessment according to clearly defined criteria are important (Silva & Almeida, 2020), and so diagnosis matrices are useful to organise and structure information in multiple settings and represent methodologies that can be applied to a diversity of territories. This knowledge is critical for a more competitive development of this activity, for regions' positioning, and to meet tourists' increasingly demanding expectations (Silva, Rachão, & Correia, 2021; Silva et al.,2021).

The valorisation of natural heritage is one of the Portuguese government priorities because it is one of the country's main assets in terms of tourism. It creates wealth and enhances the unique attributes of each region, namely for the practice of outdoor activities, increasingky popular by several tourism markets (Turismo de Portugal, 2017). Portugal has great potential for outdoor activities, namely canyoning, particularly in its northwest region, Madeira, and in the Azores islands, due to the combination of geology and geomorphology, diversity of wildlife and flora, and grainfall that produce distinctive conditions for its practice. Thus, and along with these regions' unique conditions, canyoning is growing in popularity because it is an adventure and recreation sport that involves risks and allows visitors to get to know some isolated, hard-to-get-to places (Moreira & Santos, 2010). However, and despite this recognition, information regarding resource inventories including assessment with well defined criteria is scarce. Few studies have been identified, and no study for the North of Portugal. As such, the assessment of the conditions offered in this region is vital for the promotion of competitive cayoning tourism destination.

3. Methodology

3.1 Study area

Northern Portugal, NUT II, includes five Protected (classified) Areas (Peneda-Gerês National Park; Northern Coast Natural Park; Montesinho Natural Park; Douro International Natural Park; Alvão Natural Park) (Fig. 1). The Institute for Nature Conservation and Forests (ICNF) is the national authority that manages these classified areas providing licenses for the practice of nature and adventure activities. In these classified areas, the majority of activities consist of hiking trails, particularly, trail running competitions involving thousands of participants promoted by associations, sports clubs and tourism recreation firms (ICNF, 2020). Nature tourism demand rapidly growths in this region with mountaineering, hiking, and cycling activities being popular activities. Dedicated spots are available, in general, both for experienced and independent practitioners, and for beginners (Travel BI, 2018).

Source: https://www.mapsland.com/europe/portugal/large-regions-map-of-portugal

Figure 1: North region of Portugal

According to the Tourism Strategy 2027 (Turismo de Portugal, 2017), 23% of the Portuguese territory integrates Natura 2000, and/or is under a classification status aiming at protecting biodiversity and outstanding natural values and environmental quality. In total, 27 canyoning spots were identified in the North of Portugal and assessed as described below.

3.2 Research design

3.2.1 Assessment matrix measurements

For obtaining an overview of the conditions for canyoning within Northern Portugal, an assessment matrix was employed, developed within a broader project. The OTAM resulted from a multistage and multimethod process, implemented by a multidisciplinary team (academics, public institutions, tourism recreation firms, and sports clubs) (Silva et al., 2021). For the purpose of this paper only a sub-section will be described. In its full length, the OTAM aims to assess the conditions for practicing ten different outdoor activities (including), identifying specific attributes to each activity. In the case of canyoning, a first set of attributes was identified in the literature, e.g. nature resources (Clius & Patroescu, 2014), accessibility, facilities available in place, and infrastructure quality (Alaeddinoglu & Can, 2011; Priskin, 2001). Additionally, international strategic documents from sports

associations, federations and sustainability guidelines for protected areas were also analysed, originating another set of attributes. In order to improve the robustness of the matrix eighteen semi-structured interviews were conducted with key stakeholders, experienced in outdoor tourism, including representatives of nature-based and adventure tourism businesses, and sports-related organisations, as well as development associations, local government authorities, municipalities and Nature and Forest Conservation Institute (ICNF). Of these, two semi-structured interviews were conducted with canyoning experts. Based on the literature review and supported by academics and experienced professionals in outdoor tourism, seventeen attributes were identified as being relevant for the analysis of the conditions for canyoning (Table 1).

Table 1: Canyoning assessment matrix model adopted from Silva et al. (2021)

Attributes	Rating scores
Protected area	No Yes
Accessibility	This attribute measures the travel time from the place where the equipment is collected to the place where the activity takes place; 1 – 21 minutes or more; 2 – between 16 and 20 minutes; 3 – between 11 and 15 minutes; 4 – between 6 and 10 minutes; 5 – less than 5 minutes;
Infrastructure	1 – It does not have any type of built infrastructure; 2 – It has access infrastructure to the canyon (if necessary); 3 – It has access infrastructure to the canyon (if necessary) and parking; 4 – It has access infrastructure to the canyon (if necessary), parking and public showers; 5 – It has infrastructure for accessing the canyon (if necessary), parking, public showers and changing rooms.
Safety	1 – The escape is not safe; 3 – In the event of flooding or rising water, the escape from the affected area can be completed quickly; 5 – The escape is safe along the route;
Universal accessibility	1 – It is not accessible to people with reduced mobility (RM); 2 – Easy access, with an accessible route that allows access to people with RM; 3 – Easy access, with an accessible route and parking vehicles for people with RM; 4 – Easy access, with an accessible route, parking of vehicles and easy access to support structures for people with RM; 5 – Easy access, with an accessible route, parking of vehicles and easy access to support structures and school/club/organisation capable of providing adapted service for people with RM;
Period recommended for the practice	1 – up to 2 months; 2 – 3 to 4 months; 3 – 5 to 6 months; 4 – 7 to 9 months; 5 – all year.
Practioner level of experience	1 – Very experienced; 2 – Experienced; 3 – Intermediate; 4 – Initiated; 5 – Recreational use.
Risks	Open question
Canyon difficulty	1 – Extremely difficult; 2 – Very difficult; 3 – Difficult; 4 – Moderately difficult; 5 – Easy; 6 – Very easy; 7 – Extremely easy;

Source: Authors' elaboration adapted from Silva et al. (2021)

Whereas other studies maintain a considerable degree of subjectivity (e.g. Eagles, 1984, Priskin 2001; Clius & Patroescu, 2014), the proposed instrument (assessment matrix), adds value as an innovative and more concrete tool. As displayed in Table 1, and concerning the specific conditions of each spot (Alaeddinoglu & Can, 2011; Priskin, 2001), several attributes were scored on an ordinal scale, ranging from 1 to 5 reflecting the positive progression concerning the inherent aspects of each attribute (Alaeddinoglu & Can, 2011; Priskin, 2001). Other attributes are represented as categorical variables, such as protected area, infrastructure facilities, hazards, interpretative centre, period recommended for the practice of the activity, trail type, floor type and key values to observe. The level of experience of the hiker and the difficulty of the trail were considered as categorical variables, as they do not reflect the quality of the trail. However, its variance may be important for the attractiveness of the tourist destination (for hikers more or less experienced). The trail length and duration are represented as ratio variables. The assessment matrix was administered to academics and to tourism recreation professionals for further refinement of wording and consistency, and some editing was made to improve its readability.

3.3 Data collection

The research instrument employed to collect data was the assessment matrix (OTAM) developed by Silva et al. (2021), in specific attributes for canyoning as illustrated in Table 1. In order to select the tour operators/businesses offering canyoning activities, a search in the Portuguese National Tourism database (Registo Nacional de Turismo) was performed. In total, thirty-five (35) emails were sent in April, 2021 to the tour operators offering this recreational activity in northern Portugal requesting for an online interview. From these, 7 agreed to be interviewed. Semi-strucured interviews were scheduled and carried out online through Zoom, between April and May 2021. Each online interview lasted about 60 minutes.

3.4 Data analysis

Descriptive statistics was performed to gain an overall understanding of attributes in ordinal variables (e.g. accessibility; infrastructure; security; universal accessibility; period recommended for the practice; practionier level of experience and canyon difficulty. Regarding open questions, particularly respecting to the main risks in the canyons, a content analysis of the interviews was carried out.

4. Results

Reflecting on the canyons identified and the attributes classified by the interviewees, Table 2 demonstrates the mean scores for each attribute. It is possible to note that the “accessibility” attribute shows that in average, it takes between eleven (11) up to fifteen (15) minutes to go from the place where the equipment is collected to the location where the activity takes place.

In general, it is observed that a significant part of the canyons do not have any “infrastructure” built to support the canyoning activity, which is common in northern Portugal, as it is practiced in isolated areas.Being remote and difficult to access is often an attraction for handicapped practioniers. However, two (2) canyons, namely, the canyon of Castro Laboreiro (Melgaço) and Aguieiras (Arouca) have access infrastructure, parking and public showers.

Table 2: Canyoning assssment attributes

Attributes	Mean scores
Accessibility	2.59
Infrastructure	1.61
Safety	2.83
Universal accessibility	1.02
Period recommended for the practice	3.02
Practiconer level of experience	3.22
Canyon difficulty	3.74

Source: authors’ elaboration (rating scores described in Table 1)

When analysing the ‘safety’ attribute among the twenty-seven (27) canyons, nine (9) of them are considered more dangerous in case of an accident as they do not facilitate the rescue of the practitioners. In case of increased stream flow, eight (8) canyons can become more dangerous for the practitioners, yet, the rescue can be rapidly concluded given the geomorphological features of the spots. The remaining ten (10) canyons were

classified as no dangerous in the need of a quick escape. As illustrated in Table 3, the various risks factors identified in canyons located in NUT II North of Portugal are mainly related to geomorphological features.

Table 3: Risks reported by respondents in the identified canyons

Protected area (PA)	**Code**	**Location of the canyons**	**Municipality**	**Risk factors identified by the interviewees and coded accordingly to the authors Brandão et al. (2018)**				
				Environmental		**Human**		
				Geomorphological	**Biotic**	**Emotional**	**Operational**	**Physiological**
X	1	Rio Âncora – Montaria	Caminha	sudden increases in the stream flow; slippery	X	X	X	X
Peneda-Gerês National Park (PGNP)	2	Rio Laboreiro	Melgaço	rock fall	X	X	X	X
PGNP	3	Rio Laboreiro Inferior		isolated canyon	X	X	X	X
PGNP	4	Ribeira de Varziela		sudden stream flow	X	X	X	X
PGNP	5	Ribeira de Carcerelha	Ponte da Barca	physical obstacles (amounts of rocks)	X	X	X	physical capacity
PGNP	6	Rio de Germil		X	X	X	Technical competences	physical capacity
X	7	Cascata da Candosa	Vieira do Minho	high falls; isolated canyon	X	X	X	X
Protected area (PA)	Code	Location of the canyons	Municipality	Risk factors identified by the interviewees and coded accordingly to the authors Brandão et al. (2018)				
X	8	Rio Saltadouro (Cabreira)		river/stream flow; sudden increases in the flow; high falls	X	X	X	X
Rede Natura 2000 **	9	Rio Poio	Ribeira de Pena	isolated canyon; falls	X	Emotional	X	physical capacity
; Arouca Geopark*	10	Rio de Frades Inferior	Arouca	falls; slippery	vipers	X	X	X
; *	11	Rio de Frades Superior		falls; slippery	vipers	X	Technical competences	X
; *	12	Aguieiras, Alvarenga		falls; isolated;sudden increases in the stream flow	X	X	X	X
; *	13	Frecha da Mizarela (Rio Caima)		falls; slippery	vipers	X	Technical competences	X
; *	14	Ribeira da Castanheira		slippery;	X	X	X	X
; *	15	Rio Pequenino		slippery;	X	X	Technical competences	X

Protected area (PA)	Code	Location of the canyons	Municipality	Risk factors identified by the interviewees and coded accordingly to the authors Brandão et al. (2018)				
				Environmental		Human		
				Geomorphological	Biotic	Emotional	Operational	Physiological
; *	16	Ribeira da Pena Amarela Superior		falls; slippery	X	X	Technical competences	X
; *	17	Ribeira da Pena Amarela Inferior		slippery;	X	X	Technical competences	X
; *	18	Ribeira do Fontão		slippery;	X	X	X	X
; *	19	Ribeira Côto do Boi Superior		slippery;	X	X	X	X
; *	20	Ribeira Côto do Boi Inferior		slippery;	X	X	Technical competences	X
Rede Natura 2000	21	Rio Ardena, Nespereira	Cinfães	slippery; sudden increases in the flow	X	X	X	X
PGNP	22	Rio Arado Superior	Terras de Bouro	isolated canyon	X	X	Technical competences	X
PGNP	23	Rio Arado Inferior		X	X	X	Technical competences	X
PGNP	24	Rio Conho		slippery;	X	X	Technical competences	X
Alvão Natural Park	25	Rio Olo, Mondim de Basto	Vila Real	physical obstacles	X	X	Technical competences	X
Alvão Natural Park	26	Rio Cabrão, Mondim de Basto		slippery;	X	X	X	X
X	27	Ponte de Queimadela, Fafe	Vizela	falls	X	X	X	X

*Weather and climate and Psychological: no risks identified by interviewees fall under this dimension

Although, some of the interviewees claimed that some canyons may provide an experience for people with reduced mobility if the tour operator has trained monitors and supporting equipament, most spots are not accessible to all (mean= 1.02).

Concerning the 'period recommended for the practice, this attribute demonstrates that it is possible to perform canyoning from three up to six months (mean= 3.02) of. The most suitable months are mainly between April and September due to the better water temperature and weather conditions, making it more comfortable to the recreational practice, and also due to the flow of the rivers.

With the exception of seven (7) canyons that were rated by respondents as very experienced from a recreational practitioner's point of view, the remaining twenty-one (21) were considered suitable for practitioners with lower levels of experience. This attribute is strongly related to the canyon difficulty which rates the canyons accordingly

its environmental and human factors. The interviewees rated the twenty-seven (27) canyons identified as moderately difficult (mean= 3.74).

5. Discussion and conclusions

The present study is in line with the literature (e.g. Alaeddinoglu & Can, 2011; Hardiman & Burgin, 2011) by highlighting the importance and the need to assess the conditions offered for the practice of cayoning, supported by the scarcity of information regarding resource inventories and assessment criteria, namely for the North region of Portugal.

The results allow an overall perspective of the conditions of the canyoning spots in the region based on the analysis of the supply, which differs from other studies that have focused on specific elements or attributes, and mostly from the practitioners' point of view (Brandão et al., 2018). In relation to risk, one the criteria that comprises the assessment matrix, the current study confirms that geomorphological factors are critical, as they determine the access to the canyoning spots (Brandão et al., 2018; Silva & Almeida, 2020). These results can explain the assessment of the difficulty level, which was considered moderately difficult. In the sense of the region's recognition as a tourist destination, the existence of spots requiring expertise is interesting in that it attracts specialised target groups, namely at the level of international competitions and championships. On the other hand, the existence of spots with different levels of difficulty is also favourable, allowing a response to be given to publics with different levels of experience and aptitude. Furthermore, the study results demonstrate that there is the need to improve conditions concerning infrastructures, which could improve also the perception of safety-related conditions, contributing to this latest aspect, of being "accessible" both in the sense of offering opportunities for people with low skill level. Also, efforts should be undertaken to improve the conditions to allow adapted canyoning practice (under the premise of sports for all and tourism for all), whenever that is possible.

This study, not only has theoretical contributions as it identifies the attributes that need to be taken into account when analysing cinditions for canyoning, but also the rating scores and assessment criteria, enabling the generalised use of the assessment tool. Moreover, it also has practical implications as its results assist local and regional authorities in communicating, and in the planning and development of outdoor tourism, particularly canyoning activities. The proposed assessment matrix (OTAM) allows a systematic comparison of different spots in different locations. The matrix can be applied in other regions, with different characteristics, which could be studied in the future.

This study is not without limitations, in particular, the number of interviews. A larger sample could be important to complement or reinforce the identified elements and assessment criteria. Nevertheless, as an assessment tool, the OTAM can already be used to identify and prioritise strategies for outdoor tourism sustainable development.

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