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A comparative study of regional strategies of northeast Asian countries

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ABSTRACT
After the global financial crisis in 2008, the US and Europe have experienced anemic economic growth, whereas Northeast Asia has become the most economically dynamic region worldwide. The region faced such challenges as rapid economic globalization and regional economic integration, in-depth adjustment of global economic and trade patterns, the Obama administration's *Asian Pivot* strategy, and domestic economic transformations. To address these challenges, Northeast Asian countries put forward development plans and regional strategies: Japan's *Abenomics* since 2012; China's *Silk Road Economic Belt* and *21st Century Maritime Silk Road* since 2013; South Korea's *Eurasian Initiative* proposed by President Park Geun-hye in 2013; Mongolia's *Prairie Road* Plan since 2014; *Eurasian Economic Union* led by Russia since 2015; the TPP revived by Japan as CPTPP after the US withdrawal; and the *New North* policy proposed by South Korea's newly-elected president Moon Jae-in in 2017. These projects reflect the countries' determination to play a more active role in the bilateral and multilateral cooperation in the region. The regional strategies are shaped by each country's specific economic conditions, geopolitical and diplomatic needs. Although these strategies are somewhat competitive in such aspects as resources and influence, they also offer more prospects for cooperation and integration of regional economies.

KEYWORDS
Northeast Asia; regional strategy; comparative study; *Belt and Road* Initiative; Trans-Pacific Partnership; TPP

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Сравнительное исследование региональных стратегий североазиатских стран

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РЕЗЮМЕ
После глобального финансового кризиса в 2008 г. США и Европа столкнулись со снижением темпов экономического роста, в то время как Северо-Восточная Азия стала самым регионом с наилучшей динамикой экономики в мире. Регион столкнулся с такими проблемами, как стремительная экономическая глобализация и региональная экономическая интеграция, углубленная адаптация глобальных экономических и торговых моделей, стратегия администрации Обамы «Азиатская ось» и внутренние экономические преобразования. Для решения этих проблем страны Северо-Восточной Азии выдвинули ряд планов развития и региональных стратегий, среди которых: японская «Абеномика» 2012 г., китайские проекты «Новый шелковый путь» и «Морской шелковый путь XXI века» 2013 г.; южнокорейская «Евразийская инициатива»; монгольский план «Прейри-роуд» 2014 г.; «Евразийский экономический союз» 2015 г., возглавляемый Россией; обновленное после выхода США Транстихоокеанское партнерство; и, наконец, политика «нового Севера», предложенная недавно избранным президентом Южной Кореи Мун Чжэ Ином в 2017 г. Эти проекты отражают решимость стран играть более активную роль в двустороннем и многостороннем сотрудничестве в регионе. Региональные стратегии определяются конкретными экономическими условиями каждой страны, геополитическими и дипломатическими потребностями. Хотя эти стратегии несколько конкурируют в таких аспектах, как ресурсы и влияние, они также предлагают больше возможностей для сотрудничества и интеграции региональных экономик.

КЛЮЧЕВЫЕ СЛОВА
Северо-Восточная Азия; региональная стратегия; сравнительные исследования; Инициатива «Один пояс, один путь»; Транс-тихоокеанское партнерство (ТТП)

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Introduction

Throughout its history, Northeast Asia has been dynamically developing and has been an arena for complex relationships and geopolitical tensions. On the one hand, problems like North Korean nuclear weapons, island disputes, and superpower games create uncertainty of development; on the other hand, the centre of global economic growth is moving eastwards, which turns Northeast Asia into the locomotive of the world economic development. Countries in the region devised their plans of national development and regional strategies, which brought about a complex pattern of regional economic cooperation.

Regional strategies and the recent progress of Northeast Asian countries

In 2013, Chinese President Xi Jinping first proposed *The Belt and Road* Initiative, which focuses on the idea of peace and cooperation, openness and inclusiveness, mutual learning and mutual benefit as the incarnation of the *Silk Road* spirit. The platform of the Initiative is provided by the Asian Infrastructure Investment Bank and the Silk Road Fund. The central concept for the Initiative is the *community of common destiny* [1]. Over the past four years, the positive role of the Initiative has become obvious as it gained the support of over a hundred countries. The Initiative differs from the existing rule-oriented regional cooperation mechanisms because it offers a new development-oriented mode, which provides Eurasian countries with an open platform for cooperation and integration of resources.

The Belt and Road Initiative comprises six economic corridors with China-Mongolia-Russia Economic Corridor as the cornerstone. In June 2016, the heads of the three countries – China, Russia, and Mongolia – signed the *Draft Plan of the Construction of China-Mongolia-Russia Economic Corridor*. Since then, the common concern of the three partner countries has become the question of how to integrate the *Belt and Road* Initiative, Russia's Trans-Eurasia Railway and Mongolia's Prairie Road. The Economic Corridor is expected to strengthen their trade relationships, facilitate the exchange of human resources and promote common prosperity; it serves as a model for strategic integration and cooperation between countries in Northeast Asia [2].

As a major economy, Japan is closely connected with the United States in the political sphere and in terms of security, which makes it difficult for Japan to find its proper place and identity and makes Japan sway between East Asia and Asia Pacific. From the *East Asian Community* to *ASEAN +6* (Comprehensive Economic Partnership for East Asia – CEPEA), from the Regional Comprehensive Economic Partnership (RCEP) to the Trans-Pacific Partnership (TPP), the constant goal of Japan's economic strategy is to fight for dominance in the trade of the Asia Pacific region. In March 2013, Shinzo Abe's administration, despite the protests of the domestic opposition, formally declared Japan's entry into the Trans-Pacific Partnership, the US-led twenty-first century trade agreement as its twelfth participant.

Japan is interested in the TPP not only because it seeks to dominate in the sphere of trade and investment but also because its government wants to counter the growing influence of China in Asia-Pacific, which coincides with America's *Asia-Pacific Rebalancing* strategy [3]. U.S. President Donald Trump quit the TPP soon after he took office in 2017. After that, Prime Minister Shinzo Abe in vain tried to persuade America to return. Failing to do so, he decided to *revive* the TPP. In November, the eleven remaining members decided that they would continue to move ahead without the US. A new free trade agreement *Comprehensive Progressive Trans-Pacific Partnership* (CPTTP) will be signed after the conclusion of negotiations. Although the scale of CPTPP has reduced significantly, Japan's intention to take the lead in this new Asia-Pacific economic cooperation system remains unchanged.

South Korea's *Eurasian Initiative* is an important international cooperation initiative and national development strategy, which was proposed by former President Park Geun-hye in October 2013. It aims to expand South Korea's foreign trade and promote the country's economic and trade cooperation with European and Asian countries for sustainable development of Eurasia [4]. As a neighbor and strategic partner of China, South Korea has been actively participating in China's *Belt and Road* Initiative. In March 2015, South Korea decided to join the Asian Infrastructure Investment Bank. South Korea is also actively involved in promoting the free trade agreement (FTA) between China, Japan, and South Korea. In December 2015, China-South Korea FTA came into effect, which had a positive impact on Chi-

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na-Japan-South Korea FTA negotiations and was beneficial for South Korea's economic integration in Northeast Asia. However, the influence of the situation on the Peninsula and the US-South Korean alliance have soured the close economic and trade relations between China and South Korea. In September 2016, South Korea, despite the strong opposition from China, Russia and other neighboring countries, allowed the US to deploy its THAAD missile system on its territory. Since then, the relationship between China and South Korea have deteriorated. In March 2017, the impeachment of President Park made the Eurasian Initiative face an uncertain future. In September 2017, the incumbent president Moon Jae-in introduced the *New North* policy, which aims to connect the Korean Peninsula, the Russian Far East, Northeast Asia and Eurasia continent. This policy is expected to enhance economic cooperation in the region, eventually resulting in an integrated regional organization similar to the EU, which would allow the countries to ease the geopolitical tensions and achieve common prosperity [5].

Russia is a big Eurasian country, whose economic interests are largely oriented towards the EU. Since 2014, the economic sanctions imposed by Western countries and the following economic downturn forced Russia to start seeking new strategic support and opportunities for economic cooperation in Asia-Pacific. In January 1, 2015, the Russian-led Eurasian Economic Union was established. It is expected that this treaty will lay the foundation for multilateral integration within the CIS region, compared to that of the European Union [6]. It is also planned that the Eurasian Economic Alliance will provide a free flow of goods, services, personnel and funds by 2025. The ultimate goal is to create a supranational alliance and to form a single market.

Russia has launched a series of projects to accelerate the development of the Far East, to stimulate the transition of the Russian economy and create a more advantageous environment for attracting investment from the Asia Pacific countries. In addition, Russia is also promoting economic and trade exchanges with China and other Asian Pacific countries, actively participates in the construction of China-Russia-Mongolian Economic Corridor, in the strategic integration of the *Belt and Road* Initiative and the Eurasian Economic Union. In June 2016, in his speech at St Petersburg International Economic Forum, President Putin called for the establishment of the Eurasian Partnership, which should include the Eurasian Economic Union, India, Iran, South Korea, China and CIS countries. The Eurasian Partnership is a logical continuation of the *Look East* strategy, expansion of the Eurasian Economic Union, and the companion volume of the *Belt and Road* Initiative [7].

Located between the two great powers of China and Russia, Mongolia occupies an important geographical position. In order to revitalize its economy, promote industrial innovation and develop its energy and mining industry, Mongolia proposed the *Prairie Road* plan in September 2014. The plan comprises five projects of building an expressway connecting Russia and China, electric circuit, natural gas and oil pipelines, and an electrified railway across Mongolia [8]. The idea behind the plan is to strengthen partnership with Eurasian countries in logistics, energy and trade and to integrate into the Asia Pacific economic through the construction of modern infrastructure. In May 2017, Mongolian Prime Minister Jargaltulga Erdenebat expressed willingness to participate in mutually beneficial cooperation within the framework of the *Belt and Road* Initiative. The two governments signed the memorandum of understanding *Integration of Mongolia's Development Road and China's Belt and Road*. *Development Road* is the new name for *Prairie Road* project, with the basic connotation unchanged [9].

A comparison of regional strategies and development trends of Northeast Asian countries

After the global financial crisis in 2008, the US and Europe experienced anemic economic growth, whereas Northeast Asia has become the most economically dynamic region worldwide. The region faced such challenges as rapid economic globalization and regional economic integration, in-depth adjustment of global economic and trade patterns, the Obama administration's *Asian Pivot* strategy, and domestic economic transformations. To address these challenges, Northeast Asian countries put forward development plans and regional strategies: Japan's *Abenomics* since 2012; China's *Silk Road Economic Belt* and *21st Century Maritime Silk Road* since 2013; South Korea's *Eurasian Initiative* proposed by President Park Geun-hye in 2013; Mongolia's *Prairie Road* Plan since 2014; *Eurasian Economic Union* led by Russia since 2015; the TPP revived by

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Japan as CPTPP after the US withdrawal; and the *New North* policy proposed by South Korea's newly-elected president Moon Jae-in in 2017. These strategies reflect the countries' determination to play a more active role in the process of bilateral and multilateral cooperation in this region [10]. The similarities and differences of these strategies are largely determined by each country's different economic, geopolitical and diplomatic needs.

The Belt and Road Initiative, covering more than 64% of the world's population, is the largest in scale since it is open not only for countries located along the Belt and Road but also for any other countries willing to participate. After the US quit the TPP, the new, Japan-led CPTPP now includes eleven members in Northeast Asia, Southeast Asia, Oceania, North America and South America. This organization follows the diplomatic concept of *global diplomacy* proposed by Abe's administration. The Eurasian Partnership led by Russia has expanded the geographical range of the Eurasian Economic Union from the six former Soviet Union countries in central Eurasia to all Asian and European countries and regional economic organizations. South Korea's *Eurasian Initiative* is focused on the Korean Peninsula, Russia and China, while the *New North* policy is designed to create an economic community extended to the Northeast Asia and even to Eurasia. Mongolia wants to play a more active role as the Eurasian land bridge which connects Northeast Asian countries with those in Central Asia, West Asia and Europe through the *Prairie Road* [11].

Unlike other FTAs in Asia Pacific region, the TPP has high standards on labour, the environment, rules of origin, intellectual property, and government procurement. Compared with the TPP, the *Belt and Road* Initiative is more development-oriented as it seeks to integrate the resources of regional countries and achieve common development and prosperity [12]. It is a global public product created by China and jointly built by the participating countries. Russia's Eurasian Economic Union is an institutional regional integrated cooperation organization system of high geopolitical significance. The Eurasian Partnership is an economic development initiative aimed at promoting integration in Eurasia. Both South Korea and Mongolia's development in Northeast Asia region is closely related to big power politics, which means that both of their policies seek strategic integration with China and Russia.

As for strategic goals, the TPP aims for bigger external markets, and more importantly, it seeks to establish new global trade and investment rules, play the leading role in Asia Pacific regional economic cooperation and counter China's growing regional influence in East Asia. The Initiative connects the development of China with countries along the Belt and Road through connectivity policies, infrastructure, trade, finance and people. By fostering interconnections and creation of a new open, inclusive, and balanced regional economic cooperation mechanism, the Initiative aims to form a mutually-beneficial community of interests or a *community of common destiny*. Russia's Eurasian Partnership puts the Eurasian Economic Union within a wider framework of Eurasian integration, treating it as an updated version of *Look East* strategy and as a part of Russia's long-term strategy for revitalization of the Far East [13]. The new President of South Korea Moon Jae-in's policy was designed to address the problem of policy is the escalating North Korean nuclear crisis. Thus, the aim of this policy is to alleviate the geopolitical tension in Northeast Asia, create favorable conditions for long-term peace and regional cooperation, and ultimately achieve common prosperity.

The *Belt and Road* Initiative has been implemented for four years now and comprises over a hundred countries and international organizations. More than 30 countries are involved into institutional cooperation and more than 40 countries and international organizations have signed cooperation agreements with China. Chinese enterprises invest more than 50 billion US dollars in the countries along the Belt and Road; they are building 56 economic and trade cooperation zones in more than 20 countries, thus creating a large number of jobs. The concept of building a *community of common destiny* through the construction of the Belt and Road is gaining more and more recognition and support in the global community.

In February 2016, the TPP agreement was signed by twelve countries representing about 40% of the *world's economic* output, which made the TPP the largest FTA in the world. After the withdrawal of the US, despite some pessimistic forecasts, the impact of the CPTPP on the Asia Pacific regional integration process is still tremendous. This effect is likely to persist even if the US never returns. In East Asia, Japan is also involved in RCEP negotiations and Chi-

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na-Japan-South Korea FTA negotiations. If the CPTPP is successfully signed and comes into force, together EU-Japan Economic Partnership Agreement (EPA), Japan will further enhance its economic influence in the world. This means that other East Asian countries should contemplate some countermeasures [14].

Compared with the *Belt and Road* Initiative and the TPP, other regional strategies attracted less attention from the outside world. For example, although the Eurasian Economic Union came into force three years ago, it was weakened by Russia's declining economy and Western sanctions, which made member states seek help from Europe and the United States. South Korea upgraded the Eurasian Initiative to the *New North* strategy, Mongolia changed the *Prairie Road* to *Development Road* in order to respond to the changing domestic and international situation better.

Although the regional strategies of Northeast Asian countries are competitive in terms of resources and influence, they also complement and support each other, so the collaboration space is far greater than that of competition [15]. China's *Belt and Road* has provided a new type of regional economic cooperation mode in Northeast Asia. Unlike the previous regional cooperation mechanisms, the *Belt and Road* is an open platform for cooperation, which enables countries with different development strategies to complement each other. The *Belt and Road* Initiative is connected with other regional projects seeking to enhance the countries' competitive advantages and help them build common interests: China's *Belt and Road* and Russia's *Eurasian Economic Union*; *Belt and Road* and Mongolia's *Prairie Road*; *Belt and Road* and South Korea's Eurasian Initiative, and China-Mongolia-Russia Economic Corridor. The coordinated development of each country should stimulate integration of regional economies and promote the Asia Pacific regional integration.

Conclusion

Although the US is not a traditional Northeast Asian country, its presence in the region must not be underestimated. Barack Obama's *Asia-Pacific Rebalance* strategy and the TPP agreements have profoundly affected the pattern of economic cooperation in Northeast Asia. At the beginning of 2017, when President Donald Trump took office, he announced his withdrawal from the TPP to fulfill the commitments of putting *America first* and *making America great again* that he had taken during his presidential campaign. In November, during his first trip to Asia, President Trump proposed the *Free and Open Indo-Pacific* strategy – an important symbol of his Asia-Pacific strategic readjustment. The strategy focused on India as an important strategic partner together with Japan and Australia, and was, therefore, welcomed in Japan. With the introduction of the concept of *Indo-Pacific* to replace *Asia-Pacific*, the focus of Asia-Pacific strategy has been extended to the Indian Ocean. India, which is enjoying a gradual rise in its economic and geopolitical importance, is used to reintegrated the geostrategic layout of the Asia-Pacific region. The change of the name from *Asia-Pacific Rebalance* to *Indo-Pacific*, however, does not mean that the US government have abandoned their goal to *contain* China's growth. At this stage, although the Indo-Pacific Strategy cannot yet be regarded as a mature regional strategy, we should not underestimate its impact on the process of the Northeast Asian integration. The main driving force behind the reform of the future order in Northeast Asia will be provided by the growing regional influence of China and the strategic choice of the United States.

Against the current slowdown in world economic growth and the rising anti-globalization sentiments, the economy of Northeast Asia, unlike the rest of the world, still maintains its vitality and growth. The year of 2017 saw many events that were important for economic and trade cooperation in Northeast Asia: for example, in May, China hosted the Belt and Road Forum for International Cooperation in Beijing, involving delegations from Japan and South Korea. At the Forum, it was announced that 76 major agreements had been signed and 270 deliverable results had been achieved. It was the first such official occasion when Japanese Prime Minister Shinzo Abe expressed his willingness to cooperate. Moreover, Japan sent the largest delegation of over 250 businesspeople from three major economic groups to China in November. In November 2017, the APEC Summit in Vietnam reaffirmed the commitment of its participants to supporting sustainable economic growth and cooperation. At the meeting of the RCEP participating countries, a joint statement was issued that the RCEP would conclude the negotiations in 2018, thus marking an important step towards signing a multilateral free trade agreement in the Asia Pacific region.

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U.S. President Donald Trump took the first Asian trip to Japan, South Korea, China, Vietnam and the Philippines. He signed cooperation agreements worth a total of 253.5 billion U.S. dollars during his visit to China, setting a new record of world trade and economic cooperation. Although economic and trade cooperation in Northeast Asia will still suffer from such negative factors such as the US-Japan-ROK military alliance, North Korean nuclear crisis, island disputes and so on, the overall trend is still favorable. Although the CPTPP led by Japan and the *Indo-Pacific* Strategy of the U.S. will add uncertainty to the process of regional economic integration in Northeast Asia, in the long run, the high-standard terms of trade advocated by the TPP will promote other FTAs in Asia-Pacific region. Looking ahead, it is highly likely that countries in Northeast Asia should continue to build common interests, promote modernization and coordinate their development strategies to ensure regional economic integration.

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Cluster analysis of regional innovation activity in Russia in 2010–2015

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ABSTRACT
In this article, the indicators of innovation activity in Russian regions are discussed and the regions are divided into five groups, according to their performance in these indicators. Our cluster analysis is based on the recent research and includes several groups of indicators such as innovation activity of enterprises, training of highly qualified personnel, research and development, state support for innovation, and application of innovative technologies. We used the data provided by Rosstat (Federal State Statistics Service) for 83 Russian regions in the period between 2010 and 2015. In terms of their innovation activity, Russian regions can be divided into five groups, two of which are Moscow and St. Petersburg, the two biggest Russian cities that play a special role in Russian economy. Overall, the level of innovation activity in Russia can be assessed as lower middle, although in the given period some regions managed to improve their performance in this sphere. The average level of innovation activity varies considerably across regions, which means that the state innovation policy should be more diversified. Moscow, St. Petersburg, Nizhny Novgorod and Sverdlovsk regions have demonstrated consistent high-level performance and can thus be regarded as prospective centres of innovation. These centres can positively influence the neighbouring areas through the knowledge and technology spillover effect. Although no definitive conclusion can be drawn about the connection between the regions' geographical location and their innovation activity, there is evidence that the most active Russian regions tend to concentrate in the European part of the country. Our findings can be used as guidelines for devising and modifying federal and regional innovation policies.

KEYWORDS
innovation, innovation activity, cluster analysis, regional studies, Russian regions, innovative development

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Кластерный анализ региональной инновационной активности в России в 2010–2015 годах

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РЕЗЮМЕ
В этой статье обсуждаются показатели инновационной активности в российских регионах, а также разделение регионов на пять групп согласно этим показателям. Наш кластерный анализ основан на недавних исследованиях и включает в себя несколько групп показателей, таких как инновационная деятельность предприятий, подготовка высококвалифицированных кадров, R&D, государственная поддержка инноваций и применение инновационных технологий. Мы использовали данные, предоставленные Росстатом для 83 регионов России в период с 2010 по 2015 г. С точки зрения инновационной деятельности, российские регионы можно разделить на пять групп, две из которых – Москва и Санкт-Петербург, два крупнейших города России, которые играют особую роль в российской экономике. В целом, уровень инновационной активности в России можно оценить как средний, хотя в последнее время некоторым регионам удалось улучшить свои показатели в этой сфере. Средний уровень инновационной активности в разных регионах значительно различается, что означает, что государственная инновационная политика должна быть более диверсифицированной. Москва, Санкт-Петербург, Нижегородская область и Свердловская область продемонстрировали стабильную работу на высоком уровне и поэтому могут рассматриваться как перспективные центры инноваций. Эти центры могут позитивно влиять на соседние районы благодаря эффекту распространения знаний и технологий. Хотя окончательного вывода о связи между географическим положением регионов и их инновационной деятельностью нет, есть свидетельства того, что наиболее активные российские регионы, как правило, концентрируются в европейской части страны. Наши выводы могут быть использованы в качестве руководящих принципов для разработки и изменения федеральной и региональной инновационной политики.

КЛЮЧЕВЫЕ СЛОВА
инновации, инновационная деятельность, кластерный анализ, региональные исследования, регионы России, инновационное развитие

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Introduction

Innovative development is an essential part of the economic development strategy of any country. As the experience of many developed countries show, the right innovation policy and its efficient implementation can provide sustainable and rapid economic growth. A key element of such policy is its region-specific diversification and monitoring of the dynamics of outcome indicators [1].

In modern research literature there is a widely shared view that Russian regions vary significantly both economically and socially. However, there is a lack of consensus regarding the state of innovation in Russian regions: how different or similar the regions are in this respect and how to classify them.

In this paper we analyse the data on innovation and R&D in 83 Russian regions for the period between 2010 and 2015. These data include such indicators as the number of research personnel in the region, the share of R&D spending in the GRP, the overall number of new technologies and the number of these technologies that have been put into practice; the share of companies involved in innovation; the number of students and researchers with Candidate's and Doctor's degrees. We also consider the annual dynamics of the regions' innovation-related indicators, which, apart from the qualitative changes achieved by specific regions, also reflect the overall state of innovation in Russia and the efficiency of the country's innovation policy.

We apply the method of cluster analysis to group Russian regions according to outcome indicators and to compare the results of clusterization with the regions' geographical location. Thus, our research addresses the questions about the connection between the Russian regions' geographical location and their innovation activity: how different are the Western and Eastern Russian regions? What distinguishes Moscow and St. Petersburg from other regions? Are there any regions sharing innovation-related indicators?

The structure of this paper is as follows. After the introduction, we review the existing literature in this field. The next section describes the data and methods used in this research. The fourth section focuses on the cluster analysis and its results. In the final section, the conclusions are drawn. The practical application of our results and the prospects for further research are outlined.

Literature review

The topic of spatial clustering and the knowledge spillover effects it creates arouses significant scholarly interest nowadays.

Spatial clustering creates a widely studied knowledge spillover effect, which appears to be largely a local phenomenon, dependent on the geographical proximity. For example, George Deltas and Sotiris Karkalakos investigate regional patent statistics in the European Union and find that an increase in the distance between the originating and recipient region by 500 km reduces the positive effects of spillovers by 55–70% [2]. Similar findings were made by other researchers [3; 4].

Cassandra C. Wang, Cassandra and Aiqi Wu (2015) studied the case of knowledge spillover among Chinese electronic firms and found that the geographical proximity of firms and heterogeneous rather than homogeneous knowledge play an important role in the formation of innovation clusters with Chinese companies tending to concentrate in the same regions of the country [5].

Another study on innovation in China considers the role of spatial factors impeding knowledge spillovers and demonstrates that domestic companies mostly benefit from the positive effects of foreign direct investment (FDI) in their neighbouring regions [6]. Although the effects of FDI are not the main focus of our research, this research model can be transposed onto studying innovation as an independent process.

Luciana Lazzeretti and Francesco Capone (2016) study the role of geographical proximity in the creation of innovation network by focusing on the case of high technologies in the agricultural industry of Tuscany. By using stochastic actor-oriented modelling, the authors prove that geographical proximity has a positive impact on innovation dynamics and on the formation of innovation clusters [7].

Doris Läpple and her co-authors also discuss the spatial aspect of knowledge transfer in agriculture by analyzing the case of agricultural innovation in Ireland and demonstrate the positive effect that the proximity of leaders of innovation has on their neighbours [8].

Yet another study analyzes scientific knowledge networks and technological knowledge networks of China by applying econometric and spatial modelling methods to show the positive correlation between the geogra-

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phical proximity and the intensity of knowledge spillover effects [9].

Theoretical studies of spatial aspects of innovation diffusion reveal the potential of innovation clusters which comprise closely located regions and territories [10; 11].

To the best of our knowledge, Russian scholars have not yet engaged in the research of regional innovation clusters.

Data and methods

In this research we used the data provided by Rosstat (Federal State Statistics Service) for 83 Russian regions in the period between 2010 and 2015. For clusterization we used sixteen indicators of innovation and research activity. These indicators can be divided into the following groups:

1. Innovation activity of enterprises: the number of enterprises involved into R&D; the share of innovative enterprises.

2. Training of highly qualified personnel: the number of university students; the number of researchers with Candidate's or Doctor's degrees.

3. Research and development: the number of researchers; the number of patent applications; the number of approved patent applications; export of new technologies (mln rbs); import of new technologies (mln rbs).

4. State support of innovation: research funding (mln rbs); spending on innovation (mln rbs).

5. Application of innovative technologies: the number of new technologies used by manufacturing companies; the volume of innovative products (mln rbs).

These sets of indicators cover the pivotal spheres of innovation, starting from resources to outcomes. These indicators are widely used in a number of other current studies on innovation activities [12–17].

To avoid incomparability of measurements, we normalized each of the indicators and transformed them into z-scores so that they all lay within the range of (–1; 10). This approach allowed us to avoid using additional control variables. The above-mentioned and the following calculations were made with the help of programming language R, version 3.2.2, and its packages.

Table 1 provides the main descriptive statistics for the indicators prior to normalisation.

In our clustering procedure we applied the K-means clustering algorithm which minimizes the square error:

$$e^2(X, L) = \sum_{j=1}^{K} \sum_{i=1}^{n_j} \left\| x_i^{(j)} - c_j \right\|^2,$$

where X is the vector of characteristics of the given regions; L is the vector of characteristics of cluster centres; and is the specific cluster's *centre of masses*.

To measure the distance, we used the standardized Euclidean distance:

$$\rho(x, x') = \sqrt{\sum_{i=1}^{n} (x_i - x_i')^2}.$$

Table 1

Descriptive statistics of the data

Indicators	n	mean	sd	median	min	max	se
Researchers	909	9191.479	29492.39	1711	16	241226	1357.497
Research firms	913	45.97881	92.16995	23	1	811	4.242466
Research spending	494	8511.985	30380.5	1257.05	6.0303	301817.9	1398.376
Number of researchers with Candidate's degrees	912	400.9407	1072.641	181	0	10029	49.37232
Number of researchers with doctoral degrees	901	16.75424	38.93861	8	0	312	1.792295
Patent applications	913	348.3496	1104.047	121	0	12681	50.81786
Patents granted	913	276.053	868.5144	94	0	8699	39.97662
New technologies produced	909	15.56356	34.99215	5	0	259	1.610644
New technologies used	909	2520.561	3166.581	1529.5	0	20021	145.7537
Share of innovative firms	889	9.609534	4.447225	8.8	0.5	34.3	0.2047
Innovation spending	891	11673.17	24100.93	3196.864	0.769	190334.6543	1109.335
Value of innovative goods	908	36179.19	84646.53	8538.125	0	851583.36	3896.172
Technologies exported	913	483.3724	2998.386	3.384516	0	57412.8375	138.0119
Technologies imported	913	914.7791	2276.483	54.11267	0	20183.98079	104.7836
Share of university students	912	12.63136	28.01887	7	0	268	1.289673

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For preliminary analysis we used five clusters for both theoretical and empirical reasons.

According to the graph below, which shows how the WSS is dependent on the number of clusters, we can see that the WSS falls sharply (2 to 3 clusters) but after the number of clusters reaches 5, it declines at a very slow rate (Figure 1).

Similar results were obtained by using silhouette analysis, which means that if the data are divided into two clusters, it brings more accurate results although the results of division into three, four or five clusters are also quite satisfying (Figure 2).

The preliminary modelling has also shown that Moscow is significantly different from other regions and that it tends to form a separate cluster regardless of the general number of clusters. Thus, it was decided to create five clusters for final modelling: one for Moscow and the rest for other leading regions, regions with results above average, regions with middle-level performance, and underperformers.

Modelling results

Modelling comprised two stages. At the first stage, regions were clusterized according to the average values in the given period. Then, to gain a deeper understanding of the innovation dynamics and the effects of the state policy, we considered innovation-related indicators in specific years.

The results of the first stage of modelling are shown in Figure 3 (for Russia in general) and Figure 4 (for the European part of Russia with two specific regions – Moscow and St. Petersburg).

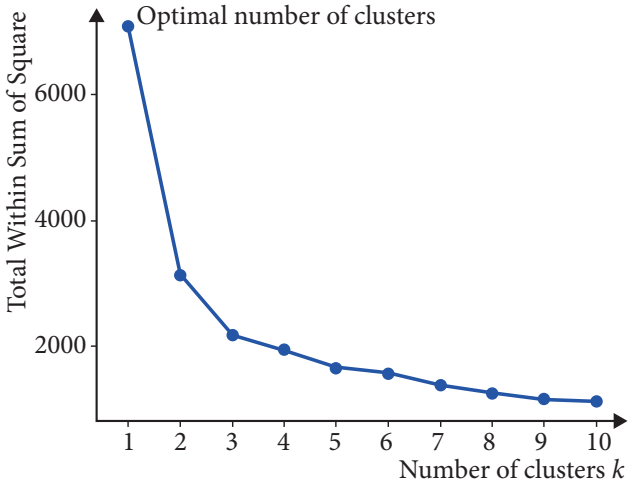

Figure 1. *Optimal number of clusters*

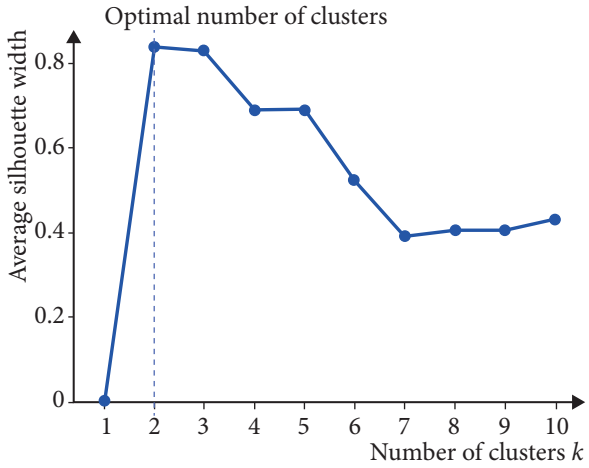

Figure 2. *Silhouette analysis of the optimal number of clusters*

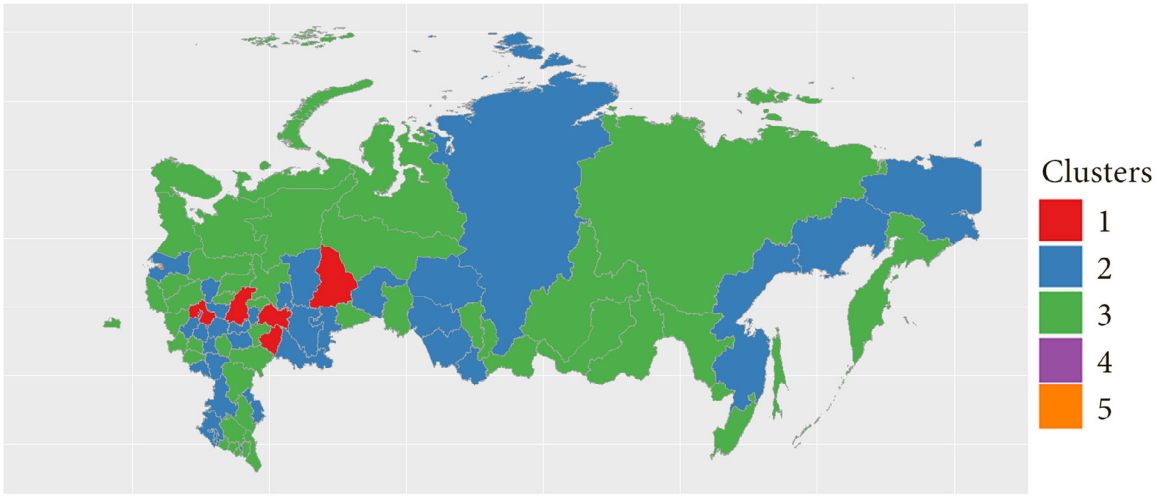

Figure 3. *Clusterization of Russian regions according to the average level of their innovation activity in the given period*

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Apart from Moscow and St. Petersburg, we also observed three specific levels of innovative activity: high, middle, and low (in the map they are indicated with red, blue, and green colours respectively). As Figure 3 illustrates, there are only four highly active regions – Moscow, Sverdlovsk, and Nizhny Novgorod regions.

Other regions have either demonstrated the middle or the low level of innovation activity. It should be noted that the most active regions are concentrated in the European part of Russia, especially around Moscow, which can be seen from the map in Figure 5.

Moscow and St. Petersburg were identified as two separate clusters and were indicated in purple and orange colours respectively. Although these cities have higher levels of innovation than other Russian regions, they significantly differ

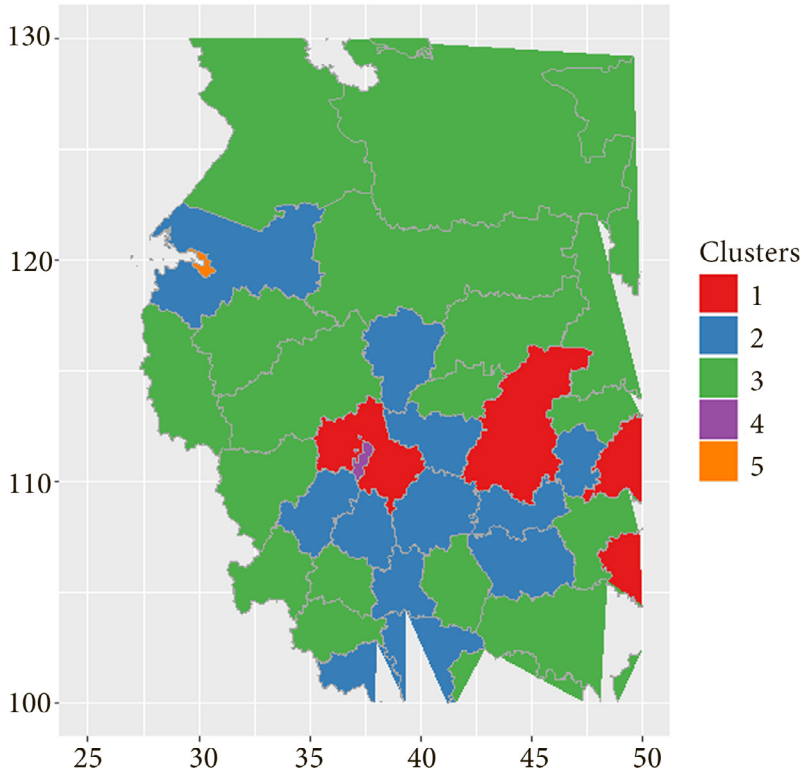

Figure 4. *Clusterization of Western Russian regions according to their average level of innovation activity in the given period*

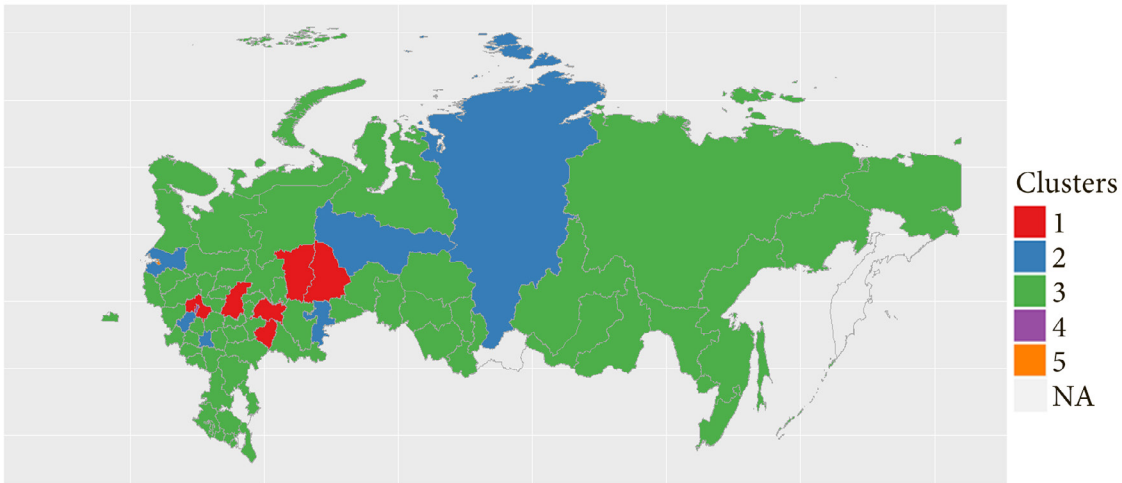

Figure 5. *Clusterization of Russian regions according to their level of innovation activity in 2010*

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from each other, which is why we regard them as separate clusters.

For Moscow, each of the indicators exceeds those of other Russian regions, even those from the *red* cluster. In general, such situation is characteristic not only of innovation but of other economic and social spheres. In the areas around Moscow and Moscow region, the level of innovation activity is also quite high, which can serve as an evidence to support the observation that the leading regions stimulate their neighbours' innovative activity.

The innovation-related indicators of St. Petersburg are comparable with other highly innovative regions, except for those indicators that characterize the availability of qualified personnel in the region. In this respect, St. Petersburg is far ahead of other regions.

Therefore, it might be productive to create regional centres specializing in various elements of the innovation process, for example, training of qualified professionals, R&D, implementation of innovations, joint projects with industrial enterprises, and adoption of foreign innovative technologies.

At the second stage of modelling, we focused on the dynamics of innovation in the country. Figures 5 and 6 show the geographical location of the regions' clusters in 2010 and 2015. Figure 5 demonstrates the state of innovation in Russia before the launch of the Innovative Development Strategy 2020.

At this stage, the majority of Russian regions were included into the cluster of underperformers. Moreover, we found that in the Asian part of the country, innovative activity is low in almost all the regions.

Figure 6 illustrates the results of clusterization for 2015, the last year in the observation period. These data show the intermediate outcomes of the Innovative Development Strategy 2020.

It should be noted that throughout the given period, the regions migrated from one cluster to another although we did not detect any general qualitative growth. The *centres of mass* of the clusters remained practically the same. Nevertheless, we saw that the regions moved to clusters with a higher level of innovation activity.

Some regions, such as Sverdlovsk and Nizhny Novgorod, unfailingly produce good results. We also noticed that in comparison with 2010, their neighbours have also demonstrated improved performance. A similar trend was observed in the Far Eastern regions, which leads us to the conclusion that there might be a spillover of technologies and innovations from the leaders to their neighbours.

If we analyze the regions' performance in specific years, the majority of Russian regions will be classified as underperformers, which shows the generally low level of innovation in the country. Moreover, only a small number of regions demonstrate the middle level of activity. Therefore, there is a significant discrepancy between the leaders and all the rest.

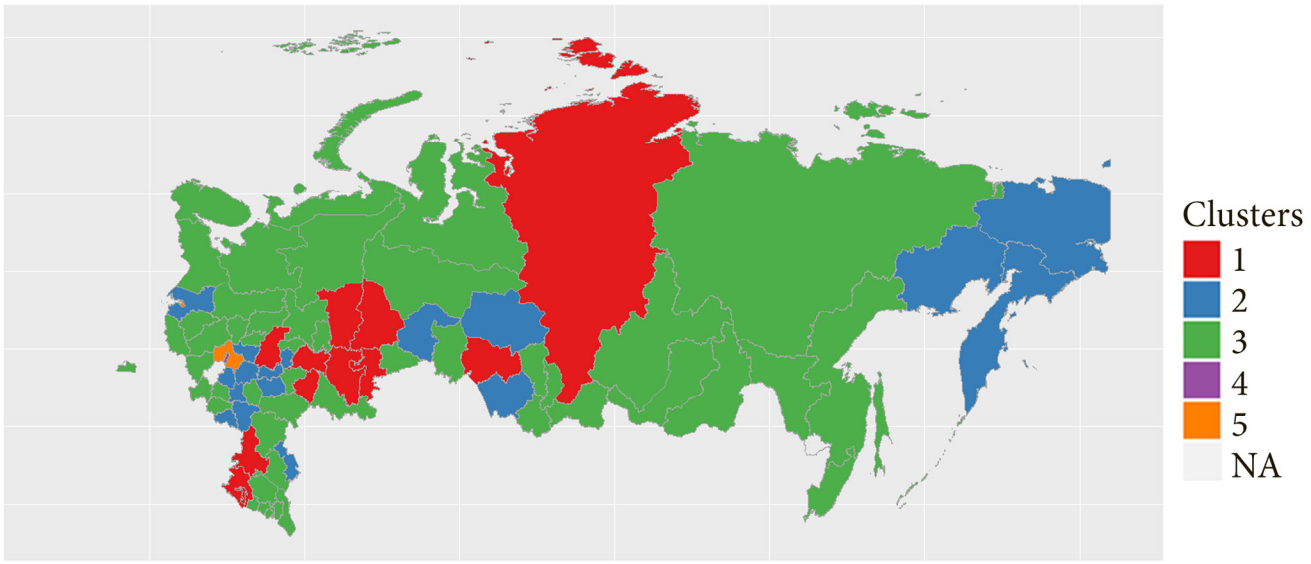

Figure 6. *Clusterization of Russian regions according to their level of innovation activity in 2015*

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Conclusion

Our results confirm that more advanced Russian regions can affect innovation activity of their neighbours through knowledge and technology spillover. This process creates sustainable geographical clusters with high innovation activity around the leading regions. Our findings can thus be used to modify the current innovation policy on the regional and federal levels and to optimize the spending on innovation in the regions.

Moscow and St. Petersburg play a special role in the innovation process as their scores are several times higher than those of other regions. Such situation shows that the economic development of Russia is uneven and that it is necessary to diversify the innovation policy to make it more effective.

Russia has a number of regions that invariably occupy the leading positions. Such regions may become drivers of innovation, maximizing the performance of their neighbours by sharing their knowledge, best practices and technologies with those in proximity. In our analysis, we further focused on specific periods and showed that the innovation policy which has been implemented since 2011 enhances positive dynamics.

Although no definitive conclusion can be drawn about the connection between the regions' geographical location and their innovation activity, there is evidence that in the majority of cases, the most active Russian regions are concentrated in the Western part of the country. At the same time some innovative centres can be also found in Western Siberia and some positive dynamics has been observed in the Far East.

The average levels of innovation, however, differ significantly for different groups of regions, which means that the state policy in this sphere should be more diversified. Our analysis of the clusters' performance in different periods has detected only a slight increase in the clusters' *centres of mass*. Both of these facts show that although the current innovation policy has brought about some positive changes, it should be modified to ensure a more rapid qualitative growth.

Based on the findings of this study, it can be suggested that further research should be made into such characteristics of Russian regions as their specialization and the available R&D facilities and training centres. Although cluster analysis makes it possible to consider such characteristics, a more precise division of Russian regions into groups will enable us to devise more targeted guidelines for the regional innovation policy.

The results of our cluster analysis can also be used to create an integral innovation-related indicator scheme for assessing Russian regions, comparing them and monitoring their further development.

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Original Paper

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Selection and application of pricing strategies in rural tourism: the case of Vojvodina's farmsteads

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ABSTRACT
Tourism today is a mass phenomenon involving a large number of actors, both on the demand side and on the supply side. For more efficient and better organized performance, tourism companies need to ensure a high quality of service and apply effective pricing strategies. Therefore, the aim of this paper is to outline the key pricing strategies and analyze their advantages and drawbacks. For this purpose we have chosen the specific case of farmsteads in the Province of Vojvodina, Serbia. We focus on the complementary products or services provided by these farmsteads that have a seasonal element to them, that is, they are hard to sell out of season. As a result, we devised guidelines for entrepreneurs to enhance their business opportunities by applying effective pricing strategies such as the *marginal costs* strategy.

KEYWORDS
strategies, prices, marginal costs, rural tourism, farmstead, Vojvodina province (Serbia)

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Отбор и применение ценовых стратегий в сельском туризме: пример хозяйств Воеводины

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РЕЗЮМЕ
Туризм сегодня представляет собой массовое явление, в который вовлечено большое количество участников, как со стороны спроса, так и со стороны предложения. Для более эффективной и высокоорганизованной работы туристические компании должны обеспечивать высокое качество обслуживания и применять эффективные стратегии ценообразования. Поэтому цель данной статьи – наметить ключевые стратегии ценообразования и проанализировать их преимущества и недостатки. Для этого мы выбрали конкретный случай фермерских хозяйств в сербском регионе Воеводина. Мы фокусируемся на дополнительных продуктах или услугах, предоставляемых этими фермерскими хозяйствами, которые характеризуются сезонностью, то есть их сложно продать вне сезоны. В результате, мы разработали советы для предпринимателей, направленные на расширение возможностей их бизнеса путем применения эффективных стратегий ценообразования, таких как стратегия «предельных издержек».

КЛЮЧЕВЫЕ СЛОВА
стратегии, цены, предельные издержки, сельский туризм, фермерские хозяйства, провинция Воеводина (Сербия)

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Introduction

The competitive position of enterprises operating in tourism industry, especially small enterprises specializing in rural tourism, depends to a large extent on the applied concept of their growth and development, i.e. on the establishment and implementation of an adequate strategy [1–3]. Therefore, to devise an efficient and dynamic strategy, these enterprises need to take into account both internal and external factors such as the level of the company's development and the market in which it is operating.

The term *strategy* is used so widely nowadays that in practice its significance sometimes seems overrated. Everything that is *important* in an enterprise tends to be referred to as *strategic*, which makes this concept too broad and, therefore, useless as it confuses more than it clarifies. Moreover, it is often misleading in the sense that it emphasizes the elements and aspects which are not crucial for the company. Ideally, a strategy should provide a framework for the company's business for better coordination and more efficient management in order to make the company more responsive to the changing environment [4]. The strategy should articulate the desirable relationships between the company and its environment, take into account the specific nature of the business sector and thus help the company's management plan, structure and organize the company's business activities accordingly [5].

Based on those assumptions, every strategic decision contributes to the successful performance of the company. All strategic decisions can be divided into two categories: fundamental and applied. It should be noted here that fundamental or the so-called corporate strategies are based on decision-making associated with, for instance, creation of new products. Strategies dealing with the implementation of such decisions (e.g. how to set prices or advertise the new product) can be called applied or business strategies. In this paper, we will primarily focus on those corporate and business strategies that can be applied in small enterprises [6], more specifically, the pricing strategies of rural tourism companies, since they have more pronounced peculiarities in the production and marketing phases. These strategies should support the portfolio product / market, i.e. should be applied within small companies in the phase of production and distribution to the final consumer.

Material and Methods

Our research was conducted at farmsteads in the Autonomous Province of Vojvodina, Republic of Serbia. The initial stage consisted of interviews with entrepreneurs, who were managers at nine farmsteads. At the second stage, we analyzed the collected data and used them for devising guidelines for entrepreneurs. The age of our respondents ranged from 22 to 64; the average age was 43. The majority (72%) had secondary education; about 12%, higher; and 16%, elementary education. In addition to the interviews, we gathered and analyzed the information about the products and services that these companies were providing to rural tourists, their methods and strategies of calculating the prices and the mutual compatibility of products/services as well as the problems that entrepreneurs faced in sales. The results were calculated for each individual farmstead and on average for the set of farmsteads we studied.

In the paper two concepts are used to determine the appropriate price strategy: *total costs or costs plus* and *marginal costs* [7; 8]. Each concept takes into account the expectations that appear on the input market, since pricing is based on the analysis of the production costs. We believe that the key factor that determines the success of a small business is the sales market.

Results and Discussion

In this section we are comparing the results of the application of the two pricing strategies – *total costs or costs plus* and *marginal costs*.

Fixing the prices by using the strategy total costs or costs plus

This method of pricing usually includes estimation of the production cost for a product or a service under normal conditions, that is, when there are no fluctuations in capacity utilization, employment or output [9]. The method can be applied to an entire range of products/services and called the strategy of building prices. This procedure is illustrated in Table 1.

After the implementation of the above-described procedure, we add to the cost of the unit the desired profit of the company. This element is determined according to the company's position in relation to its competitors, usually by calculating the average profit rate of business in this sphere [10]. However, the drawback of this pricing strategy becomes evident when the cost of a particular product or service turns out

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to be higher than the competitors' market price of the same product or service, which makes it impossible to apply the appropriate profit margin because the product would be too expensive. Therefore, most businesses choose to apply a more widely spread but also more complicated pricing strategy – the strategy of *marginal cost*.

Table 1

Strategy *total costs or costs plus* – Suggested selling price

All prices in EUR	Product	
Item	**P1**	**P2**
Direct cost of materials	5	10
Cost of direct manpower	4	2
Direct expenses	1	0
Prime costs	10	12
Additional production costs		
Variable costs of production	5	5
Fixed costs of production	5	10
Total cost of production	20	27
Marketing and distribution	3	3
Variable costs	2	1
Fixed costs	1	2
Additional administrative costs	1	1
Fixed costs	1	1
Total costs	24	31
Pre-determined profit margin (%)	10	20
Selling price	26,4	37,2
Marginal costs (total variable costs)	17	18

Fixing the prices by using the strategy marginal costs

Pricing based on the *marginal costs* strategy is a particularly effective method. It provides information that helps companies manage product selection, markets, sales areas, and market segmenting in relation to individual categories of customers [11; 12].

The 'marginal cost' strategy involves the variable costs of a product or a service unit. These are the costs that could be avoided if the product was not produced at all or if the service was not provided. An example of such calculations is given in Table 2. We were using the case of farmsteads working as tourism and catering companies. These farmsteads were run as family ventures. Our calculations illustrate the profit that can be gained by such enterprises if they sell two basic products or services (see Table 3). The assumption is that both products or services are realized, that is, completed and sold to the customer during one calendar year.

Table 2

Marginal cost of a product

Direct costs per unit	EUR/unit
Materials	0.70
Staff wages	0.10
Expenses	0.25
Total prime costs	1.05
Additional variable overhead costs per unit	
Production	0.15
Marketing and distribution	0.20
Administration	0.05
Overhead costs	0.40
Total additional variable overhead costs per unit	0.80
Marginal costs	1.85

Table 3 shows an example of an income statement on the company's performance over a one-year period

Table 3

Income statement, EUR

Indicators	Total	Product P1	Product P 2
Sales	1.500	800	700
Sales revenue	23.000	16.000	7.000
Direct materials	11.500	8.000	3.500
Direct labour	5.400	4.000	1.400
Prime costs	16.900	12.000	4.900
Production overhead costs[1)]	3.100	2.000	1.100
Production costs	20.000	14.000	6.000
Marketing, distribution and Administration costs [2)]	2.200	1.000	1.200
Total costs	22.200	15.000	7.200
Profit / loss	800	1.000	–200
Estimated allocation of supplementary and administration costs:			
[1)] variable costs	1.700	900	800
fixed costs	1.400	1.100	300
[2)] variable costs	500	300	200
fixed costs	1.700	700	1.000

The profit statement shows that the P2 product is selling not very well, which means that the company management might want to consider the question of discontinuing its production. Such decision, however, does not take into account the fact that this product whether produced or not, is bound to certain fixed costs of the company itself, such as the rent of space, taxes, fees, equipment depreciation and the salaries paid to administration. Therefore, the application of the 'marginal cost' strategy should help the entrepreneur get a clearer view of the situation (see Table 4).

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As it is evident from the example in Table 3, the P2 product makes a difference of EUR 1,100. This is the amount that the company would lose if the production of this product was stopped. On the other hand, the company's total fixed costs of EUR 3,100 would remain uncovered. Therefore, if the company discontinued the production of P2 product, it would lose about would EUR 300. The previously gained profit of EUR 800, despite the negative result of product P2 sales, would thus be lost if the production of P2 stopped. Although the fixed costs could be reduced by more than EUR 1,100 if P2 was discontinued, Table 3 clearly shows that the optimal decision for the company would be to continue its production.

Table 4

Fixing the prices using the strategy *marginal costs* (as of 31st of December), EUR

Indicators	Total	Product P1	Product P 2
Sales revenue	23.000	16.000	7.000
Less variable costs			
Direct materials	11.500	8.000	3.500
Direct labour	5.400	4.000	1.400
Variable production overhead costs	1.700	900	800
Variable marketing, distribution and administration overhead costs	500	300	200
Total variable costs	19.100	13.200	5.900
Contribution	3.900	2.800	1.100
Less fixed overhead costs			
Production overhead costs	1.400		
Marketing, distribution and administration overheads	1.700		
Total fixed overhead costs	3.100		
Profit / loss	800		

The application of the *marginal cost* strategy creates a combined effect but it also has some limiting factors. The application of this strategy makes it easier to search for a combined effect that is caused by price and cost factors, affecting both profits. In order to illustrate this, it is sufficient to make the company's profit and loss account in two successive years (see Table 5). Changes within the given period result from an increase in the sales price by 20% and from an increase in the volume of products and services sold. Thus, in this case, we need to investigate the effects of individual factors which lead to an increase in the contribution (difference) to EUR 150,000 in the second year.

Each company has one or more limitations. They represent a critical input for business which at some point or during a certain period limits the business [13]. First and foremost, this is the company's selling potential but the limitations can also be associated with certain characteristics of raw materials or production, with the degree of tourist product integration, the skills of the productive workforce, or with the availability of space or working assets [14]. When these limiting factors are introduced into analysis, the profit will be determined by their contributions. Linear programming can be used to investigate each individual influence and choose an optimal plan. This mathematical method successfully addresses cases with a number of limiting factors and interactive variables.

Table 5

The combined effect of changing the volume of sales, selling prices and costs

EUR	Year 1	Year 2
Sales	200.000	400.000
Marginal cost of sales	100.000	150.000
Contribution	100.000	250.000
1. Change related to the volume of sales		
Sales of year 2 at year 1 prices = 400.000 · 4/5	–	320.000
Sales of year 1 at year 1 prices	–	200.000
Change related to the volume = EUR	–	120.000
% change in volume (120 : 200) · 100	–	60%
Sales increase = EUR	–	120.000
marginal costs = EUR 60% · 100.000		60.000
Contribution change related to the volume = EUR		60.000
2. Change related to the selling price		
Sales of year 2 at prices from year 1		320.000
Sales of year 2 at prices from year 2		400.000
Contribution change related to the price		80.000
3. Reduction in costs		
Change in sales volume = (120,000 : 200,000) · 100		60%
Marginal costs in year 1 related to the change of volume		100.000
Marginal costs in year 2 = 100,000 + (60 : 100 · 100,00)		160.000
Marginal costs in year 2		150.000
Reduction in costs		10.000
The change in contribution of EUR 150.000 related to the following factors:		
Volume change		60.000
Price change		80.000
Cost change		10.000
Contribution in year 2		150.000

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Consequently, it may be concluded that the *marginal cost* strategy is most suitable for companies operating in unstable economic conditions. In such cases, it is better to accept orders below the level of the total value of the costs. This recommendation is based on the need to cover the marginal costs, which means that each level of the contribution above the fixed costs will at least reduce the company's losses and help the company stay afloat until better days retaining its staff and preserving its facilities and equipment. Thus, the application of this strategy can help entrepreneurs to set prices [15] in such circumstances as:

1) economic recession in this business sector;

2) excess of the company's productive capacity;

3) seasonal fluctuations of demand;

4) situations when the company is using the individual employment contract;

5) situations when alternative levels of business activities are included.

Conclusion

Starting entrepreneurial ventures in the sphere of rural tourism, such as family farmsteads, is a complex and demanding job, since it requires entrepreneurs to expand their expertise in business and management. It often happens that entrepreneurs lack experience and knowledge when faced with competitive conditions in the target market. There are dozens of farmsteads in Vojvodina province that mainly provide tourist and catering services. According to the research we conducted, most of the managers and owners we surveyed do not have sufficient knowledge in finance and business economics, especially in the sphere of standard and/or experimental pricing methods, so they are struggling to stay afloat. Thus, it can be concluded that to be successful it is essential that entrepreneurs working in this sphere should acquire the appropriate education and skills. Farmsteads that are trying to enter the market and are trying to cope with the unstable environment and seasonal fluctuations in demand need to develop and apply adequate pricing strategies such as the *marginal cost* strategy.

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Development potential of rural tourism (the case of *Tešnjarske večeri* festival)

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ABSTRACT
Rural tourism is a very broad concept which includes not only holidays in the countryside a range of other tourist activities in rural areas, such as traditional festivals. Tourist festivals are devoted to different local products which are famous in rural parts of Serbia. Some of the most popular Serbian festivals are the Grape Festivals in Sremski Karlovci, Erdevik, Banoštor, Irig, Erdevik, Vršac, Župa, Palić, Aleksandrovac, Hajdukovo, Smederevo, Topola; Plum Days in Osečina and Koštunići; Cabbage Days in Futog, Barbeque in Leskovac; BaconDdays in Kačarevo; Ham Days in Mačkat; Golden Pot of Danube in Petrovaradin, Apatin; Mushroom Days in Fruška gora, Valjevo and Divčibare, Medical Herbs Days in Soko Banja; Bee Days in Zaječar. This paper deals with the development potential of rural areas associated with these festivals by analyzing the case of *Tešnjarske večeri*. This festival provides a diverse cultural and ethnographic entertaining program, combining visual and performing arts, and celebrates the vibrant life of the local community.

KEYWORDS
rural tourism, festival, countryside, development, Tešnjarske večeri, Serbia

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Потенциал развития сельского туризма (пример фестиваля «*Tešnjarske večeri*»)

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РЕЗЮМЕ
Сельский туризм – очень широкая концепция, которая включает в себя не только отдых в сельской местности, но и ряд других туристических мероприятий в сельской местности, таких как традиционные фестивали. Туристические фестивали посвящены различным местным продуктам, которые известны в сельских районах Сербии. Некоторые из самых популярных сербских фестивалей – винные фестивали в Сремских Карловцах, Эрдевике, Баношторе, Ириге, Эрдевике, Вршаце, Жупе, Паличе, Александроваце, Хайдуково, Смедерево, Тополе; Дни сливы в Осечине и Коштуничи; Дни капусты в Футоге, Барбекю в Лесковаце; Дни бекона в Качарево; Ветряные дни в Мачкате; «Золотой горшок Дуная» в Петроварадине, Апатин; Грибные дни в Фрушка-горе, Вальево и Дивцибаре, Дни лечебных трав в Соко-Баня; Пчелиные дни в Заечаре. В данной статье рассматривается потенциал развития сельских районов, связанных с этими фестивалями на примере «Tešnjarske večeri». Этот фестиваль представляет собой разнообразную культурно-этнографическую развлекательную программу, сочетающую визуальное и исполнительское искусство и прославляет яркую жизнь местного сообщества.

КЛЮЧЕВЫЕ СЛОВА
сельский туризм, фестиваль, сельская местность, развитие, Tešnjarske večeri, Сербия

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Introduction

According to Vujko et al. [1], rural tourism is an important factor of multifunctional rural development, which has been confirmed by numerous theoretical and empirical studies [2; 3]. Rural tourism in Serbia is a new phenomenon [1; 4]. Rural tourism, like other types of tourism, may have a significant environmental, economic, and social impact on local communities. According to Petrović et al. [4], the effect of rural tourism on attitudes and behavior of local residents has been addressed in several theoretical and research papers in the last ten years [5–12]. These studies prove that rural tourism might be an important element in the positive and negative changes in the local rural area and that it might heavily affect the local residents.

Rural tourism represents tourism in rural locations and *themed villages*, which also includes participation in various recreation and leisure activities, festivals, handicraft fairs, and so on. Therefore, rural tourism can be seen as a way of solving the problem of the declining profitability potential of the local agricultural industry and as a source of additional income for local enterprises.

According to Vujko et al. [1], rural tourism encompasses all tourism activities carried out in rural areas. Rural tourism has many forms, which include the following:

– tourism in rural households;
– hunting and fishing;
– eco-tourism;
– sports and recreation;
– residential tourism (holiday homes);
– educational tourism;
– gastronomic tourism, festivals and events;
– cultural tourism.

Thus, we can identify the basic characteristics of rural tourism: first and foremost, it involves rural areas and provides people with an opportunity to be in close contact with nature and to learn about the cultural heritage, *traditional* societies and «traditional» practices. Rural tourism presents a complex of rural environments, economies, histories and locations. Most of the revenue generated through rural tourism is used to support the local community and enrich their livelihood.

For our study we have chosen event *Tešnjarske večeri* (Tešnjar Evenings), held in the city of Valjevo in the old quarter Tešnjar, which is an architectural ambience that is particularly attractive for tourists. The organizers of this event are the Municipal Assembly of Valjevo and Cultural and Education Community of Valjevo. Tourist event *Tešnjarske večeri* has been held since 1987 and is a traditional event with a diverse cultural program. The Municipal Assembly describes *Evenings of Tešnjar* as a cultural festival with a diverse program including films, theatre and music performances, meetings of writers, publishers, and booksellers. The event is held at several locations: the three key locations are Tešnjar, summer stage of the Kolubara, and the plateau of the Centre for Culture. The survey research was done at these three locations as well as on the marble bridge over the summer stage of Kolubara, Kneza Miloša Street and Vojvoda Mišić Square.

Methodology

The basic method of our research is a sociological survey, which is a method typically used for studies in cultural geography and event tourism (direct observation and semi-structured interview with the organizers and participants of the festival). During the event of 2016, a survey was done on a random sample of 276 visitors. It was done during the six days of the event. This period was chosen because in these days the event is attended by the largest number of visitors. The survey was anonymous.

One of the methods of data analysis was Pearson's chi-square test, which is used to determine whether the obtained (observed) frequency (answers of respondents according to the gender and age structure) deviate from the expected frequencies. The test shows whether there is a connection between these two groups and the likelihood of this connection. We assumed that there would be no differences in responses according to the gender and age of our respodents. In order to detect any differences in the responses we are using a significance level of $p < 0.05$.

Result and Discussion

The survey (Table 1) included 126 men (45.7%) and 150 women (54.3%). Regarding the age structure of the visitors (Table 2), most of them (27.5%) were under 18; 22.8%, from 61 to 70; 1.8%, over 71 (1.8%); from 51 to 60, 7.2%; and from 31 to 40, 9.8%.

Table 1

Gender of visitors

Gender		Frequency	Valid Percentage
Valid	Male	126	45,7
	Female	150	54,3
	Total	276	100

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Table 2

Age of visitors

Age		Frequency	Valid Percentage
Valid	Under 18	76	27.5
	19–30	43	15.6
	31–40	27	9.8
	41–50	42	15.2
	51–60	20	7.2
	61–70	63	22.8
	Over 71	5	1.8
	Total	276	100

In order to detect the differences in the responses, the results are shown depending on the gender and age structure of the participants and the statistically significant difference is taken at the level of $p < 0.05$.

Table 3 shows that the majority of visitors – 73 (26.4%) – spent one day at the event. 56 (20.3%) visitors were at the event for six days. Not surprisingly, the smallest number of visitors were those who spent at the event 7 days or more than 7 days – 4.3% and 3.6% respectively.

Table 4 illustrates that young people under the age of 18 mostly chose a one-day visit. Visitors from 19 to 30 usually spent two days. Visitors from 31 to 40 were there for three days. It is interesting that the smallest number of people attended the event for more than seven days, that is, they came to the festival every day.

Table 3

Number of days

Days		Frequency	Valid Percentage
Valid	1	73	26.4
	2	43	15.6
	3	27	9.8
	4	38	13.8
	5	17	6.2
	6	56	20.3
	7	12	4.3
	More than 7 days	10	3.6
	Total	276	100

Interestingly, there were no statistically significant differences in the responses of the people of both genders and age structure $p = 0.000$ (Table 5).

Table 5

Pearson chi-square test

	Value	df	Statistical significance (p)
Pearson chi-square test	1419.787	42	0.000

As far as the gender is concerned, it should be noted that twice as many female respondents as men came on a one-day visit – 53 (19.2%). Table 6 demonstrates that these respondents were under the age of 18. Several female respondents came to visit for several days and 9 (3.3%) came to the festival every day.

Table 4

Number of days according to age structure

Number of days		Structure of visitors by age							Total
		Under 18	19–30	31–40	41–50	51–60	61–70	Over 71	
1	Count	73	0	0	0	0	0	0	73
	%	26.4	0	0	0	0	0	0	26.4
2	Count	0	43	0	0	0	0	0	43
	%	0	15.6	0	0	0	0	0	15.6
3	Count	0	0	27	0	0	0	0	27
	%	0	0	9.8	0	0	0	0	9.8
4	Count	0	0	0	38	0	0	0	38
	%	0	0	0	13.8	0	0	0	13.8
5	Count	0	0	0	0	17	0	0	17
	%	0	0	0	0	6.2	0%	0	6.2
6	Count	0	0	0	0	0	56	0	56
	%	0	0	0	0	0	20.3	0	20.3
7	Count	0	0	0	0	1	6	5	12
	%	0	0	0	0	0.4	2.2	1.8	4.3
> 7	Count	3	0	0	4	2	1	0	10
	%	1.1	0	0	1.4	0.7	0.4	0	3.6
Total	Count	76	43	27	42	20	63	5	276
	%	27.5	15.6	9.8	15.2	7.2	22.8	1.8	100

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Table 6

Number of days according to gender

Days		Gender		Total
		Male	Female	
1	Count	20	53	73
	%	7.2	19.2	26.4
2	Count	30	13	43
	%	10.9	4.7	15.6
3	Count	10	17	27
	%	3.6	6.2	9.8
4	Count	19	19	38
	%	6.9	6.9	13.8
5	Count	10	7	17
	%	3.6	2.5	6.2
6	Count	27	29	56
	%	9.8	10.5	20.3
7	Count	9	3	12
	%	3.3	1.1	4.3
More than 7 days	Count	1	9	10
	%	0.4	3.3	3.6
Total	Count	126	150	276
	%	45.7	54.3	100

Interestingly enough, there were no statistically significant differences in the responses of the people of both genders and age structure $p = 0.000$ (Table 7).

Table 7

Pearson chi-square test

	Value	df	Statistical significance (p)
Pearson chi-square test	31.606	7	0.000

The largest number of visitors (Table 8) found out about the event from the radio and television – these were 105 people (38.0%) or more than a third of all the visitors; 63 (22.8%) visitors were told by friends and family; 51 (18.5%), from the advertising materials (e.g. brochures and leaflets); 47 (17.0%), from the Internet. The conclusion is that visitors are well informe and actively use all the available sources of information.

Table 8

Sources of information

Information source		Frequency	Valid Percentage
Valid	Radio and TV	105	38,0
	Prospectus	51	18,5
	Family and friends	63	22,8
	Internet	47	17,0
	Other	10	3,6
	Total	276	100,0

By looking at Table 9, we can conclude that the younger population (under 18) mostly found about the festival from family and friends – 33 (12.0%). It can be assumed that it was their friends and relatives who recommended the respondents to participate. The majority of those who heard about the festival used radio and television programs. Most of these people were 61 to 71 years old – 54 respondents (19.6%). Two equal groups of people have found out about the event on the Internet: these are young people and those aged between 41 and 50, each of the groups consisting of 13 people or 4.7%.

Interestingly, there were no statistically significant differences in the responses of people of both genders and age structure $p = 0.000$ (Table 10).

Table 9

Preferred sources of information according to the age structure

Sources of information		Structure of visitors by age							Total
		Under 18	19–30	31–40	41–50	51–60	61–70	Over 71	
Radio and TV	Count	14	22	7	4	4	54	0	105
	%	5.1	8.0	2.5	1.4	1.4	19.6	0	38.0
Advertising materials	Count	16	5	16	13	1	0	0	51
	%	5.8	1.8	5.8	4.7	0.4	0	0	18.5
Family and friends	Count	33	13	4	12	1	0	0	63
	%	12.0	4.7	1.4	4.3	0.4	0	0	22.8
Internet	Count	13	3	0	13	9	4	5	47
	%	4.7	1.1	0	4.7	3.3	1.4	1.8	17.0
Other	Count	0	0	0	0	5	5	0	10
	%	0	0	0	0	1.8	1.8	0	3.6
Total	Count	76	43	27	42	20	63	5	276
	%	27.5	15.6	9.8	15.2	7.2	22.8	1.8	100

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Table 10

Pearson chi-square test

	Value	df	Statistical significance (p)
Pearson chi-square test	220.472	24	0.000

Table 11 shows that most men – 78 (28.3%) – found out about the festival on the radio and television. Most women received the information from advertising materials – 47 (17.0%). It is assumed that considerably more women than men read leaflets and brochures. A lot of women also heard about the event from their friends and relatives – 43 (15.6%). As for the Internet, both sexes were equally represented.

Table 11

Preferred sources of information according to the gender

Sources of information		Gender		Total
		Male	Female	
Radio and TV	Count	78	27	105
	%	28.3	9.8	38.0
Advertising materials	Count	4	47	51
	%	1.4	17.0	18.5
Family and friends	Count	20	43	63
	%	7.2	15.6	22.8
Internet	Count	24	23	47
	%	8.7	8.3	17.0
Other	Count	0	10	10
	%	0	3.6	3.6
Total	Count	126	150	276
	%	45.7	54.3	100

There were no statistically significant differences in the responses of people of both genders and age structure $p = 0.000$ (Table 12).

Table 12

Pearson chi-square test

	Value	df	Statistical significance (p)
Pearson chi-square test	77.947	4	0.000

Conclusion

Serbia is a country with respect for traditional values, rich cultural heritage and pristine natural environment. Therefore, this country has a great potential for the development of rural tourism. There is a variety of rural areas in Serbia with different economic, socio-cultural and demographic characteristics. There are, however, a number of problems that impede efficient development of rural tourism: for example, the lack of knowledge about the new approaches to the development of rural economy; the lack of institutional framework (especially legislation) which would ensure the coordinating role of the state and greater involvement of local authorities into rural development; underdeveloped infrastructure; inadequate production and ownership structure; inadequate diversification of activities; and the dominance of the sectoral police [13; 14].

To be competitive on the market, rural destinations must meet the highest standards of quality to satisfy the needs of tourists and to ensure their loyalty. Tourists should be encouraged to return to these places again and again and to recommend them to their friends and relatives. This is particularly true of foreign tourists, who have already accumulated considerable travel experience and are seeking the highest quality of hospitality and tourism [15]. Customer loyalty is directly related to word-of-mouth communication but we should not underestimate other sources of information such as the media, good advertising materials, and the Internet.

Local authorities play the key role in developing the potential of rural areas. In the past, they mostly focused on construction or maintenance of the infrastructure facilities and the improvement of social and health care. Nowadays, they need to invest more funds and effort into the development of rural tourism, organization of various rural festivals and the creation of institutions that would represent the interests of agricultural producers. The authorities should also provide sufficient support to local farmers, for example, through subsidies, educational schemes, awareness raising measures, facilitated administrative procedures, interest-free loans, and so on. All these activities are important for the development of rural tourism.

Rural tourism provides opportunities which can be used to devise a balanced local and regional strategy ensuring cooperation of a wide range of stakeholders. Effective partnerships between the public and the private sectors can serve as the basis for sustainable development. Innovations often come from the private sector, that is, from those who live and work in that area.

In order to turn *Tešnjarske večeri* into a large-scale tourist event, better marketing strategies are required. To make this event more economically profitable it is also recommended to provide a wider range of souvenirs for sale representing the traditional arts and crafts.

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Indicators of tourism development of the Serbian Danube region

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ABSTRACT

Protected natural area in the Danube region covers 107,200 hectares and includes two national parks, two nature parks, one place of outstanding natural beauty, five special natural reserves, twenty-five nature monuments, and two sites of international significance included in the Ramsar list. However, only 140 immovable and 374 movable cultural objects are officially registered. There are 31 cultural objects of exceptional importance and national significance and 89 objects of great importance and regional significance. The objects with this status are protected by the state. Two sites are on the preliminary UNESCO World Heritage list. This paper discusses the potential of tourism industry in the Serbian Danube Region and the prospects of its further development. We outline the current state of tourism industry and describe the geographical location of the region, its natural and anthropogenic resources, and accommodation capacities. We analyse such data as the number of tourists and the number of overnight stays by municipalities in 2016, and the average length of stay. The indicators used are the functionality coefficient, the capacity utilization and the intensity of functionality. The conclusion is drawn that the tourism potential of the Serbian Danube Region is not fully realized and that its development should be at a much higher level, given the increasingly important role of the region as a major tourist destination in Serbia.

KEYWORDS

Serbia, Danube Region, indicators, development, tourism

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Индикаторы развития туризма в придунайских районах Сербии

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РЕЗЮМЕ

Охраняемая природная территория в Дунайском регионе занимает 107 200 гектаров и включает в себя два национальных парка, два природных парка, одно место выдающейся природной красоты, пять специальных природных заповедников, двадцать пять памятников природы и два объекта международного значения, включенные в список Рамсарской конвенции. Однако официально зарегистрировано только 140 недвижимых и 374 передвижных культурных объекта. Есть 31 культурный объект исключительной важности и национального значения и 89 объектов, имеющих большое значение и региональное значение. Объекты с этим статусом защищены государством. Два объекта находятся в предварительном списке Всемирного наследия ЮНЕСКО. В данной статье обсуждается потенциал индустрии туризма в регионе сербского Дуная и перспективы его дальнейшего развития. Мы описываем текущее состояние индустрии туризма и географическое положение региона, его природные и антропогенные ресурсы, а также гостиничные мощности . Мы анализируем такие данные, как количество туристов и количество ночевок в муниципалитетах в 2016 г., а также средняя продолжительность пребывания. Используемыми индикаторами являются коэффициент функциональности, использование мощности и интенсивность функциональности. Сделан вывод о том, что туристический потенциал сербского Дунайского региона не полностью реализован и его развитие должно быть на гораздо более высоком уровне, учитывая все более важную роль региона как важного туристического направления в Сербии.

КЛЮЧЕВЫЕ СЛОВА

Сербия, Дунайский регион, показатели, развитие, туризм

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Introduction

The Serbian Danube Region is a destination that is gaining more and more importance on the tourist market of Serbia. The region offers a variety of diverse tourist attractions ranging from natural parks and reserves to cultural heritage sites [1]. However, the abundance of resources does not always guarantee commercial success [2]. Therefore, it is important to define the direction for development of tourism in the region, to achieve the synergy of all the key factors, and to cooperate with other local partners to promote the Serbian Danube Region as a major tourist destination. The goal is to boost revenues of the tourism industry by increasing the number of tourists and the number of overnight stays. The growth in the tourism sector would create more jobs, reduce the outflow of the population to other regions and improve the living standards of the local community [3].

Theoretical framework

Until the second half of the twentieth century, the data on tourist arrivals, number of beds and the average length of stay as well as the number of people employed in tourism and hospitality industry had been the key indicators for assessment of tourism development in specific destinations [4]. Later, in order to determine the impact of tourism on local economies, the research started to focus on the ratio of accommodation capacities and the number of local population in specific destinations [5; 6]. The first to apply this type of methodology was French geographer Pierre Defert, who proposed the index of tourist function in 1967. French researcher Rene Baretje in 1978 improved Defert index and brought it in agreement with the spatial unit of destination. Numerous studies introduced other indicators, in addition to Defert-Baretje's index, for measuring the tourist intensity. For example, Polish researchers used Charvat's index to show the development of tourism as a result of urbanization. The intensity of tourism can also be determined with the help of Schneider's index, which is often referred to as the index of tourist traffic intensity [7].

Description of the region

The Serbian Danube Region extends between 45°48'39" and 44°12'48" north latitude and 18° 51'9"and 22°40'18" east longitude. This region is located in Central Europe in the southern part of the Pannonian Basin, in the north of the Republic of Serbia [8]. The Danube Region in Serbia covers 15,755 km^2, which is about 17.8% of its total area. According to the last census, there are 2,957,577 people in 499 settlements, that is, about 40.7% of the total population of Serbia. The average population density is 125 inhabitants per km^2. The region comprises 24 local self-government units that have a direct access to the Danube. The territory can be divided into the following parts:

– the upper Danube Region, the area located along the border with Croatia from Batina (Bezdan) to Bačka Palanka. Recently, this region has significantly changed its spatial and functional characteristics;

the central Danube Region, the area from Bačka Palanka to Ram, which includes the largest and most important centres in Serbia. This region has retained its previous characteristics and does not require any changes in the planning and arranging of its territory;

the lower Danube Region, the area from Ram to Prahovo, located on the border with Romania. This region holds considerable potential in the sphere of trans-border cooperation [9].

The Serbian Danube Region comprises 107,200 hectares of protected natural area, which makes it an ecological corridor of international significance. The protected areas include the following:

– 2 national parks: Fruska Gora and Djerdap;

– 2 nature parks: Tikvara and Begečka jama;

– Area of unique natural beauty: Veliko ratno ostrvo;

– 5 natural reserves: Gornje Podunavlje, Karadjordjevo, Bagremara, Koviljsko-Petrovaradinski rit and Deliblatska peščara;

– 25 natural monuments covering over one hectare of area: Stari park near Sonta, Park čelarevskog dvorca, Kamenički park, Dvorska bašta park, Mačkov sprud, Ivanovačka ada and Šalinački lug;

– According to the Convention on Wetlands, Gornje Podunavlje and Labudovo okno are registered as sites of international importance for wetland habitats of bird species [10; 11].

Within the Serbian Danube Region, there are areas that enjoy the status of internationally protected areas and those with the candidate status: for example, Gornje Podunavlje and Labudovo okno are already included in the list of Ramsar sites, while Koviljsko-Petrovaradinski rit and Donje Podunavlje are awaiting to be approved. Such areas as Gornje Podunavlje, Deliblatska

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peščara and Djerdap have the status of recognized biosphere reserves within the UNESCO's *Man and the Biosphere* (MAB) Programme. Djerdap National Park is covered by the Framework Convention on the Protection and Sustainable Development of the Carpathians. Serbia has also submitted nomination proposals for Deliblatska peščara and Djerdap National Park to be included into the World Heritage List on the basis of the Convention on the Protection of the World Cultural and Heritage Site [10].

There are 1,186 objects of cultural significance in the Serbian Danube Region. However, only 140 immovable and 374 movable cultural objects are officially registered. There are 31 cultural objects of exceptional importance and national significance and 89 objects of great importance and regional significance. The objects with this status are protected by the state. The town of Bač and Smederevo fortress with its surroundings have been on the preliminary UNESCO World Heritage list since 2010. All these natural and anthropogenic resources of the Serbian Danube Region are a part of the European heritage, which can be used as the starting point for their promotion and marketing as tourist attractions [11].

The peculiar feature of tourism in the Serbian Danube Region is the number and diversity of the natural and anthropogenic landmarks concentrated in a relatively small territory. The problem that needs to be addressed is the low level of their attractiveness for tourists. Moreover, tourists' awareness about these spots is also low [12]. It is known that the Danube is one of the most popular river boat destinations: it ranks first in the world by the number of tourists that visit it on boat cruises. In 2008, out of 380,000 German and Austrian tourists that travelled on international tourist boats, only 51,000 stopped in Belgrade [13]. On the one hand, there are fortresses such as Kalemegdan and Petrovaradin, whose promotion is ineffective; on the other hand, there are also fortresses that remain largely unknown to tourists. The most attractive cultural landmark in the region is the archaeological park Viminacium. Another example of successful promotion is Lepenski Vir: since 2012, the efficient marketing campaign has made it much more interesting for tourists.

Table 1

The region's population by municipalities (data of the 2011 census)

Municipality	Surface area in sq. km	Populated places	Population	People per sq. km	District
Serbia	88,509	6,158	7,258,753	–	–
Belgrade	3226	157	1,647,490	514	–
Apatin	380	5	29,500	84	West Backa
Odzaci	411	9	30,202	73	
Sombor	1216	16	87,539	74	
Bela Crkva	353	14	17,912	51	South Banat
Kovin	730	10	34,990	48	
Pancevo	756	10	12,3021	163	
Novi Sad	699	16	333,268	477	South Backa
Backa Palanka	579	14	55,898	97	
Bac	365	6	14,415	39	
Backi Petrovac	158	4	13,418	85	
Beocin	185	8	15,589	84	
Sremski Karlovci	51	1	8,797	172	
Titel	261	6	16,070	61	
Zrenjanin	1327	22	123,536	93	Central Banak
Indjija	385	11	47,818	124	Srem
Stara Pazova	350	9	70,333	200	
Kladovo	629	23	21,142	34	Southern and Eastern Serbia
Majdanpek	932	14	19,854	21	
Negotin	1,090	39	38,030	35	
Pozarevac	477	27	73,975	156	Branicevo
Veliko Gradiste	344	26	18,956	55	
Golubac	367	24	8,654	25	
Smederevo	484	28	107,170	223	Podunavlje (Danube Basin)

Source: Statistical Office of the Republic of Serbia.

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Tourist infrastructure and tourist traffic in the Serbian Danube Region

There is currently no adequate record of accommodation in Serbia and it is not possible to give a complete overview of accommodation facilities and complementary accommodation facilities. Although many towns and municipalities on the Danube hold a great potential for the development of tourism, they have a poor tourist infrastructure [14]. In our analysis we are using the data provided by the Statistical Office of the Republic of Serbia.

As statistics show, in 2016, 1,250,308 tourists arrived in the Serbian Danube Region and spent 2,647,347 nights. The average length of stay of domestic tourists was 2.3 days, while foreign tourists stayed for 2 days. Interestingly enough, twice as many foreign tourists as domestic ones visited the region in the given period.

In 2016, 299 accommodation facilities were registered in the Serbian Danube Region. These facilities offer 15,688 rooms and 33,176 beds, with 31,827 permanent and 1,349 extra beds (Table 2). Accommodation services are predominantly provided by hotels.

There are 138 hotels in the Serbian Danube Region, all of them categorized. Hotels of a lower category have 8,868 rooms and 15,688 beds. In the region, there are 5 five-star hotels, 38 four-star hotels, 26 three-star hotels, 14 two-star hotels and 4 one-star hotels. There are also two apartment hotels (a five-star and a four-star). As for garni hotels, there is one five-star, 18 four-star, 25 three-star, 4 two-star, and a one-star. In addition to the hotels, the Serbian Danube Region also has one boarding house, 3 motels, 61 overnight stays, 9 apartments, 17 inns with accommodation, 3 spa centres, 2 mountain huts, 3 children's and youth resorts, 57 hostels, 4 camps, and a car for sleeping. There are seven other accommodation facilities, including campsites, hunting lodges and huts, tourist resorts [15].

Table 2

Tourist accommodation capacities in the Serbian Danube Region in 2016

Municipality	Permanent establishment	Available rooms	Bed places	Permanent beds	Spare beds
Belgrade	149	8,047	15,389	14,695	694
Apatin	5	269	610	604	6
Odzaci	4	28	56	56	0
Sombor	9	233	630	613	17
Bela Crkva	4	346	1,016	1,011	5
Kovin	1	32	130	130	0
Pancevo	5	29	78	70	8
Novi Sad	58	4,064	9,129	8,943	186
Bac	2	14	33	33	0
Backi Petrovac	0	93	197	197	0
Backa Palanka	7	113	228	207	21
Beocin	2	36	64	61	3
Sremski Karlovci	3	129	282	268	14
Titel	1	41	93	93	0
Zrenjanin	12	323	674	654	20
Indjija	4	98	210	199	11
Stara Pazova	6	160	394	314	80
Kladovo	4	424	1,173	1,064	109
Majdanpek	2	361	736	716	20
Negotin	4	203	530	510	20
Smederevo	4	66	129	128	1
Golubac	2	84	242	191	51
Veliko Gradiste	4	338	835	808	27
Pozarevac	7	157	318	262	56
Total	299	15,688	33,176	31,827	1,349

Source: Statistical Office of the Republic of Serbia.

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Hotels are well-equipped to accommodate large tourist groups as well as conference guests. However, the average occupancy rate in the Serbian Danube Region is low and, therefore, hotels' annual revenues are quite modest [14]. The largest number of tourists come to Belgrade and Novi Sad. Thus, it is the hotel industry in these areas that has the greatest impact on economy. For more balanced development of tourism industry in the Serbian Danube Region it is necessary to build many more facilities for accommodation of tourists in other parts of the region.

The number of foreign tourist arrivals in 2016 was 885,672 or 70.8% of the total number of arrivals. Foreign tourists made 1,808,924 overnight stays, which is 68.3% of the total number of overnight stays in the Danube Region (Table 3). The large proportion of foreign tourists indicate the increasing importance of foreign tourism for the development of the region. The absolute values of the tourist traffic as well as the region's participation in the overall tourist traffic of Serbia are likely to increase in the future due to the region's significant natural potential and the size of its territory. The current data indicate the growth of tourism industry and the systemic approach applied to tourism development and management by the authorities of the Serbian Danube Region. At the moment, the leading municipalities in this respect are Belgrade, Novi Sad, Kladovo, Majdanpek and Veliko Gradište.

Municipalities which have the smallest tourist traffic are also the most underdeveloped. These include Odžaci, Bač, Titel and Pančevo. Thus, the local trend contradicts the global pattern in which the share of family business in tourism, especially in the domain of accommodation services, is becoming increasingly important [16]. Encouraging the construction of facilities in the private sector seems to be a very suitable development option, which could improve the poor social conditions of the local population and compensate for the lack of investment in tourism and hospitality management in Serbia.

Table 3

Tourists and overnight stays in 2016

Municipality	Tourists			Nights spent			Average number of nights spent	
	Total	Domestic	Foreign	Total	Domestic	Foreign	Domestic	Foreign
Belgrade	913,150	176,087	737,063	1,867,150	406,674	1,460,476	2.3	2.0
Apatin	7,007	5,570	1,437	52,035	46,875	5,160	8.4	3.6
Odzaci	58	49	9	319	241	78	4.9	8.7
Sombor	11,271	7,369	3,902	21,548	14,058	7,490	1.9	1.9
Bela Crkva	1,186	1,143	43	8,024	7,929	95	6.7	2.2
Kovin	2,520	2,358	162	8,915	8,285	630	3.5	3.9
Pancevo	1,190	670	520	2,310	1,300	1,010	1.9	1.9
Novi Sad	174,489	67,808	106,681	360,578	118,956	241,622	1.8	2.3
Bac	547	215	332	1,346	337	1,009	1.5	3.0
Backi Petrovac	2,708	1,459	1,249	5,386	2,456	2,930	1.7	2.3
Backa Palanka	3,310	1,338	1,972	6,804	2,725	4,079	1.9	2.0
Beocin	1,982	1,601	381	4,700	3,235	1,465	2.0	2.0
Sremski Karlovci	7,219	5,059	2,160	12,926	8,181	4,745	1.6	2.2
Titel	558	473	85	1,444	1,192	252	2.5	3.0
Zrenjanin	15,261	8,926	6,335	54,085	31,126	22,959	3.5	3.6
Indjija	2,503	1,340	1,163	4,762	1,927	2,835	1.4	2.4
Stara Pazova	12,053	6,308	5,745	32,986	16,949	16,037	2.7	2.8
Kladovo	25,651	21,719	3,932	50,187	42,219	7,968	1.9	2.0
Majdanpek	24,774	20,023	4,751	44,245	33,635	10,610	1.7	2.2
Negotin	4971	4,492	479	14,043	12,715	1,328	2.8	2.8
Pozarevac	13,269	11,004	2,265	30,164	24,839	5,325	2.3	2.4
Veliko Gradiste	17,891	15,755	2,136	52,861	46,378	6,483	2.9	3.0
Golubac	3,186	2,470	716	4,540	3,606	934	1.5	1.3
Smederevo	3,554	1,400	2,154	5,989	2,585	3,404	1.8	1.6
Total	1,250,308	364,636	885,672	2,647,347	838,423	1,808,924	2.3	2.0

Source: Statistical Office of the Republic of Serbia.

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Methodology

This paper analyses indicators of tourist functions that can help determine the intensity of tourism and its development in a particular destination. The analysis of four indicators is applied to determine the region's importance and participation in the overall tourist offer of Serbia. In order to present the tourist development of the region, we analysed the following indicators as of 2016: the length of stay of tourists, the functionality coefficient, the capacity utilization and the intensity of functionality [17].

Length of stay (*LS*) is the ratio of the number of overnight stays (*NO*) to the number of tourists (*NT*):

$$LS = \frac{NO}{NT}.$$

Functionality coefficient (*FC*) is the ratio of number of beds (*NB*) to the population number (*PN*):

$$FC = \frac{NB \cdot 100}{PN}.$$

Capacity utilization (*CU*) is the ratio of the number of overnight stays (*NO*) to the number of beds (*NB*) during the year. This indicator allows us to assess the profitability of accommodation facilities:

$$CU = \frac{NO \cdot 100}{NB \cdot 365}.$$

If the capacity utilization is higher than 60%, the business is profitable; if it ranges between 40% and 60%, then the business is able to cover its costs to stay afloat; and if under 40%, the business is not profitable [17].

The intensity of functionality refers to the volume of tourist traffic in the given location within a certain time period. It can be measured in terms of space, the number of local population or the size of accommodation capacities [17]. In this paper, we measure this indicator by using the population size:

$$IF = \frac{NT \cdot 100}{PN},$$

where IF is the intensity of functionality; *NT*, the number of tourists; and PN, the local population [7].

Results and discussion

The results of research show that the Serbian Danube Region is a well-established destination on the tourist market, which is reflected in the number of tourist visits throughout the year. The turnout is particularly intense during the summer months. We should take into consideration that an increase in the number of visitors in general could lead, in addition to positive economic effects, to the decline in the quality of tourist services and excessive pressure on the capacities of certain sites.

As Table 4 illustrates, the length of tourist stays in 2016 was quite short – on average two days. This fact can be explained by the poor state of tourism and hospitality infrastructure in Serbia, for example, the lack of available rooms and beds, accompanied by the decline in the population's purchasing power and the rising prices of services. The only exception from this trend is Odžaci, in which tourists' average length of stay was about 18 days.

The functionality coefficient for the entire region is only 1.12% due to the small number of available beds. However, even if the actual number of beds was increased, we would still have a low coefficient of functionality. This means that we should also work to improve the overall tourist offer in the region. A slightly better picture in this indicator is found in Djerdap, Sombor and Bela Crkva. In these areas, the functionality coefficient is significantly higher than the average values for the whole region – over 5% – due to better accommodation capacities. It is also obvious that the local population in these areas does not suffer from intensive construction of tourist infrastructure, which is of great importance for the sustainable development of the whole region. It is recommended that in the municipalities specializing in tourism the ratio of number of beds to the number of inhabitants should be 1.5:1 [18]. The capacity utilization indicator reflects the level of economic development and profitability. Unfortunately, its current level of 21.86% indicates the ultimate unprofitability of the local accommodation facilities.

The intensity of functionality is an indicator that shows the intensity of tourist traffic, which is estimated by using the number of tourist arrivals. This indicator in the region is comparatively low and amounts to 42.7%, which means that the negative impact of tourists on the local culture and the local identity is low. Higher values of this indicator were recorded in Kladovo, Majdanpek (Djerdap), Sremski Karlovci and Belgrade.

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Table 4

Indicators of tourism development in 2016

Municipality	Population (2011 census)	Tourists	Nights spent	Bed places	Length of stay (day)	Functionality index (%)	Accommodation occupancy (%)	Tourism intensity (%)
Belgrade	1,647,490	913,150	1,867,150	15,389	2.0	0.93	33.24	55.43
Apatin	29,500	7,007	52,035	610	7.4	2.06	23.37	23.75
Odzaci	30,202	58	319	56	18.5	0.18	1.56	0.19
Sombor	87,539	11,271	21,548	630	1.9	5.59	9.37	12.88
Bela Crkva	17,912	1,186	8,024	1,016	6.8	5.67	2.16	6.62
Kovin	34,990	2,520	8,915	130	3.5	0.37	18.79	7.20
Pancevo	123,021	1,190	2,310	78	1.9	0.06	8.11	0.97
Novi Sad	333,268	174,489	360,578	9,129	2.0	2.73	10.82	52.36
Bac	55,898	547	1,346	33	2.5	0.06	11.17	0.98
Backi Petrovac	14,415	2,708	5,386	197	2.0	1.37	7.49	18.79
Backa Palanka	13,418	3,310	6,804	228	2.0	1.70	8.18	24.67
Beocin	15,589	1,982	4,700	64	2.4	1.70	20.12	12.71
Sremski Karlovci	8,797	7,219	12,926	282	1.8	3.20	12.56	82.06
Titel	16,070	558	1,444	93	2.6	0.58	4.25	3.47
Zrenjanin	123,536	15,261	54,085	674	3.5	0.55	21.98	12.35
Indjija	47,818	2,503	4,762	210	1.9	0.44	6.21	5.23
Stara Pazova	70,333	12,053	32,986	394	2.7	0.56	22.94	17.13
Kladovo	21,142	25,651	50,187	1,173	2.0	5.55	11.72	121.32
Majdanpek	19,854	24,774	44,245	736	1.8	3.70	16.47	124.78
Negotin	38,030	4,971	14,043	530	2.8	1.39	7.26	13.07
Pozarevac	73,975	13,269	30,164	129	2.3	0.17	64.06	17.93
Veliko Gradiste	18,956	17,891	52,861	242	3.0	1.28	59.84	94.38
Golubac	8,654	3,186	4,540	835	1.4	9.65	1.49	36.81
Smederevo	107,170	3,554	5,989	318	1.7	0.30	5.16	3.31
Total	2,957,577	1,250,308	2,647,347	33,176	2.1	1.12	21.86	42.27

Source: Statistical Office of the Republic of Serbia.

Conclusion

The Serbian Danube Region is becoming an increasingly important tourist destination of Serbia, along with popular spa areas and mountain destinations. It is rich in natural and anthropogenic tourist attractions, which are underrated and deserve to be better presented in the tourist market. The region's natural highlights, which could successfully compete with their counterparts in other European countries, require additional investment into the development of their tourist infrastructure. Although the general attitude in the region is that each municipality should bear responsibility for the development of its own tourism industry, it would be more productive to foster stronger links between the municipalities. Then, more prosperous municipalities such as Belgrade and Novi Sad would also be able to boost the growth of tourism in other municipalities and thus make their economic development more balanced. This way, underdeveloped areas would become more attractive to tourists while more advanced municipalities would be able to reduce the negative impact of tourism on their environment and the population's culture and way of life. Moreover, such strategy would allow the government to redistribute the pressure on the existing infrastructure, which is overloaded in the high peaks of the tourist season. In the future, measures should be taken to preserve the region's natural beauty, to develop sustainable tourism, and to invest in creating diverse and modern tourist accommodation, transport and service infrastructure. It is also recommended to develop such areas of tourism industry as sports tourism, health and recreation, sightseeing, religious tourism and congress tourism, which are less dependent on weather conditions and can ensure stable tourist traffic throughout the year.

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