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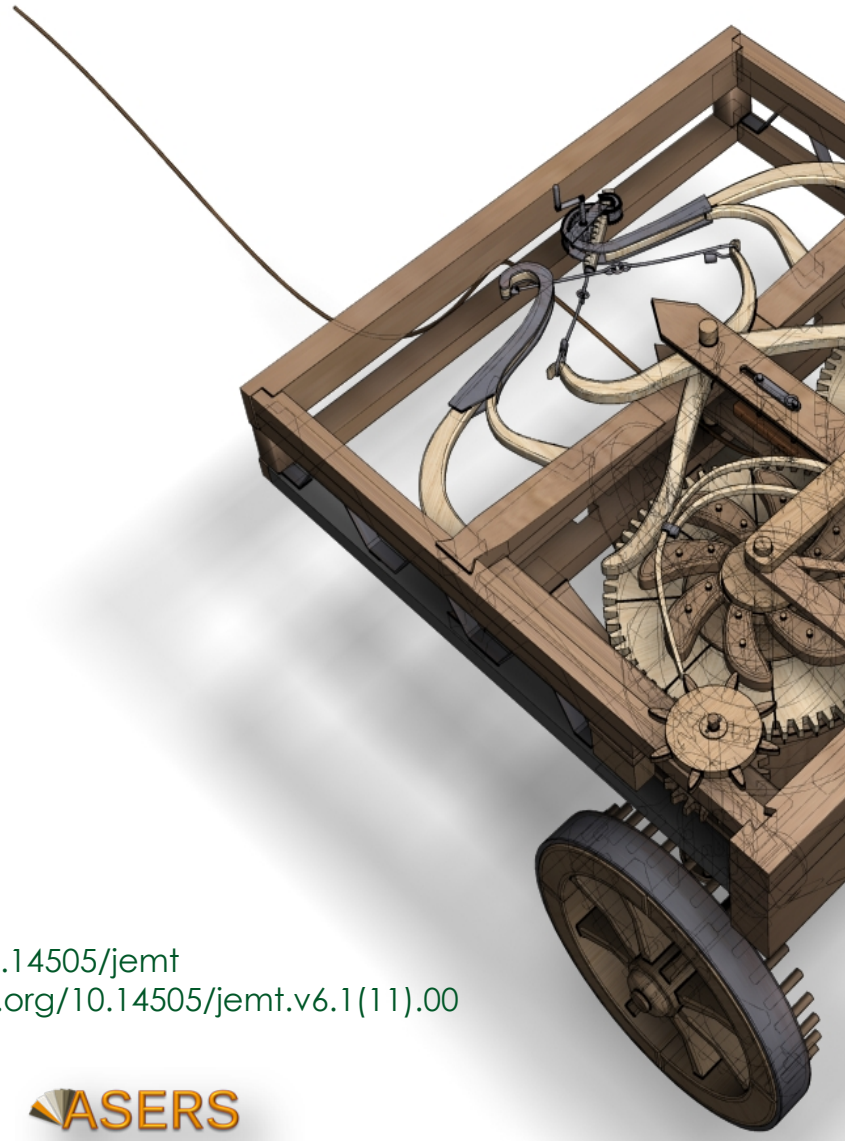

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Multi-Criteria Assessment of the Development Potential of the Tourism and Recreational Cluster of the Volgograd Region

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Abstract:

The paper formulates a simple methodology for the quantitative assessment of the tourism potential of the region. The study proposes the multi-criteria decision based on the weighted average sum model. This method involves the selection of social and material attributes and their quantitative assessment by means of ranking and scaling. This methodology is applied in the evaluation of the tourism and recreational potential of the Volgograd Region. The major constraints to the development of tourism in certain districts of the region are identified. To optimize the cost of creating tourist infrastructure, the author proposes to adopt the concept of clustering of tourist areas.

Keywords: tourism potential, multi-criteria assessment, recreational cluster, Volgograd, clustering.

JEL Classification: Q.

1. Introduction

Tourism is an important component of the public services sector, which is the industry with a huge potential for development. It is a part of the tertiary sector of the national economy consisting primarily of the supply of services which gives dynamism to the development of the territory. Tourism is a sector which makes a great contribution to the cultural, economic and social development of individual territories, generating flows

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of money and providing additional income to local budgets, as well as creation of jobs. (Shabanova, Aksenova, 2012)

In recent years, tourism has developed dynamically as a result of the growing demand for travel products and services. This development has been accompanied by the growing awareness of the needs and expectations of the customers of this sector (Gaisin, Galimov, 2010). In other words, a modern tourist becomes more demanding, which is evidenced not only by service providers (travel agents, organizers of holiday events, owners of hotels and guest houses), but also by regional authorities, for which tourism is an additional source of revenue.

Currently, the concept of tourism covers a wide range of different forms: from classic guided tours (excursion tourism) to trips to the most remote and challenging corners of the Earth (extreme tourism, geotourism). Each of the many types of tourism attracts customers with different needs, and the tour organizers have to satisfy all these needs and expectations. This involves a combination of two contradictory concepts: specialization and universality, which can't be implemented without the cooperation with other participants in the tourism market and the merging of the industries related to the travel services into a single technological cycle. The interaction of all subsystems as a part of operation of the integrated system ensures stable work and sustainable development of the tourism and recreational sector. (Seliverstova 2015)

The best form of such interaction is the cluster approach. The tourism and recreational cluster is the geographic concentration of interconnected enterprises, suppliers and associated institutions engaged in the activities related to the provision of the tourism and recreational services (Ferreira, Estev˜ao 2009). Clustering allows the market participants to use the synergetic effect and to create lasting business objectives with a focus on increasing sales and profits.

At the same time, there are many examples of poorly implemented costly projects. The most common reasons for the unsuccessful implementation of projects for the creation of the tourism and recreational clusters are the following:

- lack of justification of the need to develop infrastructure for the support of the product;
- reassessment of the tourism potential, which leads to the excess of supply over demand;
- lack of market research helping to identify consumers interested in this form of tourism;
- conflicts and lack of cooperation with other sectors.

In the context of the existing economic constraints, the adequate and unbiased assessment of the tourism and recreational potential of a region, which makes it possible to ensure the rational use of resources and to optimize the level of financial participation in the development of the tourist infrastructure of a region, becomes particularly relevant.

At the same time the methodology of the quantitative assessment of the existing tourism and recreational potential of a particular territory needs to be further improved.

The objective of this paper is to state a simple methodology for the quantitative estimation of the tourism potential of a region. This study applies the method of the weighted sums of criteria as the most popular multi-criteria decision-making tool (Podinovski, Potapov 2013). The methodology was applied to assess the tourism and recreational potential of the Volgograd Region.

In this study, the following tasks were solved:

- the methodology for the assessment of the tourism and recreational potential of the Volgograd Region based on the economic, social and environmental aspects was proposed;
- the analysis of the indicators of the development of tourism in the Volgograd Region was carried out;
- the assessment of the tourism and recreational potential of the Volgograd Region was conducted.

2. Methodology

There is a practice of the assessment of tourism potential, when all the aspects (or attributes) are quantitatively reduced to a single value by using a variety of tools of the multi-criteria decision-making methods (MCDM) (Asaul2012)

Thus, for example, C. Irate proposes the multiple linear regression method for the quantitative analysis of the arrivals of tourists based on 4 variables: natural resources, cultural resources, tourism infrastructure and common infrastructure. (Iatu 2011)

Ciurea *et al.* propose the technique of the scaling of the values of the weight with variables, including the natural potential, anthropic potential, tourism infrastructure and technical infrastructure (Ciurea, Mihalache, Ungureanu, Brezuleanu, 2011).The cluster analysis based on the weighted linear combination method (WLC) using principal component analysis (PCA) was proposed by Ashouri and Fariyadi, who propose 15 variables to assess the tourism potential of a territory. (Ashouri, Fariyadi, 2010)

Another popular method used to assess the tourism potential of a territory is based on the use of the geographic information system (GIS). GIS is a powerful set of tools for the collection, storage, retrieval, comparison, analysis, conversion and display of spatial and non-spatial data from a geographic map of a territory for a specific set of goals (Kol' 2010).

GIS applications make it possible to develop a map of tourism resources and to monitor the available resources in order to identify possible areas for the creation of new travel products or services, as well as to identify places suitable for tourists and tourism. (Marinovic, Andrlic, 2012)

Thus, the multi-criteria decision-making tools are widely used to assess the tourism potential. The analytic hierarchy process (AHP), the multi-attribute utility theory (MAUT), superiority and inferiority ranking method (SIR), the value analysis (VA), the weighted product model (WPM), the weighted sum model (WSM) are the most common tools used for the evaluation of the tourism and recreational potential of a territory. (Karmanova, Podsevalova, Zikirova, Silaeva, Leonova, 2015)

This study applies the weighted sum method as the most simple and reliable tool making it possible to make an assessment based on limited source data. The assessment methodology includes five sequential steps.

Step 1. Determination of the first-level attributes and assignment of the weights of significance

As noted in various studies, the effectiveness of tourism depends on the quality of services, as well as on the socio-economic and socio-cultural background of a region. To assess the tourism potential of a region, the material, social and environmental factors are used as the first-level attributes. Depending on the specifics of a region and the tourist clusters the values of the weights for each of these three aspects can be determined. The weights can be determined as a result of the expert survey, tourist opinion polls, interviewing service providers, etc.

Step 2. Determination of the second-level attributes and assignment of the weights of significance

Each first-level factor (material, social, environmental) consists of a set of variables which are treated as the second-level attributes:

- Physical factors (Wp) factors include: geographical location and the area of a territory; transport accessibility; facilities (water, gas, electricity, etc.); telecommunication systems, etc.
- Social factors (Ws) include the existing structure of the influx of tourists, the intensity of fairs and festivals, the timing of visits and length of stay, the security and safety of stay for visitors, the likelihood of crime, as well as social, behavioral aspects of tourism market operators or service providers, etc.
- Environmental factors (We) include the likelihood of disaster within a certain time interval, natural and anthropogenic threats, harmful land use, air quality, water pollution, etc.

Step 3. Scaling of the internal attributes

The service quality level for each attribute can't be the same for all the service providers. Depending on the quality/quantity, each attribute is scaled on the 5-point or 3-point scale.

Scaling provides the common platform for quantitative and qualitative parameters. When scaling, "1" means the worst/poor quality, and "5" indicates the best quality. For the calculation, the lowest value is regarded as 0.2 followed by 0.4, 0.6, 0.8, while the highest score is 1.

Step 4. Calculation of the aggregate potential value

The calculation of the aggregate potential value of a tourist destination is implemented using a cumulative method according to the following formula:

$V = V_p + V_s + V_e$,

where: -V_p is the potential value of the material factors of the tourism and recreational complex of a region;
- V_s is the potential value of the social factors of the tourism and recreational complex of a region;
- V_e is the potential value of the environmental factors of the tourism and recreational complex of a region;

The potential value of material factors is calculated by the formula:

$$V_p = W_p \sum_{i=1}^{N} w_i p_i ,$$

where: - W_p is the share of the first-level attribute for the material factors of the tourism and recreational complex of a region;
- N is the number of second-level attributes;
- W_i is the weight of the i^{th} second-level attribute for the material factors (values vary from 0 to 1);
- P_i is the result of scaling of the i^{th} second-level attribute. It can have five different values (0.2; 0.4; 0.6; 0.8 and 1).

The potential value of social (V_s) and environmental factors (V_e) is calculated in a similar way.

Step 5. Grouping of points and analysis

At this stage, a list of tourist attractions is formed and the potential of territories is assessed. The points are then clustered on the basis of geographic proximity for the purpose of the optimal use of common infrastructure and available resources. At this stage, new tourist attractions or recreational spaces are explored and identified in order to increase the likelihood of obtaining revenue.

3. Results

The characteristic of the tourism infrastructure in the Volgograd region

The Volgograd Region is located in the south-western part of Russia, on the shores of the Great Russian River Volga. The total area of the region is 112.9 thousand square meters; the total border length is 2221.9 kilometers. On the territory of the region there are 39 municipalities, which consist of 1506 settlements. The total population of the region is 2.56 million people *(The geopolitical position of the Volgograd Region; The Investment portal of the Volgograd Region.* (n.d.); Retrieved June 21, 2015).

On the territory of the Volgograd Region there are 7 natural parks, with a total area of more than 600 thousand hectares, which are part of specially protected natural sites: “Nizhnekhopersky”; “Ust-Medveditsky”, ”Donskoy”, ”Tsimlyanskiye pesky”, “Volga-Akhtuba plain”, “Shcherbakovsky”, “Eltonsky”.

The basis of natural resort resources of the region are mineral waters and therapeutic muds. The most abundant are sodium chloride sodium waters, which are found almost everywhere, as well as iodine-bromine waters. In the left bank area sulphate-chloride waters are encountered (Smorogdinsky mineral spring near Lake Elton). The mineral waters of Smorogdinsky and Ergeninsky springs are used for therapeutic purposes. The brine and silt mud of Lake Elton are also used for therapy.

The Volgograd Region has a well-developed transport network. The river path along the Volga River, which flows into the Caspian Sea and is connected with the Don River, which flows into the Azov Sea, via the Volga-Don shipping canal, provides ample opportunities for delivery of any goods both within the territory of Russia and abroad. The Volga-Don shipping canal, which is located in the territory of the region, connects the ports of five seas, including the Caspian and Black Sea basins. In the territory of the region there are five river

ports: “Volgograd River Port”, the cargo port “Tatyanka”, “Volzhsky cargo port”, “Kamyshinsky river port”, “Kalachevsky port” *(Statistical Yearbook of the Volgograd Region 2013)*.

Air transport in the Volgograd region is represented by JSC “Volgograd International Airport” and by several small regional airlines. Railway transport holds a leading place in the transport system of the region, both in terms of freight and passenger traffic. The following railway lines run through the territory of the region: Moscow-Saratov-Volgograd-Astrakhan-Makhachkala, Saratov – Volgograd – Kotelnikovo - Tikhoretsk towards Black Sea ports. The railway transportation in the region is carried out by the Privolzhskaya Railway – a subsidiary of thee JSC “Russian railways”. The total operational length of the railways in the Volgograd region is 1617 km.

The territory of the Volgograd Region is crossed by the federal highways M-6 "Caspian Highway", M-21 "Volgograd-Chisinau”, R228 "Syzran-Saratov-Volgograd”. The length of the public hard surface roads is 12.4 thousand kilometers. The support industries are also well-developed: roadside services, service stations, and the network of fuel-filling stations (including gas filling stations). Currently the deep modernization of the traffic network of the region is underway; there are also plans for the construction of a bypass road around the city of Volgograd.

According to the official data of the local agency of the Federal State Statistics Service for the Volgograd region (Volgogradstat), as of January 1, 2015 there were 171 collective accommodation facilities in the region, including hotels, tourist camps and sanatoriums, comprising 5599 rooms, with the total 12847 seats (Figure 1) *(On the activities of the travel companies on the territory of the Volgograd Region 2013)(On the activities of the travel companies on the territory of the Volgograd Region 2013)*.

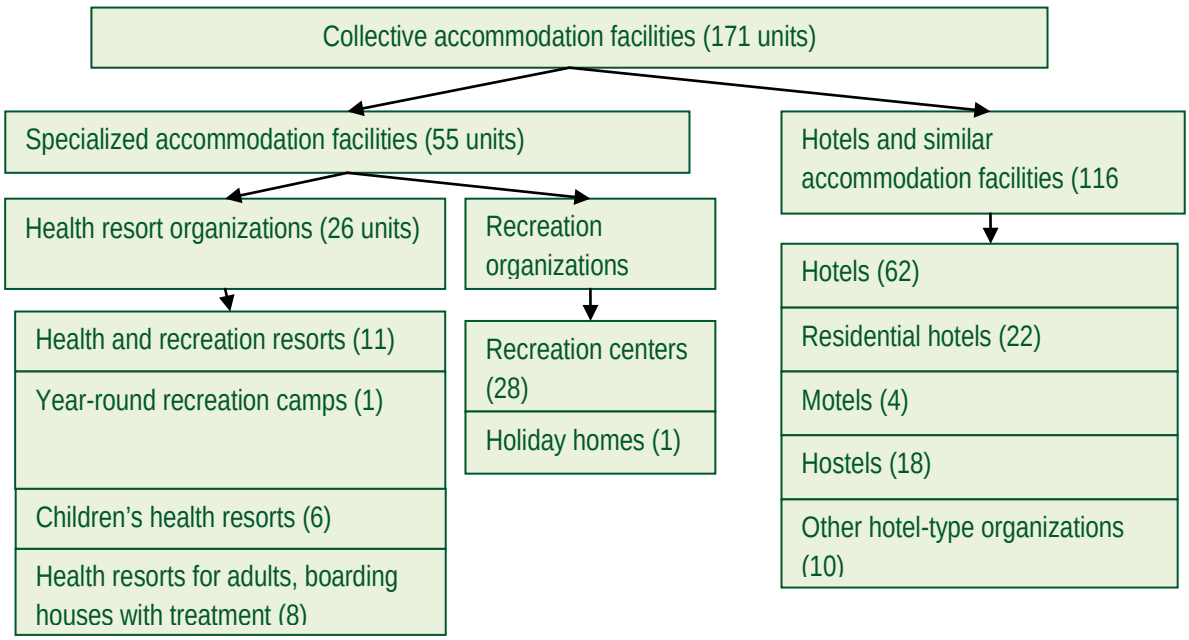

Figure 1. Diagram of the types of collective accommodation facilities of the Volgograd region

The total room inventory of the collective accommodation facilities amounts to 5599 rooms. They are able to accommodate 12847 guests of the city. Despite the fact that the years 2013-2014 years were marked by the increase in the number of hotel facilities which obtained an official category (there are 23 hotel facilities, including 11 two-star, 10 three-star and 2 four-star facilities), their number is currently small in relation to the total number of the hotels in the region. The problem of the categorization of accommodation facilities is one of the most important ones not only in terms of service quality management, but also in connection with the preparation of the region for the large-scale reception of the participants and guests of the 2018 World Cup, because accommodation facilities should be accredited in accordance with the assigned category. (Fetisova, Kurchenkov, Matina, 2015)

Specialized accommodation facilities include 26 health resort organizations and 29 recreation organizations. The health resorts offer a full range of health services using the mineral waters of Gornaya Pollyanna and unique therapeutic mud of Lake Elton.

The region is world famous for its monuments, such as the monument ensemble on Mamayev Kurgan and its chief monument "The Motherland Calls!", the panoramic museum "The Battle of Stalingrad" and the legendary Gerard's mill, the Memorial in the village of Rossoshka, a monument to the heroes of the Tsaritsyno, the Soldiers' Field Memorial and a number of other war memorials.

Currently, the cultural and historical potential of the Volgograd Region is represented by 1164 historical and cultural monuments and by 923 monuments of architecture. The region has more than 20 thousand archaeological sites *(Volgograd stat.* (n.d.), retrieved June 21, 2015). There are 289 museums and 963 cultural and leisure institutions in the region.

In the Volgograd Region and in the city of Volgograd there are 14 major theatres, which are able to meet the tastes of any audience. In Volgograd and Volzhsky there are dozens of modern concert halls, the main of which is the Central Concert Hall on the Central Quay of Volgograd, on the basis of which the Volgograd Academic Symphony Orchestra works on an on-going basis.

A huge number of catering facilities operate in Volgograd, from the sophisticated and elite restaurants "Mayak", "Volgograd", "Bar & Grill", "Moliere", the restaurants serving traditional Russian, European, Japanese cuisine, to modest but cozy and hospitable pizzerias, coffee shops, pastry shops and other facilities.

In the region there are numerous multi-purpose shopping and entertainment malls, with cinemas, shops, restaurants, cafes, sport, gaming and other leisure facilities, including bowling and billiard rooms.

Assessment of the tourism and recreational potential of the Volgograd region

The environmental aspects were excluded because of their uniformity throughout the territory of the Volgograd Region. Thus, the research of the potential of the region was based on the material and social aspects. The survey involved 112 respondents from various areas of economy, planning, geography, statistics, as well as experienced tourists, who were asked to rank the material and social factors of the tourism potential of the Volgograd Region.

According to the respondents, the weight of the material and social factors accounted for 0.6 and 0.4 respectively. Then by means of the public opinion poll the second-level attributes for the social and material factors were selected.

The social factors include 4 attributes:

- number of tourists served;
- average consumer prices for accommodation;
- tourist safety;
- average length of stay of tourists.

Each respondent ranks the attributes from 1 to 4. For each attribute, the sum of all ranks is 112. The results of the ranking of the social attributes are presented in the Table 1.

Table 1.The results of the ranking of the second-level attributes of the social factors

ATTRIBUTES	Ranks				TOTAL
	1	2	3	4	
Number of tourists served	51	28	14	19	112
Average consumer prices for accommodation	31	38	27	16	112
Tourist safety	17	24	39	32	112
Average length of stay	13	22	32	45	112

The most part of the respondents (51) assigned the first rank to the attribute "number of tourists served", so this attribute occupies the first place. The second rank is assigned to the attribute "average consumer price for accommodation". The attribute "tourist safety in the territory of the Volgograd Region" ranks third. The fourth rank is assigned to the attribute "average length of stay in the territory of the Volgograd Region". On the basis of the survey conducted among 112 respondents, 7 second-order material attributes were identified. The order of preference of the attributes was distributed as follows:

- 1st rank – living conditions;
- 2nd rank – transport accessibility;
- 3rd rank – quality of food;
- 4th rank – natural attractions;
- 5th rank – historical monuments and attractions;
- 6th rank – health and resort facilities;
- 7th rank – entertainment and leisure.

The results of the ranking of the second-order attributes of the material factors are presented in the Table 2.

Table 2.The results of the ranking of the second-order attributes of the material factors

Attributes	Ranks							Total
	1	2	3	4	5	6	7	
Transport accessibility	22	23	17	14	12	11	13	112
Living conditions	28	21	12	17	11	10	13	112
Quality of food	12	14	22	15	19	16	14	112
Entertainment and leisure	17	16	10	17	11	14	27	112
Historical monuments and attractions	12	9	15	19	22	19	16	112
Natural attractions	11	18	19	21	20	11	12	112
Health and resort facilities	10	11	17	9	17	31	17	112

Natural attractions

The Table 3 shows the calculated weights of significance for each of the second-order attributes.

Table 3.The calculation of weights of significance for the second-order attributes

Second-order attributes	Rank	Score	Weight
Number of tourists served	1	4	0.40
Average consumer prices for accommodation	2	3	0.30
Tourist safety	3	2	0.20
Average length of stay	4	1	0.10
Cumulative value of the rank for the social factors	10	10	1.00
Transport accessibility	2	6	0.21
Living conditions	1	7	0.25
Quality of food	3	5	0.18
Entertainment and leisure	7	1	0.04
Historical monuments and attractions	5	3	0.11
Natural attractions	4	4	0.14
Health and resort facilities	6	2	0.07
Cumulative value of the rank for the material factors	28	28	1.00

Table 4.Interpretation of scaling for the parameter "transport accessibility"

1 (0.2)	2 (0.4)	3 (0.6)	4 (0.8)	5 (1)
Poor condition of the road surface, the roads are narrow, there is lack of parking spaces	Poor condition of the road surface, but the roads are wide. There is lack of parking spaces	The condition of the road surface is satisfactory, but the roads are narrow. There is lack of parking spaces	The condition of the road surface is good, the roads are wide. There is no lack of parking spaces, but they are not properly equipped.	The condition of the road surface is good, the roads are wide. There are enough equipped parking spaces

Quantitative assessment of the qualitative aspects for the individual attributes was implemented on the 5-point scale. As mentioned earlier, the worst indicator is scored 1; the best indicator is scored 3. The interpretation of the comparative marking is based on the availability of services. The Table 4 presents a

sample of scaling using the example of the parameter "transport accessibility". Then the cumulative potential tourism and recreational value of cities and districts of the Volgograd Region is calculated (Table 5).

Table 5.The tourism and recreational potential of the Volgograd region

	S1 Number of tourists served	S2 Average consumer prices for accommodation	S3 Tourist safety	S4 Average length of stay	Vs	P1 Transport accessibility	P2 Accommodation	P3 Catering	P4 Entertainment and leisure	P5 Historical monuments and attractions	P6 Natural attractions	P7 Health and resort facilities	V_p	V_t
Volgograd	1	0.4	0.8	0.8	0.76	1	1	1	1	1	0.6	0.8	0.93	0.862
Volzhsky	0.8	0.6	0.8	0.8	0.74	0.8	0.6	1	0.8	0.8	1	1	0.828	0.793
Kamyshin	0.8	0.8	0.6	0.6	0.74	0.8	0.8	0.8	0.6	0.8	1	0.8	0.82	0.788
Mihajlovka	0.4	0.6	0.4	0.4	0.46	0.6	0.4	0.6	0.2	0.6	0.6	1	0.562	0.521
Urjupinsk	0.6	0.6	0.4	0.4	0.54	0.4	0.2	0.4	0.4	0.6	0.6	0.8	0.428	0.473
Frolovo	0.2	0.6	0.4	0.4	0.38	0.4	0.2	0.4	0.2	0.4	0.4	0.8	0.37	0.374
Sredneakhtubinsky District	0.6	0.4	0.4	0.4	0.48	0.4	0.4	0.8	0.4	0.6	0.8	0.8	0.578	0.539
Zhirnovsky District	0.2	0.4	0.6	0.4	0.36	0.6	0.4	0.6	0.2	0.4	0.6	0.8	0.526	0.460
Pallasovsky District	0.4	0.2	0.6	0.6	0.4	0.4	0.6	1	0.4	0.2	1	0.8	0.648	0.549
Olkhovsky District	0.2	0.2	0.4	0.4	0.26	0.4	0.4	0.6	0.2	0.6	0.8	1	0.548	0.433
Alexeyevsky District	0.6	0.6	0.4	0.2	0.52	0.2	0.6	0.8	0.4	0.4	0.8	0.8	0.564	0.546
Chernyshkovsky District	0.4	0.4	0.6	0.6	0.46	0.4	0.4	0.6	0.2	0.2	1	1	0.532	0.503
Ilovlinsky District	0.2	0.2	0.4	0.4	0.26	0.2	0.2	0.8	0.2	0.4	0.8	0.6	0.442	0.369

The potential value of social factors is ranged from 0.26 (Olkhovsky District) to 0.76 (in the city of Volgograd). The higher values of social factors were obtained in the cities of Volzhsky and Kamyshin. The lowest indicators of the social value – in Ilovlinsky, Olkhovsky, Zhirnovsky districts and in the town of Frolovo – were obtained due to a small number of tourists, as well as a shorter duration of stay of tourists in these tourist areas.

The infrastructure is most developed in Volgograd, Volzhsky and Kamyshin. The lowest value of the material factors is observed in Ilovsky District, in Frolovo and Urjupinsk. The effectiveness of the practical use of geographical and infrastructural potential of the region is clearly insufficient, and the formation of the tourism infrastructure is still only in its initial stage (Kurchenkov, Fetisova, Matina, 2015).

The uneven development of the tourism infrastructure has a significant impact on the tourist flows in the region and leads to further differentiation of the socio-economic development of the territory.

4. Discussion

Reliability of the proposed methodology is confirmed by the value of the total tourism and recreational potential of each of the studied territories of the region. The highest value is obtained in three cities of the Volgograd Region (Volgograd, Kamyshin, Volzhsky), where the most part of the accommodation, catering, entertainment and leisure facilities are concentrated. Besides, in these territories there are a large number of

historical monuments and tourist attractions. All these factors contribute to the high tourism potential of these territories.

In the districts of the Volgograd Region the tourism potential is mainly ensured by the unique natural sights and the availability of the resort and recreational infrastructure. At the same time the infrastructure is virtually undeveloped: transport accessibility, catering and accommodation services, the availability of entertainment and leisure facilities are at a low level.

The development of tourism in these spots is difficult, but possible, provided that the necessary infrastructure is created and an active advertising campaign is conducted. The value of the potential for each specific area shows the level of its attraction for the development of tourism. However, the proposed individual development strategies for each territory of the region may be not economically efficient. Thus, the intensity of the development of tourist offers in the territory of the Volgograd Region can be optimized by grouping/clustering of the tourist growth points.

The use of common infrastructure will not only make it possible to optimize financial resources, but will also help (as far as possible) to preserve the purity of nature and environment of certain tourist spots in the region. Consequently, clustering should be based on the geographic proximity of the tourist spots. At the same time, it should be noted that the proximity depends not only on the physical distance, but also on the associated parameters as the purpose and the type of a trip, the length of stay in a certain place, the likelihood of the night stay, proximity to transport junctions, the type of a trip, socio-economic and socio-cultural aspects of visitors.

For example, the concentration of historical monuments and tourist attractions in three cities – Volgograd, Volzhsky and Kamyshin – makes it possible to merge them into a single tourist network and create a tourism cluster of spiritual and patriotic direction.

Conclusion

Before investing in tourism, regional authorities should know the state of the relevant tourist resources, their attractiveness and the level of tourist demand. All those aspects are related to the assessment of the tourist potential of the region.

This paper offers an efficient methodology for the quantitative assessment of the tourism potential of a region which uses a convenient and easy-to-use tool. To achieve an optimal solution in this respect, the methodology is formulated as “a weighted sum model” based on a multi-criteria decision which includes rating and scaling of different attributes for getting their quantitative estimation.

Despite the simplicity of the methodology, the researchers should be cautious when selecting attributes, evaluating their level and relative weights. To assess the tourism potential of new territories, instead of the 5-point scale one can use the 10-point scale, which may work better in this case.

In conclusion, it should be noted that there are many opportunities for development and conducting of similar studies of tourism and recreational potential in order to achieve the goals of sustainable development and economic recovery of a region.

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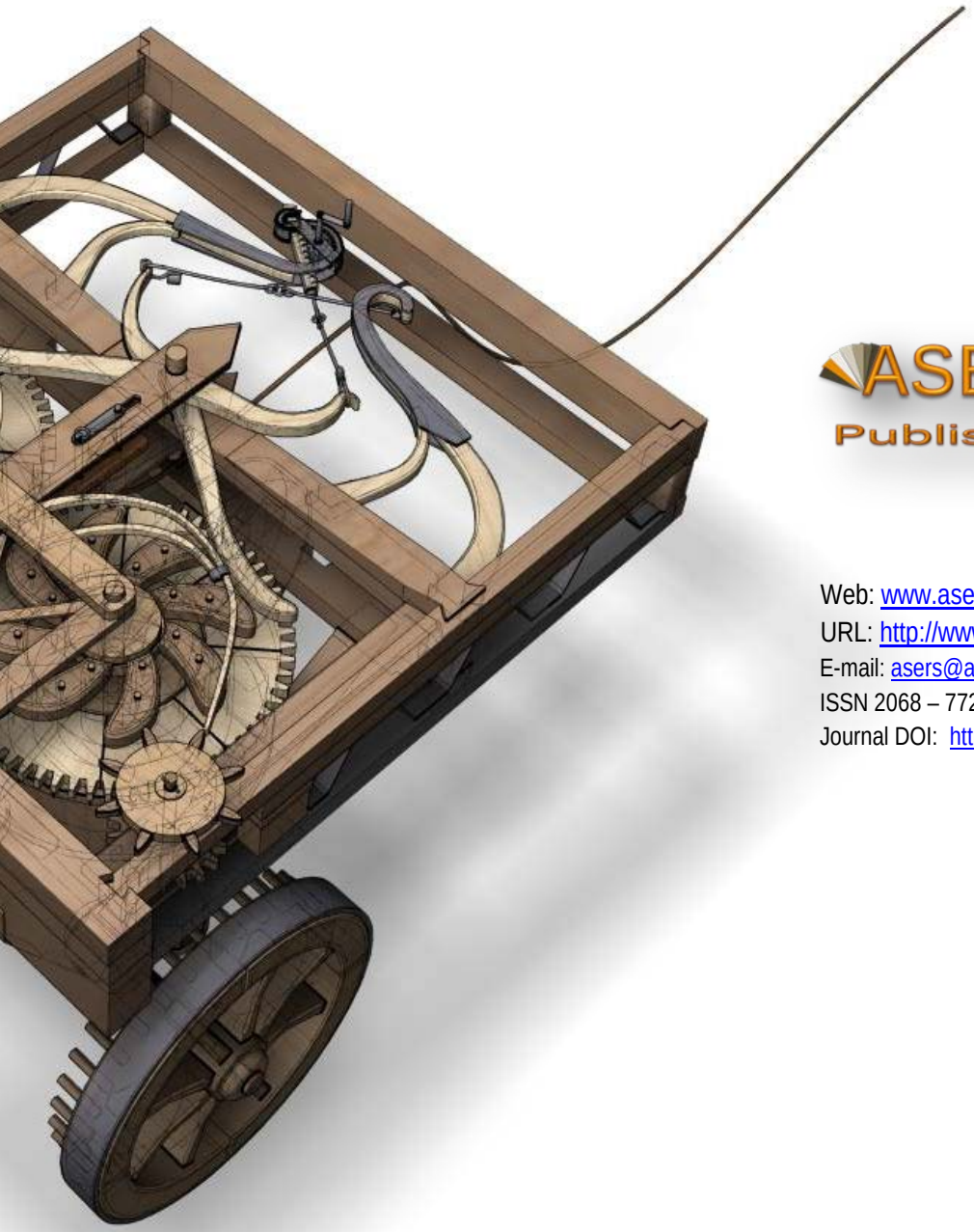

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