

Theoretical and methodological issues of creating the “ECO FERGANA” mobile application of tourist objects and resources of Fergana region

Kamola Xakimova^{1*}, *Bekzod Abduhalilov*¹, *Yunusali Ganiyev*¹, and *Mukhlisa Abdujabborova*¹

¹ Fergana Polytechnic Institute, 86, Farg'ona 150107, Uzbekistan

Abstract In this article, based on the creation, grouping and classification of a database of tourist sites and resources of the Fergana region in the ArcGIS program, an electronic map of ecotourism in the Fergana region was created, as well as issues of creation, design and methodology. A cartographic basis for managing tourism in the region according to its territorial structure has been developed. Tourist resources, development factors and objects of the Fergana region, identified on a cartographic basis, have been identified. A mobile application “Eco Fergana” has been developed, which evaluates the possibilities of using these components and forms the basis of the regional tourism organization. The appendix evaluates the bioclimatic level of tourist conditions in the region (plain, mountain and foothill areas). The map serves to determine the economic and geographical opportunities for tourism development, divide them into regions, develop new tourist routes, and attract a flow of tourists to these objects. Based on the application, the geographical location of the Fergana region, specialization, and convenience of transport routes for transferring excursion routes are shown. Based on an assessment of the potential of tourism resources (high, medium, low), the boundaries of tourist regions are identified. Based on new tourist routes of a complex type (ecological, agricultural, business, pilgrimage, historical, archaeological, extreme, recreational, gastronomic, industrial) at the regional level, these directions are highlighted on the map.

1 Introduction

In the world, ecotourism has become a global activity that does not know any political, ideological, geographical and cultural boundaries. Today, special attention is being paid to scientific research on the use of recreational-tourist, resources and recreational-tourist potential of the region, as well as territorial organization, creation of prospective programs for the development of ecotourism based on comprehensive assessment. In this regard, it is important to assess the natural and economic-social geographical conditions for the purpose

* Corresponding author: zohidjon20.06@gmail.com

of ecotourism, to identify its types, to develop regionalization, to increase and develop ecotourism opportunities. Also, with the rapid development of the field of ecotourism and tourism, the role and need for maps of tourist destinations and destinations, designed for recreational purposes, is also increasing. The essence of such cards, the color of the topics that can be reflected in them, as well as the content and equipment are of particular importance. In this respect, conducting cartographic studies today is one of the most important issues in the detailed study of theoretical, methodological and practical aspects of tourism development. Creation of ecotourism maps, including the study of national and regional tourism problems in the USA, China, Turkey, Germany, Spain, South Korea, France, Italy, Canada, Russia and other economically developed countries, as well as ensuring the reliability of such created maps special attention is paid to actual scientific and practical issues of cartography.

In the republic, the ecotourism sector is considered as one of the strategic sectors that ensure the rapid development of regions, the creation of new jobs, the increase of the income and living standards of the population, and the investment attractiveness of the country, and complex measures are being implemented for its development. In particular, in the context of goal 35 of the Development Strategy of New Uzbekistan for 2022-2026, within the framework of the "Travel around Uzbekistan" program, the number of local tourists should be increased from 12 million and the number of foreign tourists visiting the republic to 9 million. important tasks are defined.[1] In this regard, the existing natural (relief, climate, drinking water), historical-cultural (monuments, shrines, handicrafts), socio-economic (economic and tourist infrastructure), ecological (climatic discomfort, air and water pollution index) opportunities of the regions are used for ecotourism. for the purposes of evaluation and development of a typology of recreational-tourist potential (highest, high, medium, low) on the example of Fergana region and mapping based on the ArcGIS program of GAT technology, positively and negatively affecting the development of recreational-tourist activities for each type scientific research aimed at determining the factors is of great importance.[2]

2 Materials end methods

Based on geoinformation systems and technologies, the following methods have been developed: studying the development and current state of ecotourism, analyzing and classifying its geographical aspects; Territorial organization of ecotourism and its use in Fergana region were studied geographically; From the natural, natural-historical, socio-economic opportunities of the Fergana region, the ecotourism map shows the location of settlements and route directions; Recommendations for the development of the mobile application of the ecotourism digital card of Fergana region and the prospects for its development are described. [3]

Creation of an ecotourism electronic map of Fergana region based on the creation, grouping and classification of a database of tourist objects and resources in the ArcGIS program; development of new touristic routes of complex (eco, agro, business, pilgrimage, historical, archeological, extreme, recreation, gastronomic, industrial and medical) type on the regional level and the content of their interactive map; touristic conditions of the region (plains, mountains and foothills), bioclimatic health facilities (liver, kidney, high blood pressure, rheumatism, stomach) treatment and prevention of these diseases were assessed and routes for diversification of tourism types were evaluated development of the "Eco Fergana" mobile application; the balance method of assessing the ecotourism potential is based on the natural (relief, climate, inland waters), historical-cultural (monuments, shrines, handicrafts), socio-economic (economic and tourist infrastructure), ecological (climatic discomfort, reference water pollution index) characteristics of the area. Mapping based on GIS

technology, improved taking into account indicators; Territorial aspects of landscape-ecological (Sokh t., Fergana t.) attractions and natural-historical (Ko'kansh., Margilonsh., Rishtont.) bases for organizing recreational-tourist activities in Fergana region taking into account and developing the main directions of their development; Determining aspects related to the natural, socio-economic and service geography of creating ecotourism clusters in Fergana region and developing promising new tourist routes (one-day and multi-day) for each administrative unit and their model cards for tour operators .[4-5]

3 Result

Tourism conditions of Fergana region (plains, mountain and sub-mountain areas), bioclimatic health facilities (liver, kidney, high blood pressure, rheumatism, stomach) treatment and prevention of these diseases. "Eco Fergana" mobile application has been developed.

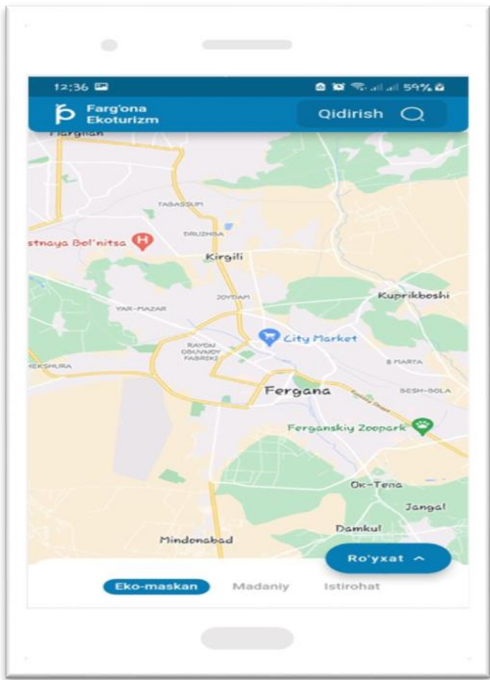


Fig. 1. "Eco Fergana" mobile application.

Through the mobile application, the regional organization and current state of ecotourism was studied, its geographical aspects were identified and classified by direction. Territorial organization of ecotourism digital card in Fergana region and geographical aspects of its use are disclosed. Geocomplexes of Fergana region and their use for ecotourism purposes were assessed, and an online map of the route was developed. Recommendations have been prepared for prospective geographic designation and use of Fergana ecotourism online card of Fergana region.

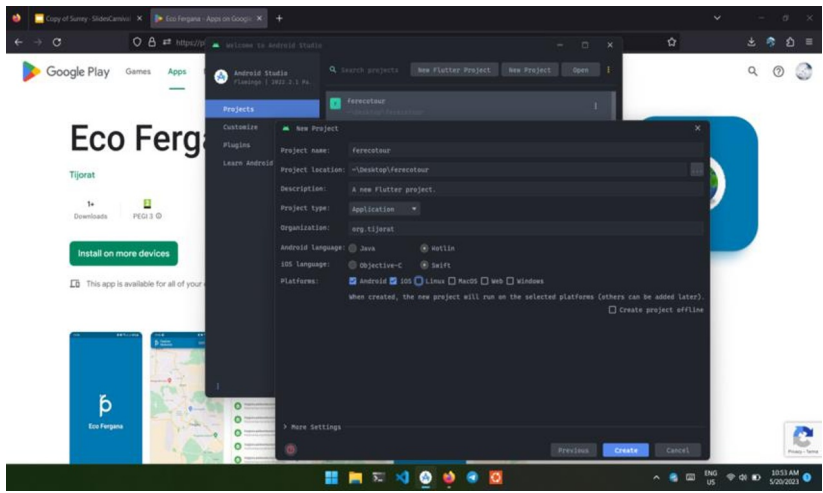


Fig. 2. Android Studio and Flutter.

The mobile application is filled with information, location and pictures of ecotourism places in the Fergana region, the application shows the direction and location map of the entered places. A short route for various types of transport is drawn and shown using Google Maps. Users can leave their opinions about the object, and they will have the opportunity to rate it with 5 stars. This makes it easier for future tourists to choose a place. The weather information and function shows the weather analysis of the past 1 weeks for each selected destination, which helps the tourist to plan the day of travel. Other important social facilities: the nearest police station, hospital and other facilities around the kitchen, toilet, emergency shelter, hospital and other facilities are shown on the free and open platform map on the basis of conventional signs. Under the control of the admin, any user can list his hotel, kitchen or other eco-space. This increases competition and choice. The location information entered separately as a mobile map via Google Maps Api provides detailed information lists and images of ecotourism and other attractions for convenience in our app, which is different and informative from the usual location tags [6]. The Flutter cross-platform framework was used to develop the mobile application and the Laravel framework was used for the backend. This makes it possible to present and serve the application on both Android and iOS platforms with the same convenience at a low cost.

4 Discussion

Today, we can say that a new phenomenon has appeared in cartography - "computer cartography". It combines various directions based on the use of computer techniques and technologies: geoinformation mapping, digital mapping, three-dimensional modeling, Internet technologies, publishing systems, etc. These areas provide significant improvements over conventional technology available today.[7]

One of the urgent issues of today is to determine the ecotourism opportunities of Fergana region and to develop suggestions and recommendations and methodology for improving the method of creating maps based on geoinformation systems.

Getz was able to integrate concepts and ideas from his book, Event Management and Event Tourism, as well as current research to raise awareness of the importance of events in the successful development of tourism. [8]

5 Results analysis

Virtual reality tours of the development of mixed (complex) type of tourism designed to effectively use natural, cultural-historical, industrial, business, handicraft, agricultural and other resources to create a complex tourist product based on the division of Fergana region into tourist regions - virtual reality using technology, the application has developed a geoportal for users in the direction of ecotourism. Also, the process of creating digital maps of ecotourism through geoinformation systems involves the use of advanced technologies to collect and analyze information about natural areas and tourist destinations, such as the environment, attractions, wildlife, local communities, cultural heritage sites and made it possible to show information about other factors affecting ecotourism. [9] Gamification - The app can use gamification techniques to make the process of exploring an ecotourism destination more interesting and engaging. For example, users can help earn points by collecting virtual badges for completing tasks or visiting certain locations. Digital mapping allows for more accurate data collection and analysis, leading to more accurate information about ecotourism destinations[10-14]. Offline Mode – The app can provide an offline mode that allows users to access important information about an ecotourism destination even without an internet connection. This feature is recommended to be especially useful for travelers in remote areas.

6 Conclusion

Digital mapping of ecotourism through geo-information systems can improve the tourist experience by providing more complete and accurate information about destinations, while promoting sustainable tourism practices that protect the environment and local communities.

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