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# THE DEVELOPMENT OF ECOTOURISM IN RUSSIA USING MODERN INFORMATION AND TELECOMMUNICATION TECHNOLOGIES

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## Abstract

The relevance of the study is due to the interest of modern science in the field of tourism in relation to the problems of the study of ecotourism in Russia and its development in our country. The purpose of the study of modern information and telecommunication technologies and their application in the development of ecotourism in Russia is to create a new tourist product on the market of the tourism industry, which will make it possible to reduce the anthropogenic impact on the nature of Russia, as well as to attract as many domestic and foreign tourists to the study of ecologically clean protected natural places in Russia, thereby promoting Russia to a higher stage of development of the tourism industry. Based on the results of the statistical analysis, authors were able to develop recommendations for combining eco-tourism and virtual tourism, as well as to identify ways to promote this idea, and, ultimately, to develop recommendations for the creation of a virtual ecological tour with subsequent calculations of the costs of this tourism product and the profits from the implementation of this project.

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## 1. Introduction

The problem of ecology in many places of our planet forces many people to think about their own future and the future of our planet. In the scientific literature, this problem has been studied in various scientific articles of journals, in teaching AIDS, and is studied to this day, in view of the annual world changes that require more and more new statistics and views to develop modern solutions to this problem. It is because of the negative anthropogenic impact on nature that climate change, natural disasters occur, in connection with which a huge number of people die, biodiversity is disturbed, many species of plants and animals die out, natural resources are exhausted, and economic instability occurs – in General, the balance between people and nature is disturbed (Arsen'yeva et al., 2005; Babkin, 2008; Ceballos, 1984, 1993; Cugina, 2018).

It is a well-known fact that the progress of innovative technologies is happening all over the world, and every year we are surrounded by more and more new inventions, there is an era of modernization in everything. Also, it is no secret that among the innovation clusters in the first place are innovations related to energy and the environment.

Eco-tourism is gaining momentum every day in various countries around the world, attracting an increasing number of travelers calling to relax in harmony with pure nature, while taking care of her and not causing harm to any negative anthropogenic influence. That is why it is necessary to create innovations that contribute to the protection of nature, unloading it from the growing tourist flows, while helping people who want to travel, but cannot afford it due to various reasons. The creation of a new tourism product in the tourism market that meets the needs of both nature and consumers will bring the Russian economy to a higher level and form a good financial support for the country (Dyachenko et al., 2015; Grabovenko, 2003).

## 2. Methodology

The object of the study: ecotourism in Russia.

Subject of research: information and telecommunication technologies used in the development of ecotourism.

The purpose of the study: to develop recommendations for the effective use of information and telecommunications tools that contribute to the development of this type of tourism.

Tasks:

- 1) consider the historical image of ecotourism in Russia;
- 2) to reveal the theoretical basis of modern information and telecommunication technologies in the tourism industry;
- 3) to characterize and conduct a comparative analysis of the main areas of ecotourism in Russia;
- 4) to review the potential audience of visits to eco-tourist areas using information and telecommunication technologies;
- 5) develop recommendations on the effective use of these technologies in the field of ecotourism.

Materials for research: the study of ecotourism and its development began in the early 20th century, experts in various fields: from geographers and biologists to psychologists and lawyers, and this problem is reflected in the scientific works of authors such as Bochkareva T. V., Mazurov Yu. L. (Mazurov, 2004),

Pieces of as, Panov I. N., Moraleva N. V., Sorokina G. A., Arsenyeva E. I., Drozdov V. A., Feoktistova N. V., Eitingon A. I., Khrabovchenko V. V. (Grabovenko, 2003), Chizhova V. P. (Ivanov & Chizhova, 2003), Zorin I. V. and Kvartalnov V. A. (Grabovenko, 2003), and many others. Among foreign experts, the phenomenon of ecotourism was considered by the following authors: K. Lindberg (Lindberg & Hawking, 1993), D. Kramer, D. McLaren, P. Wight, K. Dial, G. Wallace, I. Mose, P. Valentine, N. Ward, P. Hasslacher, K-H. Rochlitz, W. Strasdas, D. Western and others. The mentioned authors from foreign countries were representatives of 4 scientific schools in the consideration of approaches to ecotourism: Mexican, American, German and Australian.

Method of research:

- 1) theoretical – analysis, synthesis, classification of theoretical material, historical method;
- 2) empirical – comparative analysis of statistical data.

The theoretical significance lies in the generalization of theoretical and practical knowledge about the problem of ecotourism development in Russia, as well as for all people who want to travel to the most beautiful natural places, getting emotional recovery and, as a result, physical recovery. And also in the consideration of the progress of modern information and telecommunication technologies and their application for the development of ecological tourism in our country.

The practical significance lies in the possibility of using the obtained data of the study and subsequent recommendations in the work of workers in the tourism industry, in the economic sector, in the pedagogical and medical fields, workers for the protection of nature and the environment, for the scientific sphere and for many other industries as a guide and reference material for further innovative developments.

### **3. Results**

Based on the empirical study of ecological tourism in Russia and in the world, as well as the consideration of innovations in the tourism industry, we can draw the following conclusions:

1) in order to develop ecotourism in Russia, it is necessary to create innovations and implement them, based on the public demand, the indicator of the effectiveness of innovations, as well as the presence of external externalities, so that in the economic market these innovations represent an environmental and economic benefit that will guarantee success;

2) in Russia, there is a very low stimulation of demand for environmental innovation, due to savings in production costs, lack of funding, as well as the lack of interest of public policy in the provision of tax or credit benefits;

3) the main innovation in ecotourism, we will consider the creation and development of virtual tourism, using the components of modern information and telecommunication technologies, one of the goals of which is the remote transfer of information to the opponent;

4) Russia's environmental costs are rising every year, but the smallest contribution for 2017 was from the public sector;

5) Russian investments in the tourism industry are carried out by 40% with the help of budget allocations and by 60% with the help of attracting other forces, for example, rent by tourists for entering or living in specially protected natural areas (SPNA) , charging fines for illegal hunting or fishing, etc.;

6) due to insufficient financing of tourism and ecological tourism in Russia, the country is not able to accept a large number of foreign tourists. Also, the reasons for the weak competitiveness in tourism are underdeveloped infrastructure of protected areas, ill-considered transport accessibility and lack of thought-out ways to move tourists within the protected areas;

7) investing in such innovation as virtual tourism can be an additional branch of profit, which will go to: financial support of protected areas and their development, to pay for nature protection services, to create and develop a sound infrastructure, so that the quality of tourist services will increase;

8) the way to attract foreign tourists will also be to create a tourist brand of our country.

It should also be noted:

1) on the territory of Russia is 13295 existing protected areas, including protected areas of Federal significance 119 sanctuaries and 56 national parks as of April 2018, which increased the number of eco-trails, visitor centres and museums in 4-5 times in comparison with 2001, and received about 7 million ecotourists at the Federal level;

2) since Russia takes the 4th place in the number of natural objects (16) included in the UNESCO world heritage list, during the comparative analysis of 11 objects, 3 priority directions for the implementation of virtual tourism on their basis on their territories were chosen: lake Baikal, Volcanoes of Kamchatka and the Golden mountains of Altai;

3) the most visited destination among all tourists and profitable in terms of revenue is Europe, but it can compete in terms of profit and with a lower volume of visits to North and South America, where, for example, the national protected areas of the United States are visited by more than 330 million people, and this exceeds Russian indicators;

4) in order to raise the level of development of ecotourism in Russia and increase the tourist flow, it is necessary to invest innovations, in particular, virtual ecotourism, which will be a strong financial support for protected areas, and then it will be possible to modernize the infrastructure and pay for environmental services, thereby causing greater interest in visiting protected areas of Russia from domestic tourists and foreign.

## **4. Discussion**

As part of the discussion, we will consider the formation of a recommendation base for the development of virtual ecotourism.

### **4.1. Recommendations for the creation of virtual eco-tours and the benefits of implementing this idea**

Innovations in tourism are different types of development aimed at creating new projects, organizing new tourist routes, improving the efficiency of various work processes taking place at tourist sites and natural areas, contributing to the improvement of the quality of environmental protection, tourist services, infrastructure, etc. But the main task of innovation is to ensure the growth of incomes of the local population and various organizations.

For the development of virtual tourism and the creation of virtual environmental tours, we recommend the following recommendations in different variations of their applications – all at once or selectively:

1) the use of virtual reality technologies, as well as mixed reality (augmented virtuality and augmented reality), using 4D and 5D technologies;

2) the use of the helmet-VR, which is compact, reproduces the visualization program embedded in it, is able to improve the resolution of the screens, to display head turns in virtual reality, but the process of presence in virtual reality is performed in a sitting position;

3) you can also resort to the test of "virtual cocoon" Virtual Cocoon, which is also worn on the head and has a wireless connection with the main computer, where the route of the tour, for example, and will be able to transmit visualization data along with the playback of sound effects, as well as, thanks to the built-in fan, simulate the blows of warm or cold wind in the face. This "cocoon", among other things, includes tubes that are held to the nose and mouth, imitating some odors for the nasal receptors, and causing taste sensations obtained in the mouth;

4) to create such virtual ecological tours first on the basis of eco-routes on protected areas located: on lake Baikal, on the Volcanoes of Kamchatka and in the Golden mountains of Altai;

5) take into account the most visited protected areas of these areas, offering the greatest variety of eco-routes and museums;

6) include in the virtual environmental tour the most unusual and stunning routes of specific protected areas, which are very difficult to access and specific to the specific of these three areas.

Regarding other innovative aspects, which are inseparable properties of specific innovations, and contribute to solving problems related to the development of ecotourism and virtual ecological tourism, it is worth paying attention to the following:

1) the need to create a specific reference and information system related to natural, as well as historical and cultural routes, tours and attractions of all protected areas;

2) development of the necessary infrastructure of tourist areas in protected areas and their territories, as well as the development of new environmental routes and trails, which, in turn, require certification control;

3) creation of new and renewal of existing reserves and national parks, as well as other significant natural objects, and opening of specialized information centers on their territories;

4) promotion and modernization of ecological, as well as virtual ecological tourism, through the use of advertising and information content on the Internet sites of specific protected areas, promoting new innovative tourism products on the domestic and foreign market, the organization of various promotions in environmental funds and support activities dedicated to environmental care and cultural and educational education of people;

5) training and training of qualified personnel who have acquired all the necessary skills to work with innovative technologies involved in the creation and organization of virtual environmental tours (Mazurov, 1996).

Also, we would like to highlight all the advantages of the idea of this work on the combination of eco-tourism and virtual tourism:

1) ecotourism, because of its unusual routes through relatively untouched places of nature, is often difficult for many people. In this regard, virtual ecotourism is able to show these natural beauty that can hide behind the complexity of landscape reliefs, enlightening as many people as possible;

2) the advantage of low financial costs on the part of tourists on a virtual ecological tour, compared with the real ecological tour;

3) not everywhere the infrastructure of eco-zones is favorable for visiting, which can be compensated by a virtual tour;

4) virtual travel – this is absolutely no pollution of the environment, super-environmentally friendly option for the implementation of ecotourism;

5) such virtual tours will be able to attract a large number of investors who will be able to contribute to the arrangement of the necessary places for ecotourism, as well as to provide financial support to those natural areas and the local population, simultaneously educating a huge number of new people;

6) since ecotourism is not intended for mass tourism travel, virtual ecotourism will be supportive of reducing tourist flows and the burden on the environment, thus not allowing it to cause harm;

7) the lack of energy and time spent on physical movement to the desired environmental area, due to instant virtual immersion;

8) virtual ecological tour will allow you to feel in harmony with nature, thanks to immersion in an individual environment, where no outsiders will be displayed, except the only viewer.

Thus, we can draw the following conclusions:

1) in the recommendations for the creation of virtual environmental tours, we proposed the use of modern developments of information and telecommunication technologies, such as: technology 4D and 5D attractions and cinemas, which includes the concept of mixed reality, as well as the possible use of VR-helmet or "virtual cocoon»;

2) it is desirable to carry out these virtual tours on lake Baikal, Volcanoes of Kamchatka and the Golden mountains of Altai;

3) it is necessary to take into account innovative aspects that affect the development of ecotourism and virtual ecotourism, such as: the creation of a reference and information system about natural objects, modernization of infrastructure, placement of advertising blocks on the Internet sites of protected areas, etc.;

4) virtual ecotourism will make such eco-trips more accessible for different categories of citizens, eliminate the negative impact of people on nature, reduce the financial costs of tourists on tours, reduce the burden on nature from tourist flows and so on.

#### **4.2. Methods of distribution and promotion of virtual ecological tourism**

In order to determine the best ways to promote the idea of implementing virtual ecological tourism, it is necessary to first identify the types of modern information and telecommunication technologies, and then choose the most optimal ones to solve the problem.

We mentioned earlier that such technologies are a kind of system that includes computer science and telecommunications tools that allow you to transfer various kinds of information at a distance, collect, store, store, replenish or process. That is, at the heart of all modern information and telecommunication

technologies, mainly lies the main thing – information. In today's world, this information is transmitted using networks, computers and other types of electronic communication.

In this regard, there are several types of telecommunication technologies:

- 1) radio communication;
- 2) satellite communications;
- 3) telephone communication;
- (4) Internet;
- 5) television.

Each of these types of information technology can be perfectly suited for promotion to a mass or specialized audience of a product or service, in the aggregate application or individually. In our opinion, the choice of a particular type of technology to promote virtual eco-tourism will depend on the category of citizens who will be offered this idea of travel. For example, in order to interest the category of elderly citizens, it will be possible to resort to the story of virtual ecological tourism and its advertising on radio waves or on television, due to the fact that this audience by and large does not use the Internet, and not everyone from the selected category uses telephone services. In another case, if the target audience will be the youth contingent, including a specialized category of citizens with disabilities, a more effective engine of virtual ecotourism will be advertising on the Internet, video reviews on various sites, including the Internet sites of protected areas, etc.

We want to note that it is thanks to the emergence of the Internet, consumers of tourist services began to behave somewhat differently. Nowadays, almost all travel companies and their customers in the form of travelers themselves buy certain tours, excursions or tickets through the Internet portals. Russian citizens turn to the various search engines in the generation of "Yandex" or "Google" where you can find any tour operator or any travel Agency, hotel booking sites, and other services for tourists, read the reviews of people who visited these places, see pictures and description. All these features are very helpful for tourists to choose the direction of the trip, as well as provide an opportunity to choose and build a route.

#### **4.3. Recommendations for creating a virtual eco-tour of the program, calculations of costs and revenues**

We decided to make a rough plan with the calculations of the costs of this idea and its organization and possible revenues from the implementation of virtual environmental tours. To describe what can be included in one such virtual journey, you must first describe the cost of the necessary equipment and so on.

We will need:

- 1) set of 5D cinema equipment for 3 seats, the approximate cost in total – from 300 thousand rubles;
- 2) rent a room size of about 15-17 square meters: in the Shopping center the cost will vary within 15-25 thousand rubles, or in some other place, suitable in size for the cost of 15-40 thousand rubles;
- 3) qualified personnel in this field 5-7 people with a working schedule 2/2, which will be paid wages in the amount of 25-45 thousand rubles;
- 4) creation of marketing projects to promote this tourist product – 200 thousand rubles.

For the development of a virtual ecological tour, for example, on lake Baikal in one of its reserves – "Barguzin", or national parks, for example, in the "Baikal" NP. In one of these protected areas, we will

choose one of the most colorful and popular ecological route and there will have to work a team consisting of 4 people: 2 videographers to record on professional cameras of this trail from all sides with a 360-degree review, 1 photographer for the subsequent creation of an advertising campaign, 1 programmer who will have to personally inspect a specific area, and then recreate the surrounding environment exactly in digital electronic form, based on the video footage of videographers. About the way to develop a virtual environmental field trip.

Such a virtual ecological journey should last about 5-8 minutes. Its approximate cost may vary in the amount of 1200-2000 rubles per person. This tour will be conducted on a daily basis about 15 times. Every day this place will have an income of 54-90 thousand rubles, subject to a visit to the cinema for 3 people 15 times a day. Total monthly turnover for 30-31 days will be about 1.6-2.7 million rubles. You will need to pay a tax of 6% of the USN of the monthly turnover. If we calculate all the previously listed monthly expenses, they will be about 435 thousand rubles. One – time expenses for purchase of the necessary equipment-300 thousand rubles are added to them. As a result, the total cost may be about 735 thousand rubles. The tax payment from the monthly turnover will vary in the amount of 97-162 thousand rubles each month. That is, monthly expenses, excluding one-time purchase of equipment, will be 532-597 thousand rubles. This means that the net profit will be equal to 1.08-2.1 million rubles. We want to note that these calculations are approximate and relative, which can be refined and improved, exclude some nuances during the working process of developing this virtual ecological tour and creating a 5D cinema.

Thus, we can sum up the following results:

1) to implement the idea of virtual eco-tourism will need: special equipment 5D cinema, the necessary premises, trained staff, marketing campaigns for promotion and advertising;

2) to create one virtual ecological tour it is necessary: a working team of 4 people: 2 videographers, 1 photographer and 1 programmer, creating a virtual reality of the ecological route, for example, on lake Baikal in the "Barguzin" reserve;

3) the volume of initial financial costs for the implementation of the planned project will be 832-897 thousand rubles, the total turnover – 1.6-2.7 million rubles, and net profit will vary from 788 thousand – 1.8 million rubles.

As a result, the following conclusions can be made:

1) in this paper, we have created recommendations described the desirable use of modern information and telecommunication technologies such as 4D and 5D cinema technology, which will offer virtual environmental tours of the protected areas of lake Baikal or the protected areas of the Golden mountains of Altai, suitable for all categories of citizens;

2) to promote this idea in society, we proposed to use modern information and telecommunication technologies: radio, telephone, Internet and television;

3) to develop a virtual ecological tour you will need a team of 4 persons, 2 videographer, 1 photographer and 1 programmer creates a virtual eco-route on lake Baikal in the "Barguzin" reserve. These sessions will be held in the 5D cinema about 15 times a day, last for 5-8 minutes and bring net profit monthly in the amount of 788 thousand – 1.8 million rubles.



## 5. Conclusion

In the course of this work were studied the General characteristics of ecological tourism and its species and properties, especially protected natural areas and their categories (SPNA), as well as identified the origins of ecological tourism, considered theoretical approaches to the term and its definition by domestic and foreign specialists of various profiles. Was also highlighted the main principles of ecological tourism, which are the basis of all points of view on ecotourism. Also, modern information and telecommunication technologies used in the tourism industry, the concept of innovation in ecotourism and tourism in General were considered, where, mainly, definitions and representations of domestic and foreign specialists about virtual tourism, its capabilities and the degree of development at the present stage were given. We have analyzed the current state of all protected areas in Russia, given the statistics of the number of all protected areas in Russia, the report for 2017 – "Year of ecology": completed and unfulfilled tasks in accordance with the developed state plan for the development of protected areas. The socio-economic prerequisites for the development of ecotourism in Russia were listed, as well as the analysis of the dynamics of attendance of Federal protected areas of Russia by tourists in the period from 2001 to 2017 and 2018. The number and diversity of ecological trails and routes, the presence of visit centers and museums in Federal protected areas and national parks were considered. As a result of the analysis, it was possible to identify the most popular and suitable ecological places included in the UNESCO world heritage list, on the basis of protected areas which it will be possible to create a virtual ecological tour. We highlighted, as an example, the indicators of attendance and profit from visits to protected areas in foreign countries and conducted a comparative analysis of these indicators with Russian ones. Among other things, it was possible to identify the economic prerequisites for the formation of environmental innovation in Russia and create a classification of citizens who can easily approach a new way of traveling. Then, by providing statistics on the costs of environmental protection and identifying the main sector (commercial) that carries out these costs, we were able to identify the main obstacles in the development of ecological tourism in Russia, and subsequently – ways to solve these problems. Finally, based on the results of the statistical analysis, we were able to develop recommendations for combining eco-tourism and virtual tourism, as well as to identify ways to promote this idea, and, ultimately, to develop recommendations for the creation of a virtual ecological tour with subsequent calculations of the costs of this tourism product and the profits from the implementation of this project.

Thus, the objectives of the study were fulfilled.

The content of this work corresponds to the goal. We were able to develop recommendations for the effective use of modern information and telecommunication means, in particular, virtual reality and mixed reality technologies, for the development of virtual ecological tourism, which will be able to have a positive impact on the development of ecotourism in Russia as a whole.

The topic of virtual tourism is poorly studied in the scientific literature, as virtual reality technologies have appeared relatively recently, and are often used in entertainment and educational spheres. These technologies have never been used in the field of eco-tourism. We were able to identify and study the main problems of the development of ecotourism in Russia, as well as technical nuances and difficulties associated with. (Mazurov, 1996, 2004; Smirnova & Lapteva, 2004; Urzha et al., 2018).

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