
Modeling Factors of Environmental Tourism Development in Innovation Economy

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Abstract

The factors' modeling of ecological tourism development in innovative economy is carried out in the article. The relevance of the article is due to the fact that the issues of the services industry's development, especially in the field of ecological tourism, have not yet been fully resolved and require additional study and systematization of the factors determining them, which is especially important in the conditions of formation and development of the service economy in Russia. The purpose of the article is to systematize the factors of ecological tourism sector development from the position of cluster development of territories and evaluation of entrepreneurial potential in this area. The main research methods used in the article are description, comparison, generalization, analysis and synthesis, descriptive and cluster analysis. The clustering of Russia's regions in five groups with similar socio-economic characteristics was carried out on the basis of cluster analysis in terms of paid services' volume in the ecotourism market, real incomes of the population, per capita income of the population, profitability of goods sold in the industrial sector, innovative activity of organizations. The article systematizes the data of organizations' business activity in the sphere of services in the field of ecological tourism, identifies the key drivers and inhibitors of entrepreneur confidence of business entities in the sector of the economy specializing in the provision of services in the field of ecological tourism. The materials of the article can be used in the development of measures to improve the efficiency of the service sector of the economy and eco-tourism, taking into account socio-economic trends in the innovation economy.

Keywords: service sector, innovative economy, ecology, ecotourism, modeling, business activity of service sector organizations, development trends, region, economic and mathematical analysis

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INTRODUCTION

The Study Relevance

In modern conditions, the economic system requires constant adjustment, which is conditioned by the changes in the internal and external environment. The external environment, in which the organization of services in the field of ecological tourism carry out its activities, is constantly changing under the influence of changes in market conditions, innovative changes, development of new technologies, changes in consumer preferences, etc.

It is widely accepted in the scientific literature that the market is a set of consumers of a certain product or service and a set of sellers selling a certain product and providing a service (Kuznetsova et al. 2018, Ramanathan et al. 2017, Starykh 2017). The use of this interpretation

in the theory and practice of market research does not allow today to correctly and fully assess the impact of market phenomena on the development of the economy as a whole. The purposes of services' market in the field of ecological tourism are essentially similar to the purposes of commodity markets, but have several features, the essence of which characterizes the specifics of ecotourism services as a market product. The economic objective of the ecotourism market is to ensure the efficient use of consumer resources to meet the needs of society. The realization of this goal is the result of the study of society's needs in the services of ecological tourism and the representation of their diversity in the market.

In this regard, one of the directions of the service economy is the field of ecological tourism with its various innovative niches. Tourism is a branch of the

economy of the non-productive sphere, the enterprises and organizations of which satisfy the needs of tourists in material and non-material services. Currently, the tourism sector ranks third in terms of revenues among the largest export sectors of the economy, second place is occupied only by the oil industry and the automotive industry. Since 2011, there has been a steady growth trend in the contribution of the tourism industry to the development of the Russian economy. At the end of 2016, the gross value added of the tourism industry in the formation of GDP amounted to 3.4% (from: gks.ru).

The strengths of the tourist offers in Russia are: unique nature, a variety of flora and fauna; rich cultural and historical heritage; a variety of types of tourism: active, cultural, educational, health, rural ("green"), environmental and others.

To date, as an alternative to other uses of the surrounding natural resources, ecological tourism is a form of sustainable tourism, focused on visiting relatively virgin natural areas in terms of anthropogenic impact.

METHODOLOGICAL FRAMEWORK

Methodological Foundations

The issues of ecological tourism's development are analyzed in detail in the works of Russian and foreign authors (Fein 2017, Giovanis and Tsoukatos 2017, Kiran and Diljit 2017, Kudryavtseva et al. 2016a, Lezhepekova and Naumov 2018, Lynn and Brewster 2018). In addition, the issues of ecological tourism's development are reflected in regulatory documents and development programs, in particular - the strategy of tourism development in the Russian Federation until 2020 (2014), the Federal law № 33 (1995) *on specially protected natural areas*, the Federal law № 132 (1996) *on the basics of tourist activity in the Russian Federation* (from: consultant.ru) and others.

However, insufficient attention is paid to comprehensive studies of services and environmental tourism in the innovation economy from the standpoint of market and regional differences, which predetermined the choice of the purpose of this article.

Description, comparison, system analysis, synthesis, generalization, analogy method, cluster analysis, descriptive analysis, economic and mathematical modeling were used as research methods.

Theoretical Basis of the Research

The theoretical basis of the study is formed by the fundamental and applied works of foreign and domestic scientists who study the development of the services sector and ecological tourism in the innovation economy, its contribution to sustainable economic growth at different levels of economic systems management, studying the impact of ecotourism on the development of innovative economy in modern economic conditions.

The Stages of Research

The study was conducted in three stages:

- 1) Systematization of the main theoretical provisions and analytical studies in the field of assessment of business entities' entrepreneur activity in the service sector, including in the field of eco-tourism;
- 2) Generalization of the main directions of ecological tourism's development as a structure-forming factor of the economy's service sector;
- 3) Clustering of Russian regions by the level of development of the service sector, social and industrial sector and innovation.

RESULTS

Systematization of the Main Theoretical Provisions and Analytical Studies in the Field of Assessment of Business Entities' Entrepreneur Activity in the Service Sector, Including in the Field of Eco-Tourism

Analysis of business activity of service sector's organizations conducted by Russian statistics on a quarterly basis showed the following results (from: gks.ru). The survey of business activity in the service sector covers legal entities (except micro-enterprises) of the following activities: activities in the field of passenger transport, road freight transport, communications, hotels and other places of temporary residence, insurance, maintenance and repair of vehicles, repair of personal and household goods, provision of other personal services, the activities of travel agencies and other organizations providing services in the field of tourism, activities of health resorts, dental practice, creative activities, activities in the field of art and entertainment, advertising, mediation and consulting services for the sale and lease of real estate and other activities in the service sector.

A sample survey of business activity in the service sector in the 2nd quarter of 2018 was attended by 160

Table 1. Entrepreneurial confidence index in organizations engaged in environmental tourism, and elements of its formation (from: gks.ru)

Indicator		2017 y.		2018 y.
		2 quarter	1 quarter	2 quarter
Change's trends regarding previous quarter	Balance of <i>changes in the economic situation</i> in the current quarter compared to the previous quarter	6	0	11
	Balance of <i>changes in demand for services</i> in the current quarter compared to the previous quarter	-10	-16	1
Perspectives of the nearest quarter	Balance of changes in <i>demand for services</i> in the next quarter compared to the current quarter	11	18	17
The index of entrepreneur confidence		2	1	10

organizations (in the 2nd quarter of 2017 – 150 organizations). Among the surveyed organizations, the share of small enterprises (without microenterprises) in the total number amounted 57%, large – 36%, medium – sized enterprises-7%.

The results of heads' survey of organizations operating in the field of environmental tourism, different in number of employees and forms of ownership, characterize the business activity of enterprises in the 2nd quarter of 2018 in comparison with the previous quarter and the prospects for changes in the next quarter.

The assessment of changes in the overall economic situation in organizations specializing in environmental tourism in the 2nd quarter of 2018 was noted as *favorable* one by 22% of managers, *satisfactory* – 70%, *unfavorable* – 8%. In the 2nd quarter of 2018 compared to the 1st quarter of 2018, the majority of respondents (63%) did not notice changes in the overall economic situation in the organization, 24% noted improvement, 13% – deterioration. According to 60% of the heads of ecotourism service organizations who participated in the survey, the overall economic situation in their organization will not change in the next 3 months. The situation's improvement in the 3rd quarter of 2018 compared to the current quarter is expected by 34% of the respondents, the deterioration by 6%. In the 2nd quarter of 2018, the share of managers who assessed the competitive position of their organizations working in the field of ecotourism *above the normal level* was 1%, at the *normal level* – 89%, *below the normal level* – 10%.

The index value of business confidence in the field of eco-tourism in the 2nd quarter of 2018 (10%) indicates an improvement in the level of the business climate in the field of eco-tourism relatively to the 2nd quarter of 2017 (2%) and 1 quarter of 2018 (1%) (See **Table 1**).

Among the factors limiting the activities of organizations specializing in environmental tourism in the 2nd quarter of 2018, the most common were:

insufficient demand for this type of service and *lack of financial resources*, they were noted by 43.1% and 32.5% of respondents, respectively. In addition, 29.4% of entrepreneurs identified *the existing level of taxation* as limiting factors, and 26.3% – *a large reporting burden*. Thus, the analysis of the business activity of organizations in the sphere of tourism showed a sufficient stable position of economic entities in this sphere of the economy and prospects for further development.

Generalization of the Main Directions of Ecological Tourism's Development as a Structure-Forming Factor of the Economy's Service Sector

The main directions of ecological tourism's development in Russia can be systematized on the basis of SWOT-analysis matrix.

Strengths: unique nature in all parts of the country; rich cultural and historical heritage; availability of significant recreational resources and facilities; availability of human resources for the organization of tours to nature; the possibility of using less capital and organizational expenditures (compared to other types of tourism).

Weaknesses: insufficiently developed marketing of tourist products; insufficiently developed recreational infrastructure for the development of eco-educational tourism; low level of service; insufficient promotion of folk arts and crafts.

Opportunities: growth of ecological tourism's popularity in the world; favorable geographical position allowing to attract tourists; competent positioning and creation of a brand of the tourist direction; the growing interest of tourists to improving programs of rest; active assistance of tourism to nature protection, support of biological diversity.

Threats: increased competition on the side of foreign resorts and tourist centers; reduced purchasing power of consumers due to economic problems;

Core partners 1. Huge industrial enterprises 2. Public authority bodies 3. Tour agencies 4. Transport companies 5. Educational organizations of all levels Work by the principles of strategic cooperation between non-competing companies	Key activities 1. Environmental tourism 2. The ecological education 3. Scientific and educational activities in the field of ecology 4. Services of rural activities (haymaking beekeeping etc.)	Value propositions 1. An integrated approach to the development of ecotourism and eco-education 2. Year-round thematic offers for clients 3. "Effect of presence" in real natural conditions 4. Environmentally friendly and safe natural environment	Customer relations 1. New customer acquisition 2. Retention of existing customers 3. Increase of sales on target segments of ecotourism market	Consumer segments 1. Foreign citizens wishing to visit virgin places of Russia 2. Active citizens who prefer outdoor recreation 3. Students of educational institutions at all levels, ready to develop environmental awareness 4. Families with children choosing outdoor recreation
Expenditures structure 1. Development of the Park infrastructure and its improvement 2. Publication of advertising and methodical materials 3. Personnel development 4. Formation of joint routes to historical and cultural places, museums and natural landscapes 5. Expenditures for conferences, exhibitions, scientific and educational seminars, design and maintenance of internal routes in the Park 6. Other expenses (wages, utilities, maintenance of animals and equipment, etc.)			Revenue streams 1. Income from one-time transactions 2. Regular income from periodic payments received from key segments of consumers for value propositions	

Fig. 1. Business model of ecological tourism development

imperfection of environmental legislation; insufficient efficiency of public administration; insufficiently well-established mechanism of anthropogenic burden’s regulation.

In general, the plan for the development of ecological tourism can be presented in the following systemic areas:

1. Development of ecological culture, formation of understanding about the unique role and importance of the national Park for wildlife conservation in the society: development and implementation of programs to inform the population of the region and popularization of the importance and role of the national Park in wildlife conservation.
2. Provision of socio-economic alternatives to depletion forms of environmental management: assessment of maximum permissible burden and identification of ways to minimize the negative impact of tourism development on natural ecological systems; development of management plan for the development of ecological tourism in the region, its integration into the plans of socio-economic development of the Republic.
3. Organization of an effective system of ecological and educational activities on the basis of the national Park: development of excursion programs for different categories of visitors; creation of a data Bank on the monuments of

nature, culture, ethnographic sightseeing of the Park and the region as a whole.

The business model of ecotourism development can be grouped into nine areas (see **Fig. 1**).

Clustering of Russian Regions by the Development Level of the Service Sector, Social and Industrial Sphere and Innovation

In order to determine the balance of economic sectors on the example of the Russian regions, a cluster analysis was conducted.

The following indicators were used as initial data for modeling:

- X1**- volume of paid services per capita, including ecotourism services (RUB.);
- X2** - real income of the population (%);
- X3** - per capita income of the population (rubles per month);
- X4** - profitability of goods sold in the industrial sector (%);
- X5** - innovative activity of organizations (%).

The dynamic range included indicators within 2010-2017. As a tool for simulation the software product Statistica was used, the module - cluster analysis. **Table 2** presents descriptive statistics of the simulated indicators for each cluster.

Table 2. Descriptive statistics of the simulated indicators by the clusters

Indicator	X1-volume of paid services per capita, including ecotourism services (RUB.)	X2 - real income of the population (%)	X3-per capita income of the population (rubles per month)	X4-profitability of goods sold in the industrial sector (%)	X5 - innovative activity of organizations (%)
1 cluster-11 regions (Moscow region, Murmansk region, Saint-Petersburg, Krasnodar region, Sevastopol, Republic of Tatarstan, Sverdlovsk region, Tyumen region, Republic of Sakha (Yakutia), Kamchatka territory, Primorsky district)					
Average	74475.8	98.3	36073.3	13.1	9.8
Standard deviation	9072.0	11.4	5144.1	14.7	5.0
2 cluster-5 regions (Moscow, Khabarovsk territory, Magadan region, Sakhalin region, Chukotka Autonomous district)					
Average	106844.2	94.0	52185.0	6.9	9.5
Standard deviation	16346.4	0.9	10151.8	26.0	4.9
3 cluster-27 regions (Belgorod area, Vladimir area, Voronezh area, Kaluga area, Kursk area, Lipetsk area, Tambov area, Tula area, Republic of Karelia, Komi Republic, Arkhangelsk area, Vologda area, Kaliningrad area, Novgorod area, Volgograd area, Rostov area, Stavropol district, Republic of Bashkortostan, Perm district, Nizhny Novgorod area, Samara area, Republic of Buryatia, Krasnoyarsk district, Novosibirsk area, Omsk area, Amur area, Jewish Autonomous area)					
Average	49821.9	93.5	26968.0	13.5	8.0
Standard deviation	3919.8	3.9	2760.8	10.7	3.4
4th cluster-31 regions (Bryansk area, Ivanovo area, Kostroma area, Orel area, Ryazan area, Smolensk area, Tver area, Yaroslavl area, Leningrad area, Pskov area, Republic of Crimea, Astrakhan area, Republic of Dagestan, Kabardino-Balkar Republic, Republic of North Ossetia – Alania, the Chechen Republic, Udmurtia, Chuvashia, Kirov area, Orenburg area, Penza area, Saratov area, Ulyanovsk oblast, Kurgan area, Chelyabinsk area, Republic of Khakassia, Altai district, Zabaykalsky district, Irkutsk area, Kemerovo area, Tomsk area)					
Average	37747.4	94.2	22783.3	8.1	7.3
Standard deviation	2985.9	3.6	2438.2	7.1	5.1
5th Cluster-8 regions (Republic of Adygea, Republic of Kalmykia, Republic of Ingushetia, Karachay-Cherkess Republic, Republic of Mari El, Republic of Mordovia, Republic of Altai, Republic of Tyva)					
Average	24573.4	94.0	17292.0	1.4	4.4
Standard deviation	5167.9	3.5	3050.4	8.4	4.3

Thus, the clustering of Russian regions was presented by the level of development of the service sector, social and industrial sphere and innovation.

DISCUSSIONS

The first cluster can be characterized as the leaders of the social, industrial and service (services' sphere, including ecotourism) sectors of the economy, this cluster is characterized by very high values of the simulated indicators. The exception is the profitability indicator of the industrial sector, which was the largest in the regions of the third cluster and the indicator of ecotourism services' volume per capita, which was the largest in the regions of the second cluster. The cluster of leading regions included 11 entities of the Russian Federation, including the Moscow region, the Republic of Tatarstan, St. Petersburg) and others. In these regions, there was a stable unidirectional change in all simulated indicators, which made these regions pioneers in the development of all sectors of the economy.

The second cluster included regions of the contenders for the leadership, but having a maximum value for the volume of eco-tourism's services per capita. Therefore, the second cluster can be considered as a group of regions, the specialization of which is the market of ecotourism services. This cluster included Moscow, Khabarovsk territory, Magadan region. The presence of mainly Northern regions in this cluster is

explained by the higher cost of ecotourism services than the average in Russia. In addition, these regions have a relatively low profitability of the industrial sector, which may be associated with a low level of its development and its more concentration in the Central regions.

In the third cluster, for the most part, there are regions of Central Russia and the regions of the Volga Federal district, for which the specificity is the high profitability of the industrial sector (the maximum value), the other simulated indicators are inferior to the regions of the first and second cluster, but follow them. It should also be noted that in the regions of this cluster there is a maximum decrease in real cash income of the population, which leads to the average values in terms of ecotourism services per capita, due to the decrease in their purchasing power.

In the fourth cluster, the maximum number of regions is grouped – 31 entities of the Federation, with a predominance of southern regions. Here there are relatively low values for cash income, innovation, environmental tourism services, while the profitability of industrial goods is on the median value for the entire analyzed totality.

The fifth cluster is the regions of outsiders with the lowest values of all simulated indicators. This cluster includes 8 regions, including the Republic of Adygea, the Republic of Kalmykia, the Republic of Ingushetia and others.

Thus, the clustering of regions showed a stable relationship between social indicators, indicators of the industrial sector of the economy and innovation, as well as the service sector, where a separate segment for the analysis was the sphere of ecological tourism. Therefore, the field of ecological tourism acts as one of the impulses of other sectors' development in the economy that can be used for the development of the state policy of stimulation of adjacent branches' development which system-forming component is the sphere of ecological tourism.

CONCLUSION

In an open economic system focused on creating a flow of innovation, at each stage of the innovation cycle, a flow of services is generated – financial, information, consulting, marketing, etc. An integrated approach to the management of value creation flow allows one to simulate this system, to conduct a comprehensive diagnosis of its parameters (quantitative, temporary) and contributes to the development of competent management decisions (Kudryavtseva et al. 2016b). One of the main directions of the service sector, which allows occupying its market niche and diversifying it, is the sphere of ecological tourism. Ecotourism is an area of activity that allows to solve not only the problems of environmental education and social security of the population, but also can become an effective incentive for the development of innovative areas in the service sector and in the industrial sector of the economy, providing technology, work and services for the market of environmental services.

The study allows us to draw the following conclusions:

1. There has been a steady growth trend since 2011 in the contribution of the tourism industry to the development of the Russian economy. According to the results of 2016, the gross added value of the tourism industry in the formation of GDP amounted 3.4%.
2. Assessment of changes in the overall economic situation in organizations specializing in environmental tourism in the 2nd quarter of 2018 was noted as *favorable* one by 22% of

managers, *satisfactory* – 70%, *unfavorable* – 8%, which allows one to talk about the stability of ecological tourism's segment.

3. The strengths of the tourist proposals in Russia are: unique nature, a variety of flora and fauna; rich cultural and historical heritage; a variety of types of tourism: active, cultural, educational, health, rural (*green*), environmental and others.
4. To achieve the goals in the field of environmental tourism development, the developed system of program activities should include the following areas: the creation of special tourist and recreational economic zones in Russia; management of environmental tourism activities; attracting partners on the principles of public-private partnership; development of transport and logistics infrastructure in the region; staffing of ecotourism's development.
5. Clustering of Russian regions by the level of the service sector's development, including also the sphere of ecological tourism, social and industrial sphere and innovations allowed to identify 5 groups of regions with similar characteristics, for which the directions of development of the service sector and ecotourism can be developed on the basis of their service, industrial and social potential.

Thus, the management of the complex of services and environmental tourism in the innovative economy requires active cooperation of business, government and society in order to achieve sustainable development. The results and conclusions presented in the article can be used for the development of measures to improve the efficiency of the service sector of the economy and ecotourism, taking into account social and economic trends in the innovation economy.

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