MULTICRITERIA APPROACH TO RURAL TOURISM DEVELOPMENT IN REPUBLIC OF SRPSKA

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A R T I C L E   I N F O

A B S T R A C T

The purpose of this paper is to examine the current state of rural tourism in Republic of Srpska as well as to provide guidance and recommendations for the development of this form of tourism. The used model approach expert opinion and, on this occasion, the DEX method of multicriteria decision-making was used. With this model, an assessment of rural tourist capacities is carried out on a random sample of four tourist facilities. The reason for the results obtained in this way is that the observed facilities have adequately used the natural resources available to Republic of Srpska. In addition, recommendations and guidelines are given in order to further develop this type of tourism in Republic of Srpska. The presented model offers an innovative approach in the assessment of current and potential tourist facilities. For this reason, it should be used in future research.

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Introduction

In modern tourism, it is necessary to take into account all the criteria that affect the development of the tourist offer. When considering the tourist offer, it is necessary to take into account the social, economic and ecological background of the local community on which the tourism service is reflected (Puška, et al., 2020). In that way, the perception of the tourist offer through sustainability is used. In the sustainable development of tourism, it is necessary to meet the following criteria: Economic, Environmental and Social criteria. In order to obtain an overall assessment of the sustainability of tourist facilities, additional sub-criteria should be included (Prevolšek, et al., 2020). Due to

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the importance of these criteria aimed at the development of tourism, it is necessary to apply a holistic approach to the evaluation of tourist facilities. The application of this evaluation approach is a classic decision-making problem that is solved by applying the methods of multi-criteria decision-making (hereinafter - MCDM). MCDM is used in a situation where it is necessary to decide among different alternatives that are available, and all these alternatives are evaluated using different criteria (Rozman, et al., 2017).

When assessing sustainable rural offer in the Republic of Srpska (hereinafter - RS), complex decision-making will be applied with the application of the DEX method. The DEX method applies operations to the linguistic values of the criteria, and the result is also in the form of a linguistic value, bringing the decision closer to the human way of thinking (Rozman, et al., 2016; Stanković et al., 2020). The aim of the decision-making model is to perform an analysis of the existing facilities of the rural tourist offer in selected rural households where rural tourism services are offered.

The goal of the decision support model is to offer a tool for improving the sustainable development of rural tourism in RS, in order to improve the quality of this tourist offer. The methodological model consists of assessing Economic, Social and Environmental criteria. These criteria will be used to assess the current state of sustainable rural tourism in the RS. In that way, the advantages and disadvantages of the tourist offer in RS will be seen. In doing so, the assessment will be performed using expertly defined decision-making rules, whereby a new methodology in the assessment of the tourist offer will be presented. Based on the assessment of the tourist offer, guidelines for the development of this type of tourism will be given.

The managerial implications of this research are reflected in the fact that the current state of rural tourist facilities will be considered, and guidelines will be given for the sustainable development of this tourist offer. These guidelines will serve managers to improve the business of their capacities through the development of the tourist offer based on the given recommendations obtained from the research (Dakić et al., 2021). Of course, this will have implications for the development of the local community as well as the development of a certain country, because tourists are one of the promoters of the country's economic development.

In addition to the introduction, this paper will discuss the concept of rural tourism and its importance for the development of the tourist offer of a country, then the methodology will explain the applied DEX method. The results will analyse rural tourist offers and compare them to see the pros and cons of this tourist offer. Through the discussion, the obtained results will be analysed in more detail in order to give the most important results, as well as the advantages and disadvantages of the used decision-making model.

Literature overview

Rural tourism thus becomes a promoter of rural development (Puška, et al., 2021). Tourism has become one of the primary industries in the development of rural communities (Puška, et al., 2019). However, rural tourism can create negative effects for the rural development

of the local community. Therefore, it is necessary to take an appropriate position on the tourist map of the region by choosing an appropriate program for sustainable tourism development and applying adequate strategic directions as key positioning instruments, but at the same time contribute to the revival and development of rural areas, increase profits of agricultural produces and environmental protection (Maksimović, et al., 2017).

Rural tourism represents the rural way of life and the values provided by this form of tourism are all in a natural setting, so that tourists are offered alternatives to the urban way of life (Zolfani, et al., 2015; Sagić et al, 2019). Based on that, rural tourism has become a favourable and convenient alternative among tourists, because it offers a natural environment for relaxation and enjoyment of natural beauty. By building large hotels, entertainment centres, etc. the identity of the area is lost because rural areas offer the same content. It is necessary to use the opportunity of the local community in order to use the potentials they have to strengthen the identity of the tourist offer in the area. Only in that way is it possible to disperse and build a recognizable image in order to attract tourists. The increase in demand for tourism services that occurs in any rural tourist offer allows people living in this local community to earn income from selling their products and performing various services throughout the year (Sanagustin Fons et al., 2011).

When observing tourism in rural areas, it is necessary to distinguish between terms rural tourism and farm tourism, because these two terms are not always synonymous (Ghaderi and Henderson, 2012). Agriculture is practiced on tourist estates, but it does not mean that it is in the tourist offer of rural tourism. In farm tourism, it is quite logical that agriculture is in the tourist offer because it is the basis of the offer. Therefore, rural tourism can be defined as a form of tourism that includes tourist activities organized and conducted in the rural area by the local population, and a form that exploits local tourist resources such as natural, cultural-historical and human resources (Ogarlaci, 2015).

In order for the tourism product of rural tourism to contribute to the sustainable development of tourism, it needs to be locally controlled, small-scaled, based on authenticity, with a price that should maximize the economic effects for the local population (Maksimović, et al., 2017). On this basis, the living standard of the local population can be improved because domestic products can be sold to tourists, also the outflow of young people from villages can be prevented, infrastructure strengthened, trade, traffic and services developed, cultural contents and ethno events revived in these rural areas (Cvijanović, 2014). It is necessary that the tourism potentials of rural tourism in RS are sustainable in order to contribute to the development of the rural community in the area. Therefore, the focus of this paper is on providing information on the current state of the tourist offer of rural tourism on the example of rural households, and what needs to be corrected in order to improve this tourist offer.

In order to meet the sustainability criteria, it is necessary to apply a multi-criteria analysis of the existing rural tourist offer. In obtaining information on individual tourist destinations, many papers used MCDM methods, where decisions were based on decision support systems. The decision support model has a wide application in

tourism. Park et al. (2017) used the Delphi method and the AHP (Analytic Hierarchy Process) method to assess the quality of accommodation in farm tourism, and to improve accommodation capacity and quality. Nikolić et al. (2015) used the SWOT (Strengths, Weaknesses, Opportunities, and Threats method) and AHP method to provide guidelines for the development of the Stara Planina tourist destination using rural tourism. Rifle et al. (2019) used the FUCOM (Full Consistency Method) and ARAS (Additive Ratio Assessment) methods to determine sustainable rural potentials in the Brčko District of Bosnia and Herzegovina. Park and Yoon (2011) used AHP and Delphi methods to identify indicators that measure the sustainable development of rural tourism. Muhacir and Tazebay, (2017) used the AHP method to link the application of rural tourism in the ecosystem. Anabestani (2016) used the expert opinion and methods of Fuzzy AHP and TOPSIS (Technique for Order of Preference by Similarity to Ideal Solution) to identify the most favourable rural area to create a rural tourism brand.

Mahboban and Talebi (2015) used the TOPSIS method to explore tourist attractions and capacities for the development of rural mountain tourism. Zheng and Liu (2013) applied the ANP (Analytical Network Process) method to tourism activities and tourist satisfaction to improve the quality of rural development and tourism development planning through environmental management. Jeong et al. (2016) used a hybrid Fuzzy DEMATEL (Decision Making Trial and Evaluation Laboratory) and a geographic information system to evaluate tourist locations and select the best location for the use of rural tourism. Based on these and similar papers, it can be concluded that MCDM methods are used in the evaluation of rural tourism. The DEX method was also used in the evaluation of rural tourism. Rozman et al. (2009) used this method to rank farm tourism facilities according to the quality of service they provide. Pažek and Rozman (2010) created a model using the DEX method and evaluated farm tourism facilities with regard to the quality of the tourist offer. Prevolšek et al. (2020) used this method to assess the current state of the tourist offer in ethno villages in Bosnia and Herzegovina. Rifle et al. (2020) used this method to evaluate the current supply of rural tourism in Bosnia and Herzegovina. Based on this, it can be concluded that the application of the MCDA method and thus the DEX method is justified in the management of rural tourist offer.

The review of the literature to date imposes the hypothesis that the paper represents the elimination of lacks in the deficiencies of the literature offered on this topic, which would also be one of the aims achieved by this research.

Due to the nature of the research, one of the obstacles in this paper could be the inability of comprehensive research on this topic, so that the paper represents a kind of pilot study in this field.

Materials and methods

When creating the model of sustainable development of rural tourism in RS, we started from the model that requires a multidisciplinary approach because the qualitative assessment of the state of rural tourism does not provide enough information.

Therefore, the basic sustainability criteria are included, namely: Economic, Social and Environmental criteria. The aim of this paper is to examine the current state of rural tourism in RS in order to provide guidelines for sustainable development of this type of tourism. At the same time, four tourist facilities in the form of rural households were selected from a random sample, 12 of which were presented on the turizamrs. org website. Using a random number generator, 4 tourist facilities were selected to be considered in this paper as alternatives.

In order to analyse alternatives to the tourist offer of rural tourism, a model for evaluation and analysis based on the DEX method was developed. DEX is a method for qualitative multicriteria modelling, consisting of attributes that are hierarchically structured. The DEX method allows the description of attributes in the model and the aggregation of rules between attributes that are applied to real decision-making problems (Kontić, et al., 2006). The DEX method combines traditional methods for multicriteria decision making (MADM) with elements of the expert system (Pavlović et al. 2011).

Ranking using preferences is the most commonly used method in making multi-criteria decisions (Durkalić et al., 2019; Lakićević et al., 2021). Expert assessment is the use of expert knowledge in order to predict future conditions, i.e. phenomena (Rozman, et al., 2017). In this paper, the expert assessment will be used for the evaluation of 4 alternative rural tourist facilities in RS, and based on the obtained model, recommendations on the improvement of this type of tourism will be given. A panel survey was used, which included four experts in the field of tourism in cooperation with the competent ministry in the RS, who assessed the current state of rural tourism in the RS.

The most important characteristic of the DEX method is the ability to use qualitative variables that give descriptive judgments and whose values are: low, high, acceptable, unacceptable, etc. and the application of different scales of qualitative variables (Rozman, et al, 2016). By applying the "if-then" decision-making rule, it is possible to transform quantitative variables into qualitative ones, and use them in the DEX method. The application of the DEX method is done using the DEXi program.

The DEX model is usually built through the following phases (Bohanec and Zupan, 2004):

- The hierarchical decision-making model is broken down into less complex problems that are represented by an attribute tree. In the attribute tree, the tree nodes represent the input, while the root nodes represent the main output of the model.
- Each subproblem is represented by a scale of values, which compares the setting criteria.
- Affiliation functions are defined for each attribute, which represents the cumulative score of the sub-criteria.

The model for managing the sustainable development of rural tourism in Bosnia and Herzegovina consists of 28 hierarchical structured attributes (Figure 1). The basic criteria for this model are: Economic, Social and Environmental criteria (Park and Yoon, 2011). These basic criteria are then decomposed into secondary criteria which are further decomposed into terminal levels. These attributes are represented as follows:

1.   The Economic criterion consists of the following sub-criteria:

 a. Price - aims to examine the amount of monetary compensation for the use of rural tourism capacity.

 b. Location - aims to examine the spatial accommodation of the tourist offer and the environment in which these alternatives are located.

 c. Marketing criterion - assesses whether the promotion of these tourist offers is necessary and what is the possibility of selling primarily domestic products.

2.   The Social criterion consists of the following sub-criteria:

 a. Improving local community conditions - aims to examine whether this offer affects the development of local content and strengthening the infrastructure of the local community.

 b. Interaction with the community - aims to examine whether employment and living standards of the population in this area have improved.

 c. Participation and learning - aims to examine whether tourists participate in the production of domestic products, and whether they work on the farm as part of the tourist offer.

3.   The Ecological criterion consists of the following sub-criteria:

 a. Resource use - aims to examine how natural resources are used and whether renewable resources are used

 b. Environmental quality - aims to examine the quality of water, land and air in the alternatives used in the tourist offer of rural tourism.

Figure 1. Management structure for sustainable development of rural tourism in Bosnia and Herzegovina
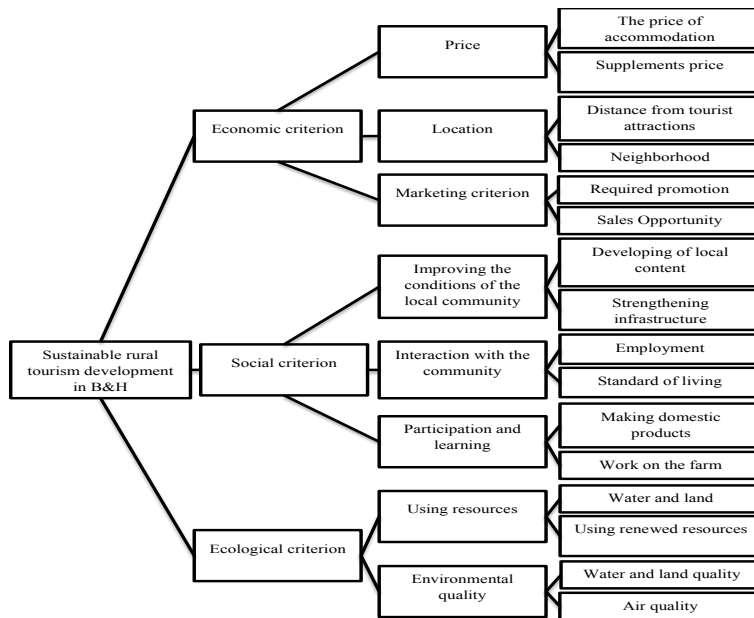
Source: Authors

All these criteria and sub-criteria in the model are described by discrete and symbolic scales of values. The maximum scale of value for the main rating of the model consisted of four levels of values from "unacceptable" to "very good". Other criteria were evaluated with a value scale of three levels, which is presented in Table 1. The way in which other criteria are defined, and which measurement scales were used in them, is shown in Figure 2.

Table 1. Value scale used in the model

	Value scale
1.	**unacceptable**; middle; *good; very good*
2.	**unacceptable**; middle; *good*
3.	**bad**; middle; *good*
4.	**high**; middle; *low*
5.	**necessary**; few necessary; *not necessary*
6.	**small**; medium; *high*
7.	**does not participate**; partially participates; *participates*

Source: Authors

When using these value scales, it was necessary to define the decision rules for each criterion. On the example of the final node Sustainable rural tourism developer in Bosnia and Herzegovina will be explained on the basis of three criteria: Economic, Social and Ecological criterion. A value scale is formed by using decision-making rules and decision-making functions (Table 2). The following rules are used in this function:

- The value of the final node will be "unacceptable", if the value of two or more criteria is "unacceptable", or if two criteria have the value "middle" and the third criterion the value "unacceptable".

- The value of the final node will be "middle", if the value of one criterion is "unacceptable", the second criterion is "middle", and the third criterion is "good", i.e. if the value of all criteria is "middle".

- The value of the final node will be "good" if the value of one criterion is "unacceptable", while the value of the other criteria is "good", i.e. if the value of the two criteria is "middle" while the value of the third criterion is "good".

- The value of the final node will be "very good" if the values of the two criteria are "good" while the value of the third criterion is "middle". The value of this criterion cannot be "very good" if any of the criteria has the value "unacceptable".

In a similar way, other decision-making rules and decision-making functions for other criteria were formed. Using these rules, a decision-making support model that assesses the sustainability of 4 rural tourist facilities was developed.

Figure 2. Value scale for attributes

Attribute	Scale
Rural tourism in RS	**unacceptable**; middle; **good**; **very good**
Economic criterion	**unacceptable**; middle; **good**
Price	**bad**; middle; **good**
The price of accommodation	**high**; middle; **low**
Supplements price	**high**; middle; **low**
Location	**bad**; middle; **good**
Distance from tourist attractions	**bad**; middle; **good**
Neighborhood	**bad**; middle; **good**
Marketing criterion	**bad**; middle; **good**
Required promotion	**necessary**; few necessary; **not necessary**
Sales Opportunity	**bad**; middle; **good**
Social criterion	**unacceptable**; middle; **good**
Improving the conditions of the local community	**bad**; middle; **good**
Developing of local content	**small**; medium; **high**
Strengthening infrastructure	**small**; medium; **high**
Interaction with the community	**bad**; middle; **good**
Employment	**small**; medium; **high**
Standard of living	**small**; medium; **high**
Participation and learning	**bad**; middle; **good**
Making domestic products	**does not participate**; partially participates; **participates**
Work on the farm	**does not participate**; partially participates; **participates**
Ecological criterion	**unacceptable**; middle; **good**
Using resources	**bad**; middle; **good**
Water and land	**bad**; middle; **good**
Using renewed resources	**bad**; middle; **good**
Environmental quality	**bad**; middle; **good**
Water and land quality	**bad**; middle; **good**
Air quality	**bad**; middle; **good**

Source: Authors

Based on the available data, the experts assessed the values of certain criteria on 4 rural tourist facilities, namely rural households: Ubović (Sunny Hill), Spasojević, Kovačević and Ziličina. The Delphi method was used when collecting data from the experts. First, each of the experts gave their assessments of the facilities. These assessments were then systematized and resubmitted to experts for approval. The experts then corrected their grades with consistent ratings. The procedure was repeated two more times to obtain uniform assessments from all experts.

Table 2. Example of decision-making rules

	Economic criterion	Social criterion	Ecological criterion	Rural tourism in RS
	37%	33%	30%	
1	**unacceptable**	**unacceptable**	*	**unacceptable**
2	**unacceptable**	<=middle	<=middle	**unacceptable**
3	**unacceptable**	*	**unacceptable**	**unacceptable**
4	<=middle	**unacceptable**	<=middle	**unacceptable**
5	<=middle	<=middle	**unacceptable**	**unacceptable**
6	*	**unacceptable**	**unacceptable**	**unacceptable**
7	**unacceptable**	middle	**good**	middle
8	**unacceptable**	**good**	middle	middle
9	middle	**unacceptable**	**good**	middle
10	middle	middle	middle	middle
11	middle	**good**	**unacceptable**	middle
12	**good**	**unacceptable**	middle	middle
13	**unacceptable**	**good**	**good**	**good**
14	middle	middle	**good**	**good**
15	middle	**good**	middle	**good**
16	**good**	**unacceptable**	**good**	**good**
17	**good**	>=middle	**unacceptable**	**good**
18	>=middle	**good**	**good**	**very good**
19	**good**	>=middle	>=middle	**very good**

Source: Authors

Results

The evaluation model of 4 rural tourist facilities in RS gave the results presented in Table 3. Based on these results, it can be concluded that the rural households Ubović and Spasojević were rated as "very good", while the facilities Kovačević and Ziličina were rated as "good". However, each of these facilities has its advantages and disadvantages, so this research will not select the best rural tourist facility, but will consider the current state of all facilities and give recommendations for improving the sustainability of this tourist offer in RS.

Table 3 shows a detailed analysis of the criteria and attributes used in the model, so it is possible to compare the used rural tourist facilities in RS. Of the 27 sub-criteria, the Ubović facility had a "medium" grade in 6 criteria, while it had a "good" grade in the other criteria. The Spasojević facility had 4 "medium" grades for the criteria, while the other criteria had a "good" grade. The Kovačević facility had a "bad" grade in 6 criteria, it had a "medium" grade in 8 criteria, and a "good" grade was obtained in the other 13 criteria. The Ziličina building had a "bad" grade in 3 criteria, it had a "good" grade in 8 criteria, while it had a "medium" grade in the other criteria.

Radar charts created using the DEXi software tool will be used for a detailed assessment of individual tourist facilities. The main graphs are in the shape of a triangle, while for all secondary criteria, graphs in the shape of an octagon were formed, since eight secondary criteria were used. Based on that, it can be concluded that the way of representation depends on the number of sub-criteria, so if there are three sub-criteria, the results will be represented by a triangle, if there are four sub-criteria, the results will be represented by a trapezoid, etc. External boundaries represent the best values of the corresponding criterion, so if the values of the sub-criteria decrease, it is graphically represented by approaching the middle of the image. If the sub-criterion has the value "bad" then it is presented in the middle of the radar chart. Based on this, it can be concluded that a better alternative should have the value of all sub-criteria at the outer boundaries of the chart.

Table 3. Assessment of used rural tourist capacities in Bosnia and Herzegovina

Attribute	Ubović	Spasojević	Kovačević	Ziličina
Rural tourism in RS	*very good*	*very good*	*good*	*good*
Economic criterion	*good*	*good*	unacceptable	unacceptable
Price	*good*	*good*	bad	bad
The price of accommodation	*low*	*low*	middle	high
Supplements price	middle	*low*	high	middle
Location	*good*	*good*	middle	middle
Distance from tourist attractions	*good*	*good*	bad	middle
Neighborhood	*good*	*good*	*good*	middle
Marketing criterion	*good*	middle	bad	middle
Required promotion	*not necessary*	few necessary	few necessary	few necessary
Sales Opportunity	*good*	middle	bad	middle
Social criterion	*good*	*good*	*good*	*good*
Improving the conditions of the local community	middle	*good*	*good*	middle
Developing of local content	medium	*high*	*high*	medium
Strengthening infrastructure	medium	*high*	medium	medium
Interaction with the community	*good*	*good*	middle	*good*
Employment	*high*	*high*	medium	*high*
Standard of living	medium	*high*	medium	medium
Participation and learning	*good*	*good*	*good*	*good*
Making domestic products	*participates*	partially participates	*participates*	partially participates
Work on the farm	*participates*	*participates*	*participates*	*participates*
Ecological criterion	*good*	*good*	*good*	*good*
Using resources	*good*	*good*	*good*	middle
Water and land	*good*	*good*	middle	middle
Using renewed resources	middle	*good*	*good*	middle
Environmental quality	*good*	*good*	*good*	*good*
Water and land quality	*good*	*good*	*good*	*good*
Air quality	*good*	*good*	*good*	*good*

Source: Authors

When evaluating alternatives for sustainable development of rural tourism using three main criteria, it can be concluded that the facilities Ubović and Spasojević have all the "good" values. In the case of the Kovačević and Ziličina facilities, the value of the Economic criterion was "bad", while in the case of the Social and Ecological criteria, they were graded as "good". Based on these obtained results, it can be concluded that the Kovačević and Ziličina facilities must improve the Economic criteria in order to have better sustainability results.

Figure 3. Evaluation of rural tourist facilities by the main criterion
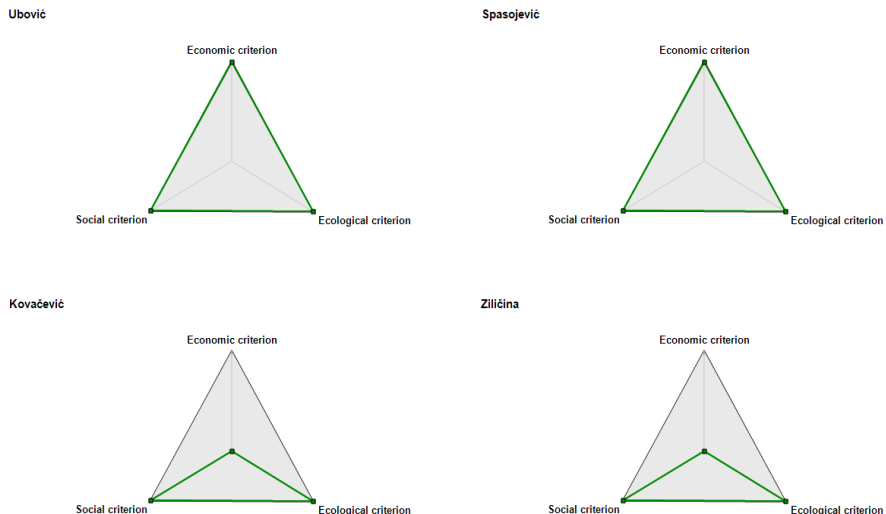
Source: Authors

However, which of the individual criteria are good and which are not, are presented in Figure 4. Using this graph, a more detailed analysis of the value of the sub-criteria can be given. Based on a detailed analysis of individual sub-criteria, it can be concluded that the facilities Ubović and Spasojević have a "middle" value in one sub-criterion, and the "good" value in the other sub-criteria. The Ubović facility had a "medium" value in the sub-criteria of "improving the conditions of the local community", while Spasojević had a "medium" value in the Marketing sub-criteria. The Kovačević facility had a "bad" grade in two sub-criteria, namely in the Price and Marketing sub-criteria; in the two sub-criteria: Interaction with the community and Location, it had a medium grade, while for the other sub-criteria it had a good grade. The Ziličina facility had a poor grade for one sub-criterion, for the Price; for four sub-criteria it had a medium grade, while for the sub-criteria Environmental quality, Interaction with the community and Participation and Learning it had a good grade.

Figure 4. Evaluation of rural tourist facilities with secondary sub-criteria
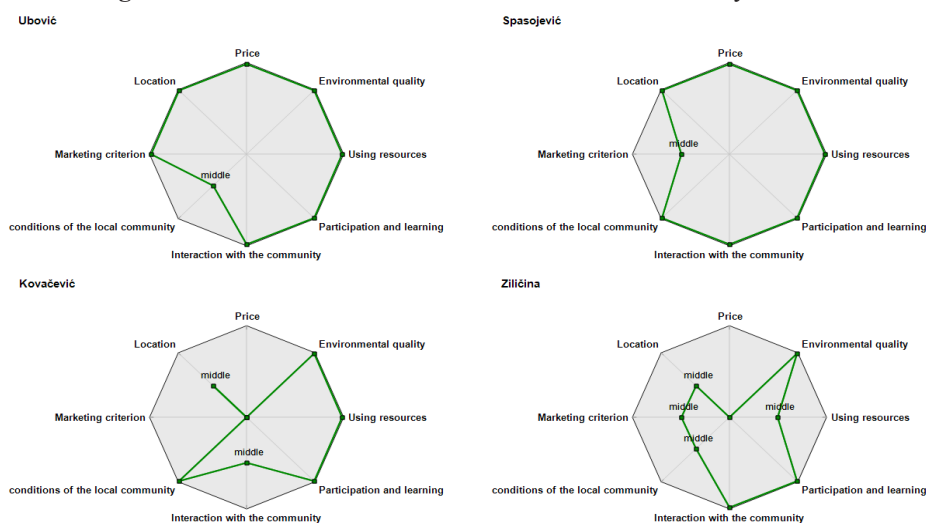
Source: Authors

Based on these assessments, it can be concluded that all facilities have good environmental conditions and participation and learning; however, other sub-criteria need to be improved in order to apply sustainability in their business. When using sustainability in business, it is necessary to have good characteristics in all criteria and sub-criteria in order to be able to use it in the promotion of these tourist facilities.

Conclusion

In this paper, the application of a multi-criteria model for the assessment of rural tourism in the RS is shown on a practical example of rural households, using the DEX method of multi-criteria decision-making. The model used is quite flexible, so it can be applied in any branch of tourism, not only in rural tourism. By applying expert opinion,

the evaluation of rural tourism alternatives was performed on the example of 4 tourist facilities in RS. Since they were taken at random, they represent this tourist offer in RS.

The obtained results showed that the rural households Ubović and Spasojević were rated as "very good", while the Kovačević and Ziličina facilities were rated as "good". However, each of the facilities has its shortcomings that should be improved. Only with the improvement of the offer can this type of tourism be improved. Due to the importance of ecology in modern business, it is necessary to apply the sustainable development of this type of tourism in order to preserve the natural beauties that RS has at its disposal. Republic of Srpska must actively take part in the promotion of these tourist potentials because they are not sufficiently promoted.

In future research, the model used here should be improved in order to be applied in other branches of tourism. Also, it is necessary to compare the rural tourist offer with the offer in other countries in order to determine the level of development of rural tourism. Also, when creating similar models in future research, it is possible to apply other MCDM methods so that more precise guidelines can be given based on the obtained results. In addition, future research should cover the entire territory of the Republic of Srpska in order to try to get answers to questions concerning the general development of rural tourism in this area.

Conflict of interests

The authors declare no conflict of interest.

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