



Assessment of Geotourism Potential of Geosites in Hashtjin Township Using the Kubalíková Model

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Abstract

Background and Objective: Tourism is one of the most important factors in economic and social development across societies, playing a key role in global economic growth by influencing capital transfer and financial circulation. Iran, with its unique geological and geomorphological capacities, holds significant potential for geotourism development; however, this field remains in its early stages of growth. This study aimed to assess the geotourism potential of geosites in Hashtjin Township, located in the southern part of Ardabil Province.

Methodology: In this research, after selecting five geosites in the Township for analysis and evaluation, tools such as questionnaires, geological and topographic maps, and ArcGIS software were utilized. Finally, the geotourism potential of these geosites was assessed using the Kubalíková model.

Results and Findings: The results revealed that Qezel Ozan River (score: 11.25) and Agh Dagh Mountain (score:10.15) achieved the highest rankings and attract the most tourists during peak seasons. In contrast, Diz Waterfall (6.5), Nodeh Waterfall (5.15), and Zaviyeh Jafarabad Hot Spring (4.85) received lower rankings. Criterion analysis indicated that value-added (31%) held the highest importance, while economic value (7%) had the least significance. However, the economic status of the geosites was not evaluated as favorable.

Conclusion: Shortcomings such as insufficient infrastructure and uneven distribution of facilities have hindered the Township from achieving higher geotourism potential rankings. Strengthening existing strengths, addressing infrastructural weaknesses, educating and raising awareness among local communities, and developing promotional programs could significantly improve the region's geotourism status. Additionally, collaboration between governmental institutions and the private sector in tourism investments could play a pivotal role in optimally leveraging the natural and historical capacities of this Township.

Keywords: Geotourism , Kubalíková Model , Hashtjin Township , Geosites.

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Extended Abstract

Introduction:

Tourism is recognized as one of the most vital drivers of development across societies, with significant impacts on the global economy. Among various branches of tourism, geotourism has recently gained considerable attention due to its emphasis on nature-based experiences and the scientific, ecological, and aesthetic value of landforms. Geotourism not only enhances local and national economies but also promotes environmental conservation and sustainable development. Identifying valuable geosites plays a crucial role in improving regional competitiveness, guiding conservation initiatives, and expanding tourism infrastructure. Iran, with its diverse geological and geomorphological phenomena, holds substantial potential for geotourism development. The Hashtjin region in southern Ardabil Province, with its distinctive geographical and environmental characteristics, is a prime example of an underexplored area with high geotourism capacity. Despite its potential, comprehensive studies on this region are scarce. This research aims to assess the geotourism potential of Hashtjin using the Kubalikova model, offering practical insights for sustainable tourism planning and development.

Methodology:

The research method in this study is descriptive-analytical, and the data are of a quantitative-qualitative nature. The study begins with a review of the literature and examination of existing documents and scientific articles in the field of geotourism and geosite evaluation. Then, a researcher-designed questionnaire was developed and distributed among two main groups, including 15 experts and 30 tourists, resulting in a total of 45 completed questionnaires. For data analysis, the Kubalikova model was used. This model, introduced in 2013, places special emphasis on scientific and educational standards in geotourism assessment. The model's criteria are classified into five main categories:

- Scientific and intrinsic values: Based on geological principles, integrity, and the natural originality of the site.
- Educational values: Including environmental education, conservation, interpretation, and respect for host communities.
- Economic values: Including tourist satisfaction, local profitability, diversification, and marketing.
- Conservation values: Including sustainability, balanced land development, and natural resource preservation.
- Additional values: Such as aesthetic and cultural aspects that complement the natural features.

In this model, each geosite can earn a maximum of 13 points: scientific/intrinsic (3 points), educational (2), economic (2), conservation (3), and additional values (3). Finally, the overall value of each geosite is calculated by summing the scores obtained in these five criteria. It is important to note that none of the criteria have negative scores in this method. If a geosite lacks a particular attribute, its score for that criterion is considered zero or close to zero.

Results and Discussion:

Based on the Kubalikova model evaluation, five geomorphosites in Hashjin—Qezel Ozan River, Mount Aq Dagh, Diz Waterfall, Nodeh Waterfall, and Zaviyeh Jafarabad Hot Spring—were prioritized through 45 questionnaires completed by 15 experts and 30 tourists. The Qezel Ozan River ranked highest overall with a total score of 11.25, followed by Mount Aq Dagh with 10.15. Nodeh Waterfall and Zaviyeh Hot Spring had the lowest scores, mainly due to poor accessibility and lack of infrastructure.

Among the five criteria, additional values (aesthetic and cultural aspects) accounted for the largest share (31%), highlighting the ecological and scenic importance of these geosites. Scientific/intrinsic values followed with 24%, emphasizing the unique geological and biological diversity. Economic values were the lowest (7%), reflecting limited tourism facilities and infrastructure.

Qezel Ozan scored 2.95/3 in scientific value and 1.7/2 in economic value, due to its role in providing drinking water and irrigation. Mount Aq Dagh achieved the highest conservation score (3/3), reflecting its environmental significance. Educational values were relatively high for both sites, supporting their use in environmental awareness and interpretation.

Lower-ranked sites like Nodeh Waterfall and Zaviyeh Hot Spring, despite their natural beauty and unique features, suffer from limited promotion and accessibility, restricting their tourism potential. Key challenges identified include inadequate marketing, lack of information sharing by tourism and hiking clubs, and insufficient government and private sector investment in infrastructure.

Overall, sites with flowing water, especially rivers, were the most valued geotourism attractions. Enhancing infrastructure and promotion is essential to fully utilize the geotourism potential of all sites in Hashjin.

Conclusion:

This study aimed to evaluate the geotourism potential of geosites in Hashtjin County using the Koubalikova model for analysis and prioritization. Results identified Qezel Ozan River and Aq Dagh Mountain as the most significant geosites for tourism attraction and geotourism value. Added value held the highest importance at 31%, followed by scientific and intrinsic value at 24%, while economic value was the lowest due to insufficient tourism infrastructure. Qezel Ozan scored highest due to easy access and rich natural resources, with Aq Dagh second for its scenic landscapes and unique features. Key challenges include limited infrastructure and uneven facility distribution. Addressing these through strengthening strengths, improving infrastructure, educating local communities, and effective promotion is crucial. Collaboration between government and private sectors can optimize the use of natural and historical assets. Hashtjin's unique geotourism potential can transform it into a major regional and national destination, but requires strategic planning, investment, and infrastructure development. Such growth will boost economic and social development while preserving the region's natural and cultural heritage.

Declarations

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