GIS-BASED SPATIAL ANALYSIS OF CULTURAL TOURIST MOTIVES: CASE STUDY OF FOČA, BOSNIA AND HERZEGOVINA

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Abstract: The research presents some of the possibilities of applying GIS tools and methods in quantitative spatial analysis, on the example of identification and tourist valorization of tourist motives. The object of the analysis are the cultural tourism motives, specifically the national cultural-historical monuments of Bosnia and Herzegovina within the municipality of Foča. The identification of tourist motives is based on an analysis of available literature, field research, and GIS methods, utilizing thematic and topographic maps and remote sensing images. The tourist assessment of cultural tourist motives was carried out using a specifically created methodological approach, which included the creation of a set of indicators that determine the tourist value of motives, such as accessibility, amenities, ancillary services, and attractions. In the process of tourism valorization, categories of quantitative indicators were created that primarily relate to the distance of tourist motives from the analyzed indicators. The final step of the analysis implied the ranking of motives based on their potential for tourist valorization. The results of the analysis are divided into three groups: low, medium, and high potential for tourist valorization. These groups are determined based on a weight coefficient, with thresholds defined using the natural breaks method. The analysis showed that most cultural tourist motives within the municipality of Foča exhibit a high potential for tourist valorization, while nearly a third of the analyzed motives fall to the lowest end of this scale. In the process of identifying, categorizing, and valorizing tourist motives, GIS has proven to be a highly efficient tool with significant potential for optimizing the tourist planning process. The achieved results can serve as a foundation for further complex analyses of tourist motives for the purposes of tourist valorization. These studies should involve the application of qualitative methods in the analysis of additional indicators.

Key words: GIS, tourism planning, spatial analyses, tourist valorization, Bosnia and Herzegovina, Foča

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INTRODUCTION

Culture and tourism have always been inextricably linked (Richards, 2018). Cultural motives are integral to the success and sustainability of tourist destinations. They enhance the overall tourism product, contribute to economic development, and play a vital role in creating memorable and authentic travel experiences. When it comes to tourist destinations which are predominantly rich in natural tourist motives, cultural motives play a pivotal role in complementing natural attractions, making a destination more appealing, sustainable, and culturally rich. By recognizing and leveraging the cultural heritage of a region, tourist destinations can create a well-rounded and memorable experience for visitors while contributing to the preservation of local identity and heritage. Moreover, it is conceivable that individuals lacking explicit motivation for cultural tourism, yet engaging in specific cultural activities, may undergo an unexpectedly profound experiential engagement, as posited by McKercher and Du Cros (2003).

The spatial analysis of cultural tourist motives involves examining the geographical patterns and distributions of factors that drive individuals to seek cultural experiences within a destination. This approach considers the spatial dimension of cultural attractions and their influence on tourist behavior. Spatial analysis has a wide application range across various branches and disciplines due to its ability to examine and interpret geographic patterns and relationships. In addition, the development of spatial analysis as a field of study has been given much impetus by the growing demands for spatial data accuracy and quality given the increased amount of spatially referenced data held by the public and private sectors as well as the use of GIS as an interactive decision-making and planning tool (Hall, 2012). Furthermore, this type of analysis of cultural tourist motives involves a nuanced exploration of the geographical patterns that shape visitors' pursuit of cultural experiences within a destination.

By meticulously mapping cultural assets such as museums, historic sites, and events, this approach unveils the geographic distribution of attractions. Accessibility and proximity to transportation hubs are scrutinized, as are the cultural corridors that guide tourists through a sequence of significant locations. The spatial patterns of visitor flow and clustering of cultural activities are dissected, shedding light on popular routes and concentrated areas of cultural interest. Beyond that, the analysis delves into the integration of cultural and natural assets, examining how land use planning, zoning, and marketing strategies contribute to the preservation and promotion of cultural richness. By employing spatial analysis, destinations can strategically plan, ensuring that cultural tourism is seamlessly woven into the spatial fabric of the locale, creating a more enriching and accessible experience for all. By

integrating spatial analysis into the study of cultural tourist motives, destinations can gain valuable insights into the geographic dynamics of cultural tourism, enabling more informed decision-making and effective destination management.

The application of Geographic Information Systems (GIS) analysis in tourism planning is integral for informed decision-making and sustainable development. A geographical information system 'is at its simplest level a technology that enables decision-makers to explore the geographical dimension of data (Grimshaw, 1993). GIS facilitates the management of spatial data, aiding in site selection, assessing tourist flow, and optimizing infrastructure planning. It plays a crucial role in crisis management, cultural and environmental conservation, and community engagement, ensuring a balance between economic growth and preservation. Impact assessment and simulation are increasingly important in tourism development, and GIS can play a role in auditing environmental conditions, examining the suitability of locations for proposed developments, identifying conflicting interests and modelling relationships (Bahaire and Elliott-White, 1999).

GIS also contributes to market analysis, enabling targeted strategies, and enhances the overall visitor experience through the development of interactive tools. By integrating spatial data and technology, GIS promotes a comprehensive approach to tourism planning that considers economic, environmental, and social factors, aligning with broader regional and national development objectives.

LITERATURE REVIEW

A. GIS based spatial analysis

GIS is a powerful tool that allows for the integration, visualization, and analysis of geographic information. Therefore, GIS-based spatial analysis has become an essential tool across various industries, providing valuable insights into geographic patterns and relationships. Its versatility makes it applicable in fields ranging from regional and spatial planning and environmental science to public health (Cromley and McLafferty, 2011; Wang, 2020; Rushton, 2003) and business planning (Longley and Clarke, 1996; Birkin *et al*., 1999; Clarke, 1999; Yeh, 1999). GIS is capable of accurately determining the ultimate classification of regional preparedness by meticulously mapping spatial data according to its significance and rating. Accordingly, GIS utilization can serve as a valuable tool for advising and formulating plans in the development of tourism destinations across various regions (Rifki, *et al*., 2019; Savitsky *et al*., 1999; Shyti and Kushi; 2012). Future GISs are anticipated to possess enhanced analytical skills, surpassing their current role as efficient display and database management tools. (Ding and Fortheringham 1992; Maguire and

Dangermond, 1994; Drummond and French, 2008) The impact of GIS, the abundance of large-scale, highly detailed data, and the accessibility of powerful computing resources have significantly transformed spatial data analysis. This trend is expected to persist as new methodologies are developed to accommodate the current data and computing landscape (Unwin, 1996; Goodchild and Longley, 1999).

B. Cultural tourist motives valorization

Tourism valorization is still insufficiently used in the current research activities for the creation of development plans, programs, and strategies (Risteski, 2020). Simultaneously, the synergistic effects of the integration of the cultural and tourism sectors contribute to cultural tourism being a true catalyst for overall tourism growth and development (Sančanin *et al*., 2022). The tourist valorization of cultural motives holds significant importance for both destinations and travelers, contributing to a more enriching and sustainable tourism experience. Evaluating tourist motivations involves assessing the capabilities, quality, and spatial characteristics of tourists, typically using spatial analysis (Drešković, *et al.*, 2022; Kastrati, Q, 2022) The importance of tourist valorization of cultural motives extends beyond economic benefits, enriching the cultural fabric of both the destination and the visitor's experience. It promotes sustainable practices, community empowerment, and a deeper appreciation for the diverse cultural heritage present in tourist destinations. Ranking cultural tourist motives in a destination is vital for efficient resource allocation, strategic planning, and enhancing the overall visitor experience. This process allows destinations to prioritize and promote their most appealing cultural assets, gaining a competitive advantage in the tourism market. In essence, ranking cultural attractions contributes to the sustainable development and successful promotion of cultural tourism. In their analysis, Göksu and Kaya (2014) examined six tourist centers in Bosnia and Herzegovina, gathering data on tourist destination preferences through focus group interviews with four travel agents, and subsequently evaluated the interview results using the Fuzzy Analytic Hierarchy Process (FAHP) and Technique for Order Preference by Similarity to Ideal Solution (TOPSIS) for option assessment and ranking. Their study underscores the importance of aligning tourist demands with destination alternatives, emphasizes the strategic significance of internal and external factors for future tourism planning in Bosnia and Herzegovina, recommends the use of scientific methods for analysis, and identifies natural beauty and historical-cultural criteria as the most influential factors for attracting tourists. Nahar *et al.* (2015) utilized the Analytic Hierarchy Process (AHP), a Multi-Criteria Decision Making (MCDM) technique, to identify and rank appealing tourist destinations in Bangladesh based on criteria like cost, distance, accommodation, transit, safety, and architectural/natural beauty, recognizing the

importance of additional factors such as weather, comfort, and recreation in attracting tourists. Frequently, the 4A's model is employed in the process of ranking tourist motives. The 4 A's of tourism – Attraction, Accessibility, Accommodation, and Amenities – provide a vital framework for understanding tourism development. Attraction is the cornerstone, drawing tourists with natural or cultural features. Accessibility emphasizes ease of reaching a destination, while Accommodation involves the availability and quality of lodging. Amenities, including services like restaurants, enhance the overall tourist experience. These components, interconnected and supported by references such as Crompton (1979), Wöber (2002), Page (2014), and Fredline & Faulkner (2000), are crucial for attracting tourists, ensuring satisfaction, and fostering industry growth. Continuous improvement in these aspects is essential for destinations to remain competitive globally. Rifki *et al*. (2019) employed GIS to assess the tourism readiness of a region, utilizing 4A's where they employed a mixed-method approach, predominantly qualitative, and geographic information systems mapping with MapInfo. The sample focused on three high tourism development sub-districts in Purwakarta Regency, Indonesia. Fundamentally, different approaches and methods are utilized in the ranking process of cultural motives within tourist destinations, wherein geographical considerations often play a crucial role in determining the most optimal criteria.

STUDY AREA

Foča is a town located in the eastern part of Bosnia and Herzegovina, situated on the banks of the Drina River. It serves as the center of the Foča Municipality. The geographical coordinates of Foča are approximately 43.5047° N latitude and 18.7781° E longitude. It covers an area of 1.115,00 km² with a population of 18.288, according to the latest Census (2013).

The town is surrounded by picturesque landscapes, including mountains and the Drina Canyon, Notably, it is close to the National Park Sutjeska, known for Bosnia and Herzegovina's highest peak, Mount Maglić (2,386 meters), the well-preserved rainforest of Perućica, seven glacial lakes on Mount Zelengora, Europe's deepest canyon formed by the river Tara (1.333 meters), and the unique natural Sand Pyramids. These features are making Foča an attractive destination for nature enthusiasts. However, the foundation of our research rests upon cultural and historical monuments derived from the national registry of cultural and historical heritage in Bosnia and Herzegovina. The diverse cultural and historical heritage, both movable and immovable, within Bosnia and Herzegovina and its distinct regions exhibits significant variability. This richness is indicative of the dynamic historical and geographical transformations that occurred during specific epochs in the development of the region (Drešković et al., 2015).

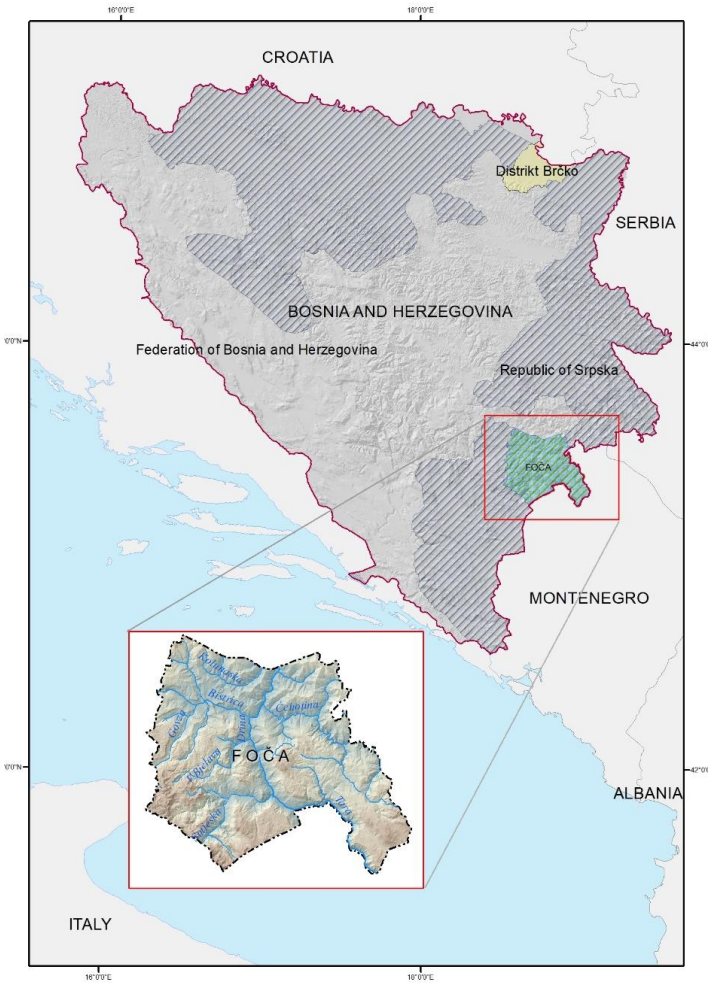


Fig. 1. Geographic position of Foča in Bosnia and Herzegovina

(Source: Geo-database of GIS Center of Department of Geography, University of Sarajevo – Faculty of Science, adapted by the authors using ArcGIS [GIS software] Version 10.6.1.)

The study aimed to explore the potential of utilizing GIS tools and techniques for quantitative spatial analyses. Our objective was to assess the spatial location of monuments in relation to tourist infrastructure and superstructure, with the aim of prioritizing them for improved valorization. Therefore, the goal of this study was to devise and suggest a novel methodology with the potential for application to various types of resources, encompassing both natural and social domains. The Foča municipality is home to a total of 16 national cultural-historical monuments. This list encompasses significant landmarks such as the Čaršija historical area, Mehmed Pasha Kukavica's Han, Mehmed Pasha Kukavica's caravanserai, Mehmed Pasha Kukavica

mosque and madrasa, Mehmed Pasha Kukavica's clock tower, Emperor's Mosque, Aladza mosque, Sheikh's Mosque (Kadi Osman-Efendi's Mosque), Church of Saint Nicholas, Bridge of Prince Karl, Atik Ali Pasha's Mosque, Rataje archaeological area, Necropolis Mramor in Vrbica, Stone bridge on the river Bistrica in Ocrkavlje, Necropolis of Borjanice - Marevska kosa, and the Memorial complex Sutjeska – which is part of the tentative list. Among these, the monument of the Battle on Sutjeska holds a particular significance.

RESEARCH PROCESS AND METHODOLOGY

The research unfolded through a meticulous four-phase approach. The initial phase encompassed an exhaustive examination of relevant literature pertaining to the subject matter, as well as comprehensive listings of national monuments in Bosnia and Herzegovina. Concurrently, field research was conducted to ascertain the precise geographical locations and spatial position of each monument. Geographic Information System (GIS) methodologies were employed, incorporating a variety of tools, and encompassing the analysis of thematic and topographic maps, as well as the utilization of remote sensing imagery. The tourist assessment of cultural tourist motives was carried out using a specifically created methodological approach, which included the creation of a set of indicators that determine the tourist value of motives. Subsequently, following the research findings, the 4A's model emerged as the most suitable framework for ranking tourist motives in the studied area, encompassing indicators such as availability, amenities, ancillary services, and attractions.

The subsequent phase involved the formulation of quantitative criteria categories to serve as the foundation for spatial analysis, predominantly focusing on the proximity of each motive to the analyzed indicators. Finally, in the concluding phase, national monuments as tourist motifs underwent ranking based on a weight coefficient determined through an arbitrary procedure. The ranking process employed the natural breaks method (Jenks, 1963), a statistical classification technique characterized by the creation of classes that optimally group similar values and accentuate differences between classes. Class boundaries are established where substantial differences in data values exist. This method is particularly useful for visualizing spatial patterns in non-normally distributed data.

RESULTS

The initial parameter under consideration is accessibility, encompassing two defined criteria: the road type of the highest rank within a 300-meter radius of the motive and the nearest distance from any road type, each assigned a weight coefficient of 0.15. It is imperative to underscore that the zones of influence for these criteria were

established through an arbitrary procedure, leaving room for further evaluation and refinement. This suggests the need for a more extensive tourist survey to acquire a representative sample, thereby enhancing our understanding of the significance of each parameter in the decision-making process regarding the visitation of tourist resources. The findings indicate that arterial roads dominate in the proximity of seven motifs, while one tourist motif within a 300-meter radius lacks any road category. Moreover, over 80% of motifs within a 100-meter radius exhibit traffic accessibility, yet two motifs remain unconnected to the traffic system within a radius of 500 meters or more.

Fig. 2: Accessibility criteria

Criteria	Weight_co	Categories	Points	Weight	Number of motives	% of total motives
Road type of the highest rank within radius of 300m from the motive	**0,15**	Arterial	5	0,15	**7**	**43,75%**
		Regional	4	0,12	**0**	**0,00%**
		Collector	3	0,09	**5**	**31,25%**
		Residental	2	0,06	**3**	**18,75%**
		Macadam	1	0,03	**0**	**0,00%**
		No road access	0	0	**1**	**6,25%**
Nearest distance from any road type	**0,15**	100	5	0,15	**13**	**81,25%**
		200	4	0,12	**1**	**6,25%**
		300	3	0,09	**1**	**6,25%**
		400	2	0,06	**1**	**6,25%**
		500	1	0,03	**0**	**0,00%**
		>500	0	0	**0**	**0,00%**

Amenities constituted the second indicator, encompassing the following criteria: the nearest distance from any category of accommodation, the nearest distance from any category of restaurant, distance from the visitor information center, and distance from the municipality (administration) center, each assigned a weighting coefficient of 0.09.

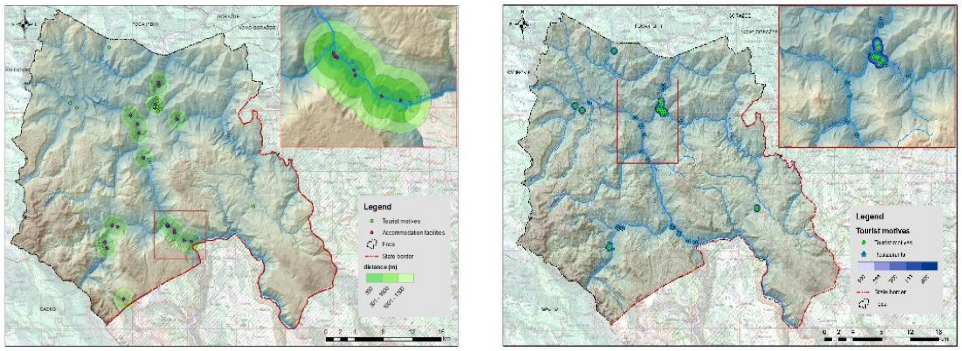
The analysis revealed that over half of the motifs are situated within a 500-meter zone from accommodation facilities, totaling 20 in the analyzed area, mostly camps, whereas a quarter of the motifs are located more than 1.5 km away from any type of accommodation, with their nearest facility positioned more than 8 km distant.

Fig. 3: Amenities criteria

Criteria	Weight_coefl	Categories	Points	Weight co	Number of motives	% of total motives
Nearest distance from any category of accommodation	**0,09**	500	5	0,09	**9**	**56,25%**
		1000	3	0,06	**3**	**18,75%**
		1500	1	0,03	**0**	**0,00%**
		>1500	0	0	**4**	**25,00%**
Nearest distance from any category of restaurant	**0,09**	100	5	0,09	**7**	**43,75%**
		200	4	0,072	**1**	**6,25%**
		300	3	0,054	**0**	**0,00%**
		400	2	0,036	**1**	**6,25%**
		500	1	0,018	**2**	**12,50%**
		>500	0	0	**5**	**31,25%**
Distance from visitor information centre	**0,09**	500	5	0,09	**7**	**43,75%**
		1000	3	0,06	**4**	**25,00%**
		1500	1	0,03	**0**	**0,00%**
		>1500	0	0	**5**	**31,25%**
Distance from the municipality centre (administration centre)	**0,09**	750	5	0,09	**8**	**50,00%**
		1500	3	0,06	**3**	**18,75%**
		3000	1	0,03	**0**	**0,00%**
		>3000	0	0	**5**	**31,25%**

Regarding proximity to restaurants, of which a total of 48 were identified, 44% of subjects are within a 100-meter radius, while 30% have no restaurant within a 500-meter radius, and the closest one is more than 10 km away. Furthermore, the presence of three visitor information centers in the municipality of Foča is noteworthy. Over 40% of the motifs are situated within a 500-meter zone from these centers, whereas more than 30% of the motifs are positioned at a distance exceeding 1500 meters. Regarding the proximity to the administrative center, housing facilities like the post office or bus station, precisely 50% of the motifs are situated in the immediate vicinity of the municipality's center, while approximately 30% are positioned at a distance exceeding 1500 meters.

Fig 4. The spatial distribution of accommodation and hospitality facilities in Foča



(Source: Geo-database of GIS Center of Department of Geography, University of Sarajevo – Faculty of Science - Topographic maps of SFRY 1: 200.000, sheets Zvornik and Nikšić, adapted by the authors using ArcGIS [GIS software] Version 10.6.1.)

In our examination of Ancillary Services and Attractions, the first criterion considered the distance from banks and ATMs, as well as the distance from hospitals and clinics, both assigned a weight coefficient of 0.09. For the attractiveness category, only the mutual distance of the motifs was considered, with the qualitative assessment of their attractiveness and ambiance left for analysis through qualitative methods; this criterion held a slightly higher weight coefficient of 0.15. The analysis revealed that the Foča area has 5 banks with ATMs. Approximately half of the motifs are situated within a 750-meter radius from these facilities, while around one-third of the motifs are positioned at a greater distance of 3500 meters. In terms of hospitals, Foča houses a notable university clinical center, with over 60% of the motifs located within 3 km of it, while three motifs are positioned at a greater distance, specifically 5 km away in this instance.

Fig 5: Ancillary Services and Attractions criteria

Criteria	Weight_coefficient	Categories	Points	Weight coefficient	Number of motives	% of total motives
Distance from banks & ATMs	0,09	750	5	0,09	8	50,00%
		1500	3	0,06	3	18,75%
		3000	1	0,03	0	0,00%
		3500	0	0	5	31,25%
Distance from hospitals and clinics	0,09	1500	5	0,09	1	6,25%
		3000	3	0,06	10	62,50%
		5000	1	0,03	0	0,00%
		>5000	0	0	5	31,25%
Criteria	Weight_coefficient	Categories	Points	Weight coefficient	Number of motives	% of total motives
Distance between tourist motives (Cultural-historical heritage)	0,15	300	5	0,15	7	43,75%
		700	3	0,1	4	25,00%
		1000	1	0,05	0	0,00%
		>1000	0	0	5	31,25%

In the final category of Attractions, as previously mentioned, we examined the mutual distance between attractions. The analysis revealed that slightly more than 40% of the motifs are situated in the immediate vicinity of another motif of the same category, specifically the national cultural and historical collection. Conversely, 5 motifs do not have any national cultural and historical monuments within a radius of 1 km.

The results of the analysis are divided into three groups: low, medium, and high potential for tourist valorization. These groups are determined based on a weight coefficient, with thresholds defined using the natural breaks method (Jenks, 1963). The analysis showed that most cultural tourist motives within the municipality of Foča exhibit a high potential for tourist valorization, while nearly a third of the analyzed motives fall to the lowest end of this scale. Ultimately, based on the conducted analyses, a ranking of the weight coefficient for all motives was carried out, yielding the following indicators:

1. **0,060 – 0,348: LOW**: 5 motives: Rataje, archaeological area; Necropolis Mramor in Vrbica; Stone bridge on the river Bistrica in Ocrkavlje and Necropolis of Borjanice - Marevska kosa; Memorial complex Sutjeska.

2. **0,349 – 0,743: MEDIUM**: 4 motives: Sheikh's Mosque; Church of Saint Nicholas; Bridge of Prince Karl and Atik Ali Pasha Mosque.

3. **0,744 – 0,935: HIGH**: 7 motives: Čaršija, historical area; heritage buildings of Mehmed Paša Kukavica (han, caravanserai, mosque, madrasa, and clock tower); as well as Emperors Mosque and Aladža Mosque.

DISCUSSION

Following the analyses, the ranking of cultural and historical monuments as tourist motives commenced, categorized based on weight coefficients with thresholds defined through the natural breaks method. The findings suggested that a significant proportion of cultural tourism motivations within the Foča municipality demonstrate substantial potential for tourist valorization, whereas approximately one-third register

at the lowest spectrum of this evaluative scale. Notably, the inner-city core of Foča, comprising Čaršija, historical areas, and heritage buildings of Mehmed Paša Kukavica, Emperors and Aladža mosques, emerged with the highest potential for tourist valorization. The fulfillment of tourism components in this area, particularly the availability of these components, plays a decisive role in motivating tourists. The presence of public facilities significantly influences the level of tourist potential, even if not directly linked to tourist facilities. While the lack of ATMs, restaurants, and money changers outside the city core impacts potential valorization, the substandard quality of available hotels and souvenir shops further diminishes tourism potential.

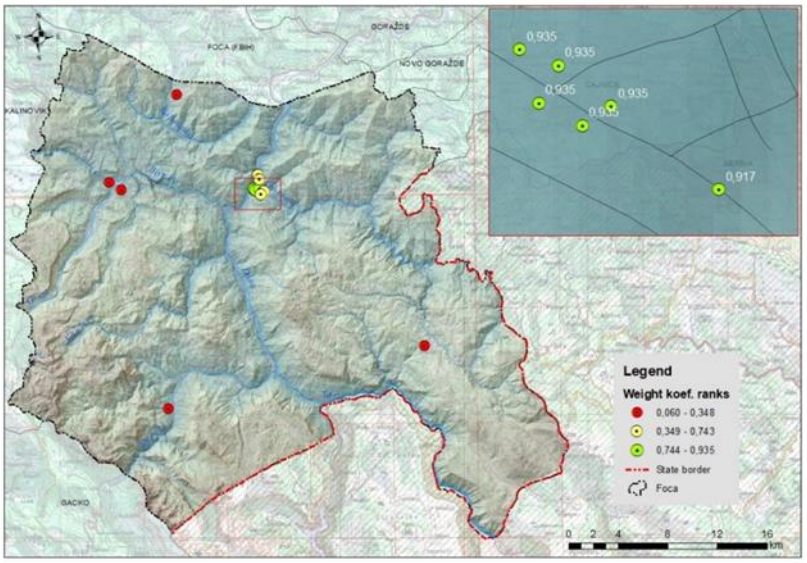


Fig 6. Weight coefficient ranks of cultural motives in Foča municipality

(Source: Geo-database of GIS Center of Department of Geography, University of Sarajevo – Faculty of Science - Topographic maps of SFRY 1: 200.000, sheets Zvornik and Nikšić, adapted by the authors using ArcGIS [GIS software] Version 10.6.1.)

Although the tourism potential of the Sutjeska memorial complex is evident, based on the conducted analysis, it has been ranked in the lowest category. This memorial complex ranks lower in quantitative analysis due to its distance from vital tourist facilities such as information centers, hospitals, banks, and other monuments. Highlighting the importance of qualitative evaluations in assessing the allure of motives and appraising the value of the natural resources in its vicinity, it is proposed that a qualitative analysis would probably afford it a more favorable positioning in

the ranking. Therefore, it is recommended that all future research incorporates qualitative methods, which would undoubtedly result in more realistic indicators when it comes to categorizing tourist motives according to their significance.

CONCLUSION

In the process of identifying, categorizing, and valorizing tourist motives, GIS has demonstrated its efficiency in optimizing the tourism planning process by providing information, allocating tourist attractions, and aiding decision-making in grouping and relating patterns based on specific criteria. The potential for tourist valorization is primarily influenced by the quality of its components, with attractiveness being a dominant factor.

The attained results lay the groundwork for further comprehensive analyses of tourist motives, aiming for tourist valorization through a multicriteria analysis involving several input parameters. This approach seeks to select the most favorable locations for constructing tourist infrastructure and superstructure. Future studies should incorporate the application of qualitative methods to analyze additional indicators.

Moreover, it is necessary to include attractiveness and ambience in the list of indicators to obtain a more objective assessment of the value of tourist motives. To achieve this, conducting an adequate survey to examine the opinions of visitors becomes imperative. The integration of these subjective perspectives will contribute to a more holistic understanding of the tourist experience and facilitate informed decision-making in tourism planning.

REFERENCES

1. Bahaire, T. and Elliott-White, M., 1999. The Application of Geographical Information Systems (GIS) in Sustainable Tourism Planning: A Review. Journal of Sustainable Tourism, 7(2), pp. 159–174.
2. Birkin, M., Clarke, G.P. and Clarke, M., 1999. GIS for business and service planning. Geographical Information Systems, 2, pp.709-722.
3. Clarke, M., 1999. GIS and strategic business planning. In Geographical Information and Planning: European Perspectives. Berlin, Heidelberg: Springer Berlin Heidelberg. pp. 334-348.
4. Cromley, E.K. and McLafferty, S.L., 2011. GIS and public health. Guilford Press.
5. Crompton, J. L. 1979. Motivations for pleasure vacation. Annals of Tourism Research, 6(4), pp. 408-424.

6. Ding, Y. and Fotheringham, A.S., 1992. The integration of spatial analysis and GIS. Computers, environment, and urban systems, 16(1), pp. 3-19.
7. Drešković, N., Banda, A., Hrelja, E. and Sivac, A., 2015. Possibilities of GIS application in the organization and presentation of tourism potentials-case study of Sarajevo, Internatonal scientific conference GEOBALCANICA 2015 Proceedings, Macedonian geographic society, pp. 119-126.
8. Drešković, N., Hrelja, E., Osmanović, M. and Durmišević, B., Identification and valorization of tourist motives-case study of the old town of Dubrovnik in Ilijaš. Journal of Tourism and Hospitality Management, pp. 108-125.
9. Drummond, W.J. and French, S.P., 2008. The future of GIS in planning: Converging technologies and diverging interests. Journal of the American Planning Association, 74(2), pp. 161-174.
10. Fredline, E. and Faulkner, B., 2000. Shopping motivations, barriers and timing of demand: The case of four Queensland tourism destinations. Journal of Vacation Marketing, 6(4), pp. 356-373.
11. Goodchild M.F. and Longley, P.A., 1999. The future of GIS and spatial analysis. Geographical information systems, 1, pp. 567-580.
12. Göksu, A. and Kaya, S.E., 2014. Ranking of Tourist Destinations with Multi-Criteria Decision Making Methods in Bosnia and Herzegovina, Economic Review: Journal of Economics and Business, ISSN 1512-8962, University of Tuzla, Faculty of Economics, Tuzla, Vol. 12, Iss. 2, pp. 91-103.
13. Grimshaw, D.J., 1993. Bringing GIS into Business Geoinformation. London: Longman.
14. Hall, C.M., 2012. Spatial analysis: A critical tool for tourism geographies. In The Routledge handbook of tourism geographies, pp. 178-188. Routledge.
15. Jenks, G.F., 1963. Generalization in statistical mapping. Annals of the Association of American Geographers, 53(1), pp.15-26.
16. Kastrati, Q., 2022. Identification, classification and valorization of tourist motives of theth (Theth) valley. South Florida Journal of Development, 3(4), pp. 5327-5343.
17. Longley, P.A. and Clarke, G. eds., 1996. GIS for business and service planning. John Wiley & Sons.
18. Maguire, D.J. and Dangermond, J., 1994. Future GIS technology. In The AGI source book for geographic information systems, 1995, pp. 113-120.
19. McKercher, B. and Du Cros, H., 2003. Testing a cultural tourism typology. International journal of tourism research, 5(1), pp. 45-58.
20. Nahar, K., Islam, S. and Rahman, M.K., 2015. Selection of a tourist attractions using AHP method: The case of Bangladesh. World Journal of Social Sciences, 5(3), pp. 211-226.
21. Page, S. J., 2014. Tourism management: An introduction. Routledge.

22. Richards, G., 2018. Cultural tourism: A review of recent research and trends. Journal of Hospitality and Tourism Management, 36, pp. 12-21.
23. Rifki, M., Rahmafitria, F. and Sugito, N.T., 2019. Tourism component evaluation: GIS based analysis towards the qualification of destination planning. In 3rd International Seminar on Tourism (ISOT 2018), Atlantis Press, pp. 121-124.
24. Risteski, M., 2020. Tourist valorization as the basis for managing tourist destinations. International Journal Knowledge, 38(1), pp. 257-263.
25. Rushton, G., 2003. Public health, GIS, and spatial analytic tools. Annual review of public health, 24(1), pp. 43-56.
26. Savitsky, B., Allen, J. and Backman, K.F., 1999. The role of geographic information systems (GIS) in tourism planning and rural economic development. Tourism Analysis, 4(3-4), pp. 187-199.
27. Sančanin, B., Perić, G. and Jevtović, A., 2022. Tourist valorization of the cultural and historical heritage of the city core of Sremski Karlovci. Megatrend revija, 19(3), pp. 411-426.
28. Shyti, B. and Kushi, E., 2012. The impact of GIS application in the tourism development of Elbasan region. The Romanian Economic Journal, 15(45), pp. 189-210.
29. Unwin, D. J. (1996). GIS, spatial analysis, and spatial statistics. Progress in Human Geography, 20(4), pp. 540–551.
30. Vojnogeografski institut Beograd, 1974-1976 and 1984-1986: Topographic maps of SFRY 1: 200.000, sheets: Zvornik and Nikšić
31. Wang, F., 2020. Why public health needs GIS: a methodological overview. Annals of GIS, 26(1), pp. 1-12.
32. Wöber, K., 2002. Accessibility, attractions, accommodation, and amenities. Annals of Tourism Research, 29(4), pp. 973-976.
33. Yeh, A.G., 1999. Urban planning and GIS. Geographical information systems, 2, pp. 877-888.