ORGANIZATIONAL AND ECONOMIC ASPECTS OF AGRARIAN TOURISM ACTIVITY MANAGEMENT IN UZBEKISTAN: ANALYSIS, CHANGES, AND PROSPECTS

Abdullajon T. Mirzaev

ABSTRACT

Objectives: The primary objective of this article is to investigate the organizational and economic facets associated with the management of agricultural tourism in Uzbekistan. The focus is on understanding the potential for the rapid development of the country's economy through the promotion of agricultural tourism activities.

Methods: The study engages in theoretical research, culminating in the development of an author's definition of agricultural tourism. This definition is crafted by synthesizing insights from both foreign and local scholars. The research employs a multifactor econometric analysis, utilizing multifactorial production functions and related functions, to examine the factors influencing the development of agrarian tourism. The chosen objects of observation are tourist enterprises in Fergana and Tashkent regions engaged in agrarian tourism, with financial and economic data being key components of the analysis. Additionally, econometric models are formulated to depict changes in income volume from agrarian tourism services, based on multifactor linkages, and medium-term forecast indicators are established.

Results: The article presents the findings of the analysis of 19 administrative-territorial units in the Fergana region, evaluating the existing conditions and resource potential for the development of agrarian tourism activities. Integrated indicators, reflecting the overall potential for each region, are determined through the integration of various parameters. The article employs the Sterjess formula to group these integrated indicators, leading to the categorization of regions into four zones concerning the development of agricultural tourism activities.

Conclusion: Based on the comprehensive research conducted, the article concludes with practical proposals and recommendations. These are aimed at fostering the development of agrarian tourism activity in Uzbekistan and enhancing the overall efficiency of activity management in this sector. The conclusion emphasizes the importance of leveraging the identified zones for targeted strategies to maximize the economic benefits of agricultural tourism in the country.

Keywords: agrarian tourism, rural tourism, agricultural tourism, ecological tourism, green tourism, agrarian tourism activity, agrarian tourism resource components, multi-factor model, development strategy of agrarian tourism.

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RESUMO

Objetivos: O objetivo principal deste artigo é investigar as facetas organizacionais e econômicas associadas à gestão do turismo agrícola no Uzbequistão. O foco é entender o potencial para o rápido desenvolvimento da economia do país através da promoção de atividades de turismo agrícola.

Métodos: O estudo se envolve em pesquisa teórica, culminando no desenvolvimento da definição de turismo agrícola de um autor. Esta definição é trabalhada sintetizando insights de estudiosos estrangeiros e locais. A pesquisa emprega uma análise econométrica multifatorial, utilizando funções de produção multifatorial e funções relacionadas, para examinar os fatores que influenciam o desenvolvimento do turismo agrícola. Os objetos de observação escolhidos são empresas turísticas das regiões de Fergana e Tashkent envolvidas no turismo agrário, com dados financeiros e econômicos sendo componentes-chave da análise. Além disso, são formulados modelos econométricos para descrever as mudanças no volume de renda dos serviços de turismo agrário, com base em ligações multifatores, e indicadores de previsão de médio prazo são estabelecidos.

Resultados: O artigo apresenta os resultados da análise de 19 unidades administrativas-territoriais da região de Fergana, avaliando as condições existentes e o potencial de recursos para o desenvolvimento de atividades de turismo agrícola. Os indicadores integrados, que refletem o potencial global de cada região, são determinados através da integração de vários parâmetros. O artigo emprega a fórmula de Sterjess para agrupar esses indicadores integrados, levando à categorização das regiões em quatro zonas relativas ao desenvolvimento de atividades de turismo agrícola.

Conclusão: Com base na pesquisa abrangente realizada, o artigo conclui com propostas e recomendações práticas. Estes têm por objetivo promover o desenvolvimento da atividade turística agrária no Uzbequistão e melhorar a eficiência global da gestão da atividade neste setor. A conclusão enfatiza a importância de alavancar as zonas identificadas para estratégias direcionadas a fim de maximizar os benefícios econômicos do turismo agrícola no país.

Palavras-chave: turismo agrário, turismo rural, turismo agrícola, turismo ecológico, turismo verde, atividade de turismo agrário, componentes de recursos de turismo agrário, modelo multifatorial, estratégia de desenvolvimento do turismo agrário.

1 INTRODUCTION

In the conditions of globalization of socio-economic systems in the world, the rate of growth of the tourism sector in the gross domestic product in the countries of the world is increasing significantly. Many factors related to the need of the population to relax and reduce mental stress caused by the sharp increase in information flows are creating the necessary conditions for economic growth through the expansion of tourism activities and
the improvement of its management processes. According to the World Tourism Organization (WTO), due to the impact of the global pandemic that began in 2019, the amount of income from tourism activities decreased by 72% in 2020 compared to the pre-pandemic level. However, by the end of 2021, the increase in the volume of gross services of the tourism sector by 4% compared to the indicator of the previous year shows that the sector has moved to the stage of development based on mitigating the impact of the pandemic and adapting to changes. In order to balance the level of recession that occurred in the global crisis in the countries of the world, it is necessary to organize the activities of ensuring the development of the sector on the basis of a new approach and to improve the management processes at the expense of the development of the domestic tourism sector, including agrarian tourism activities within the existing potential.

In the world, it is necessary to reduce the losses in the real sector of the world by integrating them with the related activities of tourism, to increase its share in the gross domestic product and services per capita on the basis of the development of promising activities in the tourism sector, to increase the population in the regions due to the establishment of new and promising tourist activities. A number of scientific studies are being carried out on providing new jobs and improving the organizational and economic mechanisms of management in enterprises of the sector. In this regard, the formation of agrarian tourism activity as an independent structure in regions with high resource potential, development of agrarian tourism activity in regions based on strategic programs, assessment of regional agrarian tourism resource potential, and scientific research in the direction of improving management mechanisms in activity structures are among the priorities.

The main part of structural changes occurring in socio-economic systems is interpreted as a new form of integration processes related to demand and need in these systems, and as a result of these changes, social and economic needs are fully and effectively satisfied. The trend of “migration” of the population in the rural areas of the developing countries to large cities also requires the transfer of social relations related to the agrarian sector and rural areas to a new basis. The economic activity within the agro-industrial complex carried out in the rural areas plays an important role in the social development of the regions along with the production of the enterprises.

As one of the main reasons for the formation of agrarian tourism activity, in some studies, it is interpreted as the reduction of jobs as a result of the innovative development
of agricultural branches and fields in connection with the development of science, and the involvement of labor resources freed from the network in the activity of agrarian tourism, which is considered an adjacent field of the branch [1, pp.400-405].

In a number of other studies are shown as one of the main factors in the formation of agrarian tourism, the low level of profitability, which represents the efficiency of the production activity in agricultural enterprises (farms), and the increase of the overall efficiency of the activity by the means of agrarian tourism activity, which is considered an adjacent field [2, pp.635-642].

If we take into account that both reasons discussed above are directly related to the social development of rural areas, it is correct to point out that the stability of population migration is ensured by establishing a new form of income-generating entrepreneurship in rural areas as a reason for the formation of agrarian tourism activity.

Based on the above points, it can be said that the term "agritourism" did not appear without reason, but has traditionally been an integral part of the household in rural areas. Agrarian tourism activity provides employment to the local population living in the area, and also constitutes a certain share of the profit of agricultural enterprises.

2 LITERATURE REVIEW

A broader approach to researching the problems of development and management of agrarian tourism activities in our country is required. The reason is that the essence, features and directions of agrarian tourism development have not been sufficiently disclosed even in foreign scientific literature.

When starting any research work, it is necessary to learn the meaning of the basic concepts used in a particular field. It depends on having a conceptual approach and the unity of understanding the essence of certain phenomena and processes, how clearly and clearly the researcher expresses his opinion, explains this or that fact, and how correctly his evidence is accepted by other scientists and specialists. During the implementation of this research, based on the above-mentioned points, an attempt was made to develop a more complete definition of the term “agrarian tourism” by studying the meaning and essence of the term “agrarian tourism”.

The analysis of the research on the problems and prospects of the development of the service and tourism sector reveals very conflicting interpretations of certain concepts related to agrarian tourism and its essence by different authors. This is especially true for
new areas of tourism, including agrarian tourism. Currently, there are relatively few scientific studies devoted to the development of agrarian tourism activities in our country, but there are many differences in the comparative analysis of the definitions of the main concepts given in these scientific literatures.

We will consider the main approaches to the essence of the concepts of “agritourism”, “rural tourism”, “agricultural tourism”, “ecological tourism” and “green tourism”.

It should be noted that there are several approaches to considering the essence of the above concepts. One of the most common types of tourism is rural tourism and agrarian tourism are the same concepts. Ecological tourism is an independent direction of tourist activity. According to another approach, agrarian tourism and ecological tourism are directions of rural tourism.

In the studies of N. Volodin, he considered the categories “rural tourism” and “agritourism” to be synonymous. According to him, agrarian tourism involves the temporary stay of tourists in rural areas for recreation or participation in agricultural activities [3].

A. Barlibaev and G. Nasirov understood agrarian tourism as a type of activity focused on the organization of tourists' recreation in rural areas or small towns, including the provision of residential services with the possibility of labor participation in the private sector and the use of natural, cultural-historical, socio-ethnographic resources [4, pp. 93].

M. Birjakov, L. Bitkulova, D. Panova to form a complex of services for organizing rural tourism, active types of tourism, accommodation, food, recreation, sports events (hunting, fishing, acquisition of knowledge and skills specific to residents of rural areas), considered that it is a special type of activity that includes organization and presentation to the end user (agrarian tourist) [5]. At the same time, the authors considered the concepts of "agritourism" and "rural tourism" to be equal.

There are other approaches to the ratio of rural tourism, agrarian tourism and ecotourism. According to the approach of Z. Kamilova and S. Laipanov, agrarian tourism is a direction of ecological tourism, which provides recreation for people on the basis of farm or household [6, pp.39]. At the same time, these authors consider ecological tourism as a type of tourism based on contact with nature, which does not harm natural complexes,
helps to protect the environment and contributes to the improvement of the well-being of local residents.

In the researches of V. Senin, the following definition of ecotourism is given: “Ecotourism is a type of tourism, the main purpose of which is to travel to ecologically clean natural areas” [7].

In our opinion, agritourism is a direction of rural tourism, which is related to the stay of tourists in rural areas for the purpose of recreation, and includes the participation of vacationers in agricultural work and their acquaintance with the culture and life of the villagers. According to our approach, ecological or “green tourism” is a direction of rural tourism that attracts tourists to travel outside urban settlements for recreation, contact with nature, environmental education and training.

3 RESEARCH METHODOLOGY

In the study, the study of the methodology of management of agrarian tourism activities and the evaluation of activities were theoretically extensively studied on the basis of monographic studies. Based on the results of the financial analysis of business entities operating in the field of agrarian tourism in the regions of Uzbekistan, using the Eviews10 analysis program, an econometric model was determined based on the time series of the number of tourists served in the direction of agrarian tourism, which is considered the main indicator, and the indicators of the resource component affecting it, the trends of changes in the main parameter were evaluated and short-term forecast indicators for the period were determined.

Scientific abstraction, correlation-regression analysis, analysis and synthesis methods were used as a research methodology during the research.

4 RESULTS AND DISCUSSION

Although there are no statistical data on the volume of tourism, particularly agrarian tourism services, in the open data system of the State Statistics Committee of the Republic of Uzbekistan, the data obtained as a result of research show that there is development in agrarian tourism, which is considered a special direction of the tourism industry. Taking into account that statistical data representing the volume of agrarian tourism services of tourism are not kept in the state statistical system today, an attempt was made to approach the state of development of agrarian tourism services based on the
analysis of the agrarian tourism resource components at the country level and the activities of entities involved in economic processes based on their use.

In the course of the research, the analysis of the agrarian tourism resource components of all territorial units of the Republic of Uzbekistan and the analysis of the agrarian tourism resource components of the Fergana region, where the agricultural sectors of our country (except livestock) are relatively well developed, taking into account the fact that the possibility of evaluating the resource components of the regions based on the analysis is limited in terms of time and data, and the analysis an attempt was made to evaluate the resource components according to the results.

Our country is a country with a favorable location and a relative advantage among the countries of the Asian continent in terms of natural and climatic conditions and geographical location. The existing soil conditions, the location of the lands used in agriculture, and the availability of favorable climatic conditions of the regions where agricultural products are grown determine the high possibility of developing agrarian tourism activities in these regions along with the activities of agricultural branches and sectors.

In the multi-factor econometric analysis of the factors influencing the development of agrarian tourism activities, taking into account the wide use of multi-factor production functions and the functions arising from them, the selected observation objects were selected as the objects of observation, using the financial and economic data of tourist enterprises in Fergana and Tashkent regions engaged in domestic tourism activities. We determine the econometric models of the change in the volume of income from agrarian tourism services provided in enterprises in the form of a production function based on a multifactor connection. Based on the study of the volume of agrarian tourism services and the direction of management of the factors affecting it, the defined models will help to determine the target forecast indicators for the medium-term period for tourist enterprises and to implement the necessary measures to ensure these indicators [8, pp.29].

A multi-factor analysis was carried out on the volume of agrarian tourism services provided in the selected enterprises, i.e. the change under the influence of the main influencing factor on the indicator considered as an endogenous factor.
Having defined the volume of agrarian tourism services as the peak of the production function, i.e., as a result factor, the following indicators were selected based on the conclusions of experts in the field, such as indicators of factors affecting it:

- \( x_1 \) – the number of tourists served in the direction of agrarian tourism;
- \( x_2 \) – management costs for the implementation of agrarian tourism activities;
- \( x_3 \) – amount of funds involved for agrarian tourism activity;
- \( x_4 \) – regional agricultural product volume of regions with high potential of agrarian tourism resource components.

Each of the influencing exogenous factors is one of the main influencing factors in the formation of the amount of income received from the provided agrarian tourism services. For example, if the number of tourists served in the agrarian tourism direction is the workload that determines the size of the activity and the amount of income from the services, the management costs for the implementation of the agrarian tourism activity represent the possibility of optimal provision of the activity, the amount of funds attracted for the agrarian tourism activity represents the amount of insufficient funds necessary for the organization of the activity of the tourist enterprises, the volume of regional agricultural products of regions with high potential of agrarian tourism resource components, including the development of agricultural sectors with high demand for services, determines the limits of the possibility of attracting tourists to the region.

Modeling the volume of services provided by tourist enterprises operating in the market of agrarian tourism services can be done with the help of models such as trends, trends and time series in the market of agrarian tourism services. In the course of the research, an analysis of the trends of change in the volume of income from agrarian tourism services and the main indicators affecting its formation in two tourist enterprises operating in Fergana and Tashkent regions during 2014-2021 was carried out (Table 1).

The number of tourists served in the agrarian tourism direction \((x_1)\), management costs for the implementation of agrarian tourism activities \((x_2)\), the amount of funds attracted for agrarian tourism activities \((x_3)\) and indicators such as regional agricultural product volume \((x_4)\) of areas with high potential of agrarian tourism resource components were selected.

All the resulting and influencing factors for both tourism enterprises had a certain rate of fluctuation during 2014-2021 due to the market conjuncture and the pandemic that started in 2019. Correlation-regression analysis of the factor parameters listed in the
above table and, based on it, the formation of the volume of domestic tourist services
provided in each enterprise, multi-factor models are carried out for individual enterprises.

Due to the fact that the unit of measurement of the resulting and influencing factor
indicators extracted in Table 1 is not the same, that is, the factor indicators are not
homogeneous, we can determine the main trend model in the form of a linear logarithmic
connection. For this, all the factor indicators are brought to natural logarithmic indicators
(Table 2).

Using the Eviews10 software package, the parameters identified during the
regression analysis and the significance of the model were calculated using the main
evaluation indicators calculated by the program (Table 3).

A logarithmic model of the trend is formed by extracting the coefficients of the
regression model from the results of the regression analysis.

A multi-factor econometric model of changes in the volume of income from
agrarian tourism services in the activity of the family enterprise “DILRABO TRAVEL”
and the factors affecting it was created using the identified data. According to him,
representing this process

\[ \text{LnY} = 0.0058 \cdot \text{LnX}_1 + 0.1454 \cdot \text{LnX}_2 + 0.3447 \cdot \text{LnX}_3 + 0.1395 \cdot \text{LnX}_4 + 1.9156 \]  

(1)

a regression equation was constructed.

If the determined linear logarithmic model is potentiated, a non-linear
econometric model representing the amount of income received from agrarian tourism
services in the enterprise's activity is derived:

\[ Y_1 = x_1^{0.0058} \cdot x_2^{0.1454} \cdot x_3^{0.3447} \cdot x_4^{0.1395} \cdot e^{1.9156} \]  

(2)

It is necessary to check the reliability and adequacy of the model and its
parameters created using the software package based on several criteria and make sure of
the accuracy of the results. Since the autocorrelation in the determined trend is slightly
higher than the optimal limit (DW=3.17) and it meets the requirements for other criteria,
the above-defined regression equation (1) was found to be reliable and proved to be
adequate.
In the activities of “SEZAM” LLC, the amount of income received from agrarian tourism services and the level of mutual correlation of the factors affecting it were studied on the basis of correlational analysis.

Due to the fact that the unit of measurement of the resulting and influencing factor indicators extracted in Table 1 is not the same, that is, the factor indicators are not homogeneous, we can determine the main trend model in the form of a linear logarithmic connection. For this, all the factor indicators are brought to natural logarithmic indicators (Table 4).

The parameters identified during the regression analysis using the Eviews10 software package and the importance of the model were evaluated by the main evaluation indicators calculated by the program. From the results of the regression analysis, the logarithmic model of the trend is formed by extracting the coefficients of the regression model for the given situation (Table 5).

Multi-factor econometric model of changes in the volume of income from agrarian tourism services of “SEZAM” LLC and the factors affecting it was created using the identified data. According to him, representing this process

$$LnY = 0.8215 \cdot LnX_1 - 0.0059 \cdot LnX_2 + 0.3746 \cdot LnX_3 + 0.165 \cdot LnX_4 - 3.552$$ (3)

a regression equation was constructed.

If the determined linear logarithmic model is potentiated, a non-linear econometric model representing the amount of income received from agritourism services of the enterprise is derived:

$$Y_2 = \frac{X_1^{0.8215} \cdot X_2^{0.3746} \cdot X_3^{0.165}}{X_2^{0.174} \cdot e^{3.552}}$$ (4)

It is necessary to check the reliability and adequacy of the model and its parameters created using the software package based on several criteria and make sure of the accuracy of the results. Since the autocorrelation in the determined trend is slightly lower than the optimal limit (DW=1.76) and it meets the requirements for other criteria, the above-defined regression equation (3) was found to be reliable and proved adequate.
Based on the regression coefficients of the variables in the multifactor models representing the change in the volume of income from agrarian tourism services in the tourist enterprises taken for analysis, we will be able to estimate the level of their influence on the resulting factor. In both enterprises, the degree of connection of the factors affecting the result factor differs from each other (Fig. 1).

In the model representing the multi-factor connection, it is seen that the increase of all factors included in the model in the family enterprise “DILRABO TRAVEL” is directly related to the change of the resulting factor. In this case, it is recommended to increase the values of the factors directly related to the activity of the enterprise to the point of saturation among all the factors selected by the tourist enterprise.

Based on the multi-factor model, “SEZAM” LLC, the increase in the number of tourists served in the direction of agro-tourism, the amount of funds attracted for agrarian tourism activities and the increase in the volume of regional agricultural products of the regions with high potential of agrarian tourism resource components are directly dependent on the change of the resulting factor, management for the implementation of agrarian tourism activities costs and the degree of general impact of random factors are seen to be inversely related. In this case, it is recommended to increase the size of the factors that are properly connected by the tourist enterprise, to optimize the costs of the necessary resources in proportion to the number of tourists served. The use of identified trends allows to optimize the efficiency obtained from the unit of resource factor while correctly distributing the amount of input resources in the process of managing the amount of income received from agrarian tourism services in the analyzed tourist enterprises.

In the program of actions determined to be implemented in the development of agrarian tourism activities in the Fergana region of the Republic of Uzbekistan, the implementation of measures with territorial zoning of activities will have a good effect. Territorial zoning of the region should be carried out on the basis of the assessment of the potential of existing 19 administrative-territorial units to organize agrarian tourism activities and the potential of agrarian tourism resources. In the strategic planning of agrarian tourism activities in the regions, the assessment of the existing conditions and resource potential requires the use of an assessment methodology that allows for a clearly based and realistic assessment.
It is desirable that the methodological approach to the development of the regional strategy for the development of agrarian tourism activities should include the following provisions:

- the principles of development and implementation of the strategy for the development of agrarian tourism activities in the area where the activity is to be developed (consistency, openness, partnership, availability, balanced development of the territory, efficiency and equivalence, integration, compliance of the strategy with advanced approaches and practices in the field of using the principles of sustainable development, national tourism policy, tourism using a product-oriented approach);

- the strategy development algorithm, content of development of agrarian tourism activities depending on the level of its regional investment attractiveness;

- the conceptual content of the strategy allows to determine the sequence of actions and methodological requirements used for their creation, including justification of the capabilities of agrarian tourism entities in the region;

- a system of indicators confirming the stability of the development of agrarian tourism activities in the region (management of agrarian tourism activities, added value in the tourist product, socio-cultural impact and impact on the environment);

- method of assessment of regional attractiveness for the development of agrarian tourism activity, which allows to assess the main factors of the touristic attractiveness of the area [9, pp.132].

When evaluating the agrarian tourism potential of the territorial units of Fergana region, it is recommended to use a methodological approach to the development of a regional strategy for the development of agrarian tourism, the methodology of evaluating the potential of agrarian tourism development at the regional level (Table 6).

The existing 19 administrative-territorial units in Fergana region were analyzed based on the methodology presented in the table above, and the existing conditions and resource potential of the regions for the development of agrarian tourism activities were evaluated. Based on the integration of the indicators of the general potential determined for each of the regions, the integrated indicators evaluating the possibility of developing agrarian tourism activities in 19 regions were determined. With the help of Sterjess formula, in order to group the determined integral indicators, it was decided to divide the regions into 4 zones from the point of view of the development of agrarian tourism activities [10].
The designated zones were determined in descending order from the zone with the highest potential for agrarian tourism development, and the cities and districts in the interval were included in the zones on the basis of the relevance of integral indicators and statistical data showing the level of growth of regional agricultural products in recent years.

The first group, i.e., the zone assessed as "promising" for the development of agrarian tourism activities, includes the districts of Altiaq, Koshtepa, Kuva, Uchкуприк, Rishton and Fergana, and these areas have the necessary conditions and resource components for the development of agrarian tourism activities.

The second group - the zone with "stable" conditions for the development of agrarian tourism activities includes the city of Kuvasoy, Bagdad, Beshariq, Toshloq and Uzbekistan districts, and although the necessary conditions for the development of activities exist in these areas, the level of use of resource components is insufficient. However, by systematizing the use of resource potential, there are opportunities for rapid development of agrarian tourism activities in these regions.

The third group - the zone with "possibility of development" includes the districts of Buvayda, Dangara, Furqat and Yozyovon, where the necessary infrastructure for the development of agrarian tourism activities is partially formed, resource potential is sufficient, but the existing conditions are not systematized. In the regions belonging to this group, agrarian tourism activities can develop rapidly in the future, providing the necessary functional connections.

The fourth group - the cities of Fergana, Kokand and Margilan of the region, as well as Sokh districts, which are considered an enclave, were included in the "unpromising" regions, which have insufficient resource potential for the good development of the agricultural network, and at the same time, the natural and geographical location is not favorable for the development of agrarian tourism. Since there are no necessary conditions for the organization and development of agrarian tourism activities in urban areas, it is desirable to attract their residents to areas with high resource potential as consumers of agrarian tourism services.

The introduction of agrarian tourism activities in the form of special socio-economic experimental projects in the regions initially included in the 1st zone allows for a more accurate assessment of the extent to which the new form of tourist activity is economically justified in practice (Fig. 2).
The main purpose of special socio-economic projects aimed at the development of agrarian tourism activities in rural areas is to create an image of a rural area that has rich experience in agricultural production and is comfortable for living; development of agriculture in the direction of modern production; ensuring the direct participation of tourists in the process of agricultural production; popularization of traditions and values of rural areas; maintaining and creating jobs for rural residents, providing them with income; development of rural areas by creating social, communication and production infrastructure for agrarian tourism activities.

It is recommended to organize the proposed special projects in rural areas in the areas of “agro-farm”, “Youth social agro-tourism”, “Modern rural business” and “Development of creative rural entrepreneurship” and to finance these projects in a mixed form, that is, from private, state and various funds. implementation in the form will give good results.
Table 1 Indicators of the volume of income from agrarian tourism services in tourist enterprises and factors affecting its change

<table>
<thead>
<tr>
<th>Years</th>
<th>Amount of income from agrarian tourism services, mln. Soum (Y)</th>
<th>Number of tourists served in the field of agrarian tourism, unit(X₁)</th>
<th>Management costs for the implementation of agrarian tourism activities, mln. soum(X₂)</th>
<th>The amount of funds involved for agrarian tourism activities, mln. soum(X₃)</th>
<th>Regional agricultural production volume of regions with high potential of agro-tourism resource components, billion soum(X₄)</th>
</tr>
</thead>
<tbody>
<tr>
<td>“DILRABO TRAVEL” family enterprise</td>
<td>“SEZAM” LLC</td>
<td>“DILRABO TRAVEL” family enterprise</td>
<td>“SEZAM” LLC</td>
<td>“DILRABO TRAVEL” family enterprise</td>
<td>“SEZAM” LLC</td>
</tr>
<tr>
<td>2014</td>
<td>62.3</td>
<td>47.1</td>
<td>765</td>
<td>618</td>
<td>6.6</td>
</tr>
<tr>
<td>2015</td>
<td>67.6</td>
<td>55.5</td>
<td>798</td>
<td>694</td>
<td>7.4</td>
</tr>
<tr>
<td>2016</td>
<td>74.4</td>
<td>67.8</td>
<td>842</td>
<td>759</td>
<td>8.4</td>
</tr>
<tr>
<td>2017</td>
<td>83.9</td>
<td>80.3</td>
<td>951</td>
<td>873</td>
<td>9.1</td>
</tr>
<tr>
<td>2018</td>
<td>98.2</td>
<td>94.7</td>
<td>1078</td>
<td>924</td>
<td>14.4</td>
</tr>
<tr>
<td>2019</td>
<td>112.5</td>
<td>123.2</td>
<td>1246</td>
<td>1162</td>
<td>21.6</td>
</tr>
<tr>
<td>2020</td>
<td>74.3</td>
<td>87.4</td>
<td>732</td>
<td>871</td>
<td>7.3</td>
</tr>
<tr>
<td>2021</td>
<td>127.7</td>
<td>122.6</td>
<td>1027</td>
<td>957</td>
<td>24.8</td>
</tr>
</tbody>
</table>

Source: Prepared by Authors (2023)
Table 2 The logarithmic value of the factor indicators affecting the volume of income from agrarian tourism services in the activity of the family enterprise “DILRABO TRAVEL” and its change

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>LnY</th>
<th>LnX1</th>
<th>LnX2</th>
<th>LnX3</th>
<th>LnX4</th>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td>2014</td>
<td>4.13</td>
<td>6.64</td>
<td>1.89</td>
<td>2.50</td>
</tr>
<tr>
<td></td>
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<td>2015</td>
<td>4.21</td>
<td>6.68</td>
<td>2.00</td>
<td>2.65</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2016</td>
<td>4.31</td>
<td>6.74</td>
<td>2.13</td>
<td>2.87</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2017</td>
<td>4.43</td>
<td>6.86</td>
<td>2.21</td>
<td>2.96</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2018</td>
<td>4.59</td>
<td>6.98</td>
<td>2.67</td>
<td>3.17</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2019</td>
<td>4.72</td>
<td>7.13</td>
<td>3.07</td>
<td>3.31</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2020</td>
<td>4.31</td>
<td>6.60</td>
<td>1.99</td>
<td>2.54</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2021</td>
<td>4.85</td>
<td>6.93</td>
<td>3.21</td>
<td>3.48</td>
</tr>
</tbody>
</table>

Source: Prepared by Authors (2023)

Table 3 The characteristics of connection of the selected factors and the main indicators of the quality of the constructed factor model for the family enterprise “DILRABO TRAVEL”

The volume of income from agrarian tourism services, LnY

Method: Least Squares
Date: 06/29/22 Time: 19:37
Sample: 2014 2021
Included observations: 8

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of tourists served in the field of agrarian tourism, LnX1</td>
<td>0.005760</td>
<td>0.115025</td>
<td>0.050077</td>
<td>0.9632</td>
</tr>
<tr>
<td>Management costs for the implementation of agrarian tourism activities, LnX2</td>
<td>0.145422</td>
<td>0.075515</td>
<td>1.925728</td>
<td>0.1498</td>
</tr>
<tr>
<td>Amount of funds attracted for agrarian tourism activity, LnX3</td>
<td>0.344662</td>
<td>0.099491</td>
<td>3.464254</td>
<td>0.0405</td>
</tr>
<tr>
<td>Regional agricultural production volume of regions with high potential of agrarian tourism resource components, LnX4</td>
<td>0.139486</td>
<td>0.028909</td>
<td>4.824999</td>
<td>0.0170</td>
</tr>
<tr>
<td>The general effect of random factors, e</td>
<td>1.915627</td>
<td>0.748327</td>
<td>2.559878</td>
<td>0.0832</td>
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</tbody>
</table>

R-squared 0.996324 Mean dependent var 4.443750
Adjusted R-squared 0.991422 S.D. dependent var 0.254049
S.E. of regression 0.023530 Akaike info criterion -4.391946
Sum squared resid 0.001661 Schwarz criterion -4.342295
Log likelihood 22.56778 Hannan-Quinn criter. -4.726822
F-statistic 203.2574 Durbin-Watson stat 3.168878
Prob(F-statistic) 0.000556

Source: Prepared by Authors (2023)
Table 4 The logarithmic value of the volume of income from agrarian tourism services at “SEZAM” LLC and the factors influencing its change

<table>
<thead>
<tr>
<th></th>
<th>LnY</th>
<th>LnX1</th>
<th>LnX2</th>
<th>LnX3</th>
<th>LnX4</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
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<td>6.43</td>
<td>1.65</td>
<td>2.26</td>
<td>7.93</td>
</tr>
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<td>2015</td>
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<td>7.95</td>
</tr>
<tr>
<td>2016</td>
<td>4.22</td>
<td>6.63</td>
<td>1.90</td>
<td>2.62</td>
<td>8.06</td>
</tr>
<tr>
<td>2017</td>
<td>4.39</td>
<td>6.77</td>
<td>2.15</td>
<td>2.78</td>
<td>8.34</td>
</tr>
<tr>
<td>2018</td>
<td>4.55</td>
<td>6.83</td>
<td>2.60</td>
<td>2.99</td>
<td>8.55</td>
</tr>
<tr>
<td>2019</td>
<td>4.81</td>
<td>7.06</td>
<td>3.20</td>
<td>3.11</td>
<td>8.56</td>
</tr>
<tr>
<td>2020</td>
<td>4.47</td>
<td>6.77</td>
<td>2.13</td>
<td>2.72</td>
<td>8.76</td>
</tr>
<tr>
<td>2021</td>
<td>4.81</td>
<td>6.86</td>
<td>3.08</td>
<td>3.35</td>
<td>8.96</td>
</tr>
</tbody>
</table>

Source: Prepared by Authors (2023)

Table 5 The characteristics of connection of the selected factors and the main indicators of the quality of the constructed factor model according to “SEZAM” LLC

Dependent Variable: The volume of income from agrarian tourism services, LnY

Method: Least Squares
Date: 06/29/22  Time: 20:23
Sample: 2014 2021
Included observations: 8

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of tourists served in the field of agrarian tourism, LnX1</td>
<td>0.821523</td>
<td>0.165858</td>
<td>4.953177</td>
<td>0.0158</td>
</tr>
<tr>
<td>Management costs for the implementation of agrarian tourism activities, LnX2</td>
<td>-0.005949</td>
<td>0.082074</td>
<td>-0.072489</td>
<td>0.9468</td>
</tr>
<tr>
<td>Amount of funds attracted for agrarian tourism activity, LnX3</td>
<td>0.374653</td>
<td>0.135474</td>
<td>2.765499</td>
<td>0.0698</td>
</tr>
<tr>
<td>Regional agricultural production volume of regions with high potential of agro-tourism resource components, LnX4</td>
<td>0.164975</td>
<td>0.071060</td>
<td>2.321610</td>
<td>0.1029</td>
</tr>
<tr>
<td>The general effect of random factors, e</td>
<td>-3.551967</td>
<td>1.011188</td>
<td>-3.512667</td>
<td>0.0391</td>
</tr>
</tbody>
</table>

R-squared 0.996044  Mean dependent var 4.390000
Adjusted R-squared 0.990769  S.D. dependent var 0.346863
S.E. of regression 0.033327  Akaike info criterion -3.695741
Sum squared resid 0.003332  Schwarz criterion -3.646090
Log likelihood 19.78296  Hannan-Quinn criter. -4.030616
F-statistic 188.8196  Durbin-Watson stat 1.758697
Prob(F-statistic) 0.000621

Source: Prepared by Authors (2023)
Figure 1. Changes in the volume of income from agrarian tourism services in the family enterprise “DILRABO TRAVEL” and LLC “SEZAM” in 2014-2024, mln. soum (2022-2024 forecast)

Table 6 Methodology of multi-level assessment of necessary conditions and resource potential for agrarian tourism in Fergana region

<table>
<thead>
<tr>
<th>Stage</th>
<th>Evaluation process</th>
<th>The result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1</td>
<td>Selection of indicators of regional potential of agrarian tourism in the section of its components (nij).</td>
<td>The structure of the territorial potential of agrarian tourism activities is evaluated based on the potential of 9 specific characteristics - production, natural resource, socio-economic, historical, cultural and ethnological, environmental, infrastructure, information, institutional potential. A set of indicators is defined for each individual characteristic potential.</td>
</tr>
<tr>
<td>Stage 2</td>
<td>Analysis of indicators in a cross-section of regions to determine threshold and average values $P_{ij}, P_{ij_{max}}, P_{ij_{min}}$</td>
<td>Limit and average values are determined for a set of indicators representing the potential of the selected private sign in the cross-section of territorial units of Fergana region.</td>
</tr>
<tr>
<td>Stage 3</td>
<td>Calculation of the eigenvalues of the k-index of the j-element of the i-area potential ($P_{Ri_{ijk}}$)</td>
<td>For each indicator, its quantitative measurement is brought into a comparable form using a 100-point rating scale.</td>
</tr>
<tr>
<td>Stage 4</td>
<td>Determining the average score of the components of the territorial potential of agrarian tourism</td>
<td>The calculation is made according to the following formula: $P_{Ri_{ijk}} = \frac{\sum_{i=1}^{n_j} P_{RC_{ijk}}}{n_j}$, $j = 1, m$, $k = 1, l$</td>
</tr>
<tr>
<td>Stage 5</td>
<td>Calculation of the overall territorial potential indicator of the development of agrarian</td>
<td>The calculation is made according to the following formula:</td>
</tr>
<tr>
<td>Stage</td>
<td>Description</td>
<td>Formula/Details</td>
</tr>
<tr>
<td>-------</td>
<td>-------------</td>
<td>----------------</td>
</tr>
<tr>
<td>6</td>
<td>Grouping of regions according to the general potential for the development of agrarian tourism activities</td>
<td>Regions are divided into groups based on the Sterjess connection based on the overall regional potential indicator</td>
</tr>
<tr>
<td>7</td>
<td>Calculating the integral indicator of the level of development of agrarian tourism activity in the region ( AIL_k )</td>
<td>Indicators of the level of development of agrarian tourism ( (IL_{d0}) ) are determined: activity intensity index; income from the provision of agrarian tourism services, income from the provision of agrarian tourism services by 1 subject. The integral indicator reflecting the general state of the above indicators is made according to the following formula: [ AIL_k = \sum_{j=1}^{m} PRC_{jk} \cdot \beta_j, \quad k = 1, l ] Here ( \beta_j ) – is the weighting coefficient of the private character potential.</td>
</tr>
<tr>
<td>8</td>
<td>Determining the effectiveness of using the general potential of agrarian tourism development ( (\mathcal{E}_k) )</td>
<td>The calculation is made according to the following formula: [ \mathcal{E}_k = \frac{AIL_k}{ARC_k}, \quad k = 1, l ] The comparative effectiveness of the level of effective use of agrarian tourism potential in the conditions of the regions is defined as the ratio of the efficiency index ( (\mathcal{E}<em>k) ) and its maximum value ( (\mathcal{E}</em>{\text{max}}) ) of the overall potential of agrarian tourism development in a certain region.</td>
</tr>
<tr>
<td>9</td>
<td>Determining the position of regions according to the level of investment attractiveness of agrarian tourism</td>
<td>According to the criteria of investment attractiveness, 4 boundaries of territories are determined - &quot;unpromising&quot;, &quot;potential for development&quot;, &quot;stable&quot; and &quot;promising&quot; boundaries</td>
</tr>
<tr>
<td>10</td>
<td>A set of measures to determine the main goals of regional development of agrarian tourism activities and to achieve them</td>
<td>The evaluation results are summarized in order to determine the prospects for the development of agrarian tourism, taking into account the specific characteristics of the regions, competitive advantages and potential.</td>
</tr>
</tbody>
</table>

Source: Prepared by Authors (2023)
6 CONCLUSION

Based on the results of the research, the following scientific conclusions and proposals and practical recommendations were developed:

1. Organization and development of agrarian tourism activities must be carried out simultaneously in connection with two main complexes of the national economy: agro-industrial complex and tourism complex. Because the organized activity is considered as an activity within the tourism complex in terms of content, on the other hand, this activity is considered a direction of activity within the social infrastructure of the agro-industrial complex;

2. It is possible to use the experiences of foreign countries in agrarian tourism activities and the models of agrarian tourism development used in the world countries in the development of this type of tourism activity in our country, taking into account local conditions and natural and climatic conditions;
3. Taking into account that the development of agrarian tourism activities is carried out in the regions in connection with the development of agricultural sectors and industries, in the assessment of its resource potential, the level of development of the sector in the regions and the type and volume of products produced in the sectors of the sector, the position of agriculture in the region at the national level, and the resource components are evaluated.

4. The analysis of the components of the territory of Fergana region showed that the rural areas of the region have natural, historical and cultural objects and events, as well as socio-economic and technological conditions. An integral assessment of the resource potential of the region is considered necessary for the correct determination of the agrarian tourism development strategy in the region and its territorial organization, and allows to identify priority regions with high potential;

5. Through multi-factor econometric modeling based on economic-mathematical methods, it is possible to determine the pattern of development of any socio-economic activity in the form of models and to develop the most effective scenarios of activity by managing the influencing factors in the identified models. In the course of the research, an econometric model in the form of a Cobb-Douglas production function was determined, choosing the indicator of the number of tourists served in the direction of agrarian tourism as a result factor, and on the basis of this model, the forecast scenarios of the change of the indicator in the medium term, i.e. in 2022-2024, were developed.

6. The existing 19 administrative-territorial units in Fergana region were analyzed based on existing methods and the existing conditions and resource potential of the regions for the development of agrarian tourism activities were evaluated. Based on the integration of the indicators of the general potential determined for each of the regions, the integrated indicators evaluating the possibility of developing agrarian tourism activities in 19 regions were determined. With the help of Sterjess formula, in order to group the determined integral indicators, it was determined that the regions will be divided into 4 zones from the point of view of the development of agrarian tourism activities.

Maximizing the level of use of existing agrarian tourism services on the basis of effective management and planning of agrarian tourism activities in the regions of Uzbekistan, and developing mechanisms for effective use of the methodology of applying the resource component of innovative potential in the field in the effective organization of the service offer
will further shorten the development period of the field. This is the basis for determining the high saturation point of supply and demand relations in the market of agrarian tourism services and accelerates the diffusion of the development of the agrarian tourism services market in the region, creates new jobs, and provides effective employment of the population.
REFERENCES


